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Geoeconomic determinants for foreign investments

A quantitative study of potential national strategic objectives of Chinese investments to Europe using firm-level data

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Abstract

In this thesis, I examine potential geoeconomic determinants for the location choice of non-European investments to the EU28 and EFTA-countries. Over the past decade, Chinese outward FDI has tripled. With that comes growing accusations that their investments are used to reap national strategic (geopolitical) returns. The allegations do not only come from nationalist or protectionist politicians, but is also supported by governments, national security bodies, and academics. Although the claims vary in degree of explicitness and justification, most suggest that the investments are not fully commercially driven – often pointing at high-profile cases and other anecdotal evidence. Still, there has for long been a lack of screening and control mechanisms for foreign investments. For this reason, I asked myself: are there support of these allegations in large-scale European microdata of firm ownership? I start by translating these broad allocations into a narrower research question. To be able to answer this, I conceptualize six hypotheses that could suggest geoeconomic pull motives, which I operationalize into testable variables. More precisely, I test whether Chinese investments seem stronger associated with majority ownership, technology, market power, highly concentrated markets, and critical infrastructure – compared to other non-European investors. For examining these hypotheses, I have developed a sophisticated dataset, using longitudinal firm-level data from Orbis.

For my study, I use a dual-method approach. First, I examine China's investment strategy, formulated using the method of Babic et al. (2019). I compare China's strategy to that of other major non-European countries, as well as the average of all non-European investors. Second, I develop a unique econometric model estimated using random effects, testing the investments' intensive margin. Combined, and with all the methodological limitations I problematize, my study strongly favors the majority ownership and the critical infrastructure hypotheses. In addition, it provides non-conclusive partial support and disapproval for the market power and the technology hypotheses, respectively. Overall, when comparing with other extra-European investors, China is stronger associated with certain potential geoeconomic characteristics.

Although interesting, the results cannot be concluded as meaningful, causal, and generalizable, or whether they are linked to the government's strategic (geoeconomic) objectives. Rather, the findings should be viewed as an attempt to examine investment characteristics that may, but do not necessarily, imply national strategic objectives. I will argue that my assignment contributes to enhancing our understanding of motives for foreign investments in Europe. Especially as empirical studies of geoeconomic determinants are still a relatively uncharted territory, it can provide new ideas on how to approach such questions.

Contents

1. Introduction

As the global economy has become strongly intertwined, foreign investments accounts for a significant part of the European economy. Foreign investments may provide advantages both for the senders and the receivers – such as gaining access to global markets, utilizing competitive advantages, increasing domestic capacity and competitiveness, providing higher return on capital, or be used as a 'catch-up strategy' (Amann & Virmani, 2015). Still, in recent years there has been broader skepticism towards foreign ownership. This is particularly the case in Europe, where several countries and the European Commission have implemented new regimes for inward investments, with screening mechanisms assessing whether the investments could have effects on security and public order. This includes critical infrastructure, technology, and access to sensitive information (Casey, et al., 2020). This trend of increased control is interesting, as the European control regime for incoming investments has been less developed than the export control regulations. Thus, foreign actors could have, and likely still do, regard investments as the easier way to access sensitive European goods or technology.

The skepticism is often displayed by allegations that the investments are not commercially driven – particularly when the investor comes from 'Non-western' countries, such as China, Russia, and the Middle East. In particular due to their economic success, with outward FDI being tripled in the past decade, most focus has been on China. Although the claims vary in degree of explicitness and justification, most seems to suggest that the investments are motivated by some sort of national strategic or geopolitical objectives. This can be referred to as "security externalities" – which are benefits for the country beyond the pure commercial aspects (Norris W. J., 2010). On the other hand, the traditional view has been that economic forces applies to everyone. Thus, it has been assumed that investors of foreign investments are commercially driven profit-maximisers (Buckley, et al., 2007). The business theory views foreign investments to be a good way of acquiring access to natural resources, foreign markets, increased productivity, and assets that are strategically important for the firm. This is backed by most of the available empirical studies of Chinese investments – finding that they, at least to some degree, are commercially reasonable. Thus, Chinese investments abroad are likely more similar to investments from other countries than these warnings suggest (Knoerich, 2012). In my assignment I want to dig into these divergent views on Chinese investments, and by using micro data of ownership in European firms, examine whether there are investment characteristics which could suggest non-commercial motives. More precisely, my research question is: *Are potential geoeconomic factors stronger determinants for Chinese foreign investments to Europe than for investments from other non-European countries?* With this

wording it is important to clarify that I do not intend to prove or interpret what the actual fundamental motives for investing are. Rather, I will formulate theory-based proxies that may, but do not have to, suggest the existence of geoeconomic intentions. Then, I will examine whether the effects of these proxies are larger for Chinese investments than investments from other non-European countries.

As the research question is broad and hard to answer, I have formulated six testable hypotheses based on mechanisms advanced by previous studies in recognized journals. The Chinese government is often accused of seeking technological advancement and increased leverage against other countries. Therefore, I use technology-seeking and firms with leverage as a proxy for national strategic (geoeconomic) motives. The latter includes majority ownership, market power, highly concentrated markets, and critical infrastructure sectors. I will focus on hypotheses about factors in the destination country and in the target firm – thus being "pull motivations" for the investment. To determine whether these apply to Chinese investments in Europe, I use a dual approach. First, I will use the formulation of investment strategies, based on Babic, Garcia-Bernardo, & Heemskerk (2019) to measure whether Chinese investor are relatively more attracted to firms where they hold majority ownership, compared to other non-European investors. Second, I have developed what is, as far as I am aware, a unique econometric model. This approach studies what is defined as the intensive margin of the investments, focusing on the size of the investments rather than whether an investment takes place. The construction of the needed variables is based on replications of choices and procedures from previous studies, combined in a way which has never been done before. This econometric approach will answer the remaining hypotheses, namely whether Chinese investors seem attracted to firms with technology assets, higher market share, operating in highly concentrated markets or within of critical infrastructure. As looking at Chinese investments alone may not provide too meaningful information, I compare investments from China with those of other non-European investors. In this way, I will be able to find out whether there is any support in the data for investments from China being inherently different.

In my assignment I find partial support for the hypotheses. First, my findings suggest that majority ownership and critical infrastructure are more important motives for Chinese than for the rest of non-European investors. This is in line with the accusations and could suggest geoeconomic motives. The majority ownership hypothesis is supported both by the investment strategies method and by the econometric approach – while the critical infrastructure results are robust for changes in the model specifications. On the other hand, I am not able to find support for the remaining hypotheses. In fact, Chinese investors even seem to care less about

technological assets – which is contrary to the allegations that China seek technology when investing abroad. In addition to these findings, my assignment contributes by developing a new way of testing geoeconomic motives for foreign investments.

Analyzing motives is hard. A recurring problem in this type of study is distinguishing what 'feature' of the target firm that is actually driving an investment. All the hypotheses I look at may also be explained by ordinary business motives – and do not solely equal geoeconomic drivers. Therefore, even if I do find support of the hypotheses, I cannot confidently claim that the effects are causal and generalizable. A related argument is that the hypotheses are intentionally formulated specifically for China. Therefore, I could face potential "postdiction" problems, as well as issues regarding multiple hypothesis testing.

The scope of my thesis is to further develop our understanding of investment motives – by shedding some light on what I deem to be an understudied field. Together, my assignment provides a unique methodology on a relatively unexplored firm-level data source. To do that, I have divided this thesis into nine chapters. In this first chapter, I argue the purpose of my thesis, including the research question and why I find the topic interesting. Then, Chapter 2 establishes the context of my study, by digging into the claims about the geoeconomics of Chinese investments. Next, in Chapter 3, I provide the theoretical foundation for understanding motives of foreign investments from the opposite poles, namely geoeconomics and the motive-based business theory. Chapter 4 develops my six hypotheses, based on theoretically founded mechanisms presented in the aforementioned chapter. Next, Chapter 5 describes the relatively newly available firm-level dataset, Orbis, that I will be using in my study. Chapter 6 presents the dual methodology I use to answer the hypotheses, which will help answer the research question. This includes the operationalization of the hypotheses through developing proxy variables. In Chapter 7, I will present the results, starting with the investment strategies and ending with the regression outputs. Followingly in Chapter 8, I discuss these results. I will end the chapter by debating the contribution of my thesis, and considering the limitations to internal and external validity. The final chapter delivers some final remarks and conclude the thesis. In addition, the thesis contains references and an appendix

There are also some delimitations to be aware of. My thesis is not intended to examine other determinants of investments than strategic asset-seeking. Further, I will not make policy recommendations or judge whether China is "good" or "bad". In fact, I will not even attempt to evaluate or prove causal, generalizable, and predictive effects. Rather, I only assess whether there is support in European firm-level data of the existence of investment characteristics which could suggest national strategic objectives

2. Background

My thesis is motivated by the recurring accusations about the national strategic (geopolitical) aspects of Chinese investments. In this chapter I will provide a background to what these accusations are all about. The idea of using economic tools for national strategic purposes is the basic premise of the fields of "geoeconomics" and "economic statecraft". Despite the terms being fairly new, the idea of *"offering economic rewards or withholding economic advantages. Politics may therefore be an instrument of economics and economics may be an instrument of politics."* was pointed out in Quincy Wright's landmark book from 1955 (p. 239). In recent years, the idea of using the economy as a foreign policy tool is even less far-fetched. As Secretary of State, Hillary Clinton even "*put what I call economic statecraft at the heart of our foreign policy agenda*" – with the reason that "*It gives us the leverage we need to exert influence and advance our interests"* (US Department of State, 2011). In other words, using the economy strategically is an established notion, but the focus has mostly been centered around trade policy or sanctions. This includes the development of the TIES-database of over 1400 imposed or threatened cases of sanctions (Morgan, Bapat, & Kobayashi, 2014). Examples of using foreign investments for the same reason have been mostly anecdotal. Part of the reason is likely that economic statecraft is seldom meant to be explicit and public, which makes evaluating whether the objectives are national strategic more difficult. On the other hand, economic sanctions are normally meant to be openly linked to the geopolitical aim. Hence, the criteria of an explicit 'quid pro quo' may be too strict when analyzing investments as a geoeconomic tool.

Due to their economic success, China has, next to the United States, emerged to a pole-position for geoeconomic capacity. In 2015, China became the second largest outward investor in the world, and there is an academic consensus that their capital export is growing (Li Y. , 2018). With these large outflows of capital, most of the focus of foreign investments as a geoeconomic tool has been given to China. The historical development in foreign investment is described in Appendix A. One of the main trends is that Chinese foreign investments have grown rapidly – both as share of the gross domestic product (GDP) and in aggregated figures. Over the past decade, past foreign direct investments (FDI) from China have tripled. The growth has been particularly strong from Mainland China, where it has increased by a factor of 6.6 over the same period. While no one claims that all the investments are government-enforced, many views the investments to be part of national strategic ambitions. The idea that China has other drivers for their investments than pure commercial is well summarized by Macikenaite (2020, p. 9), who argue that *"China utilizes or directs outward FDI to promote its soft power and international image. Finally, outward FDI is used as a tool to provide incentives to other countries to follow China's policy line, would it be recognition of Taiwan or consideration to China's principles*

of noninterference". In addition to the large size, it is claimed that *"Chinese businesses and politics are often intertwined*" (Bräutigam & Xiaoyang, 2012, p. 16). As a result, it may be that Chinese firms are not profit-maximisers, or that they *"may be maximizing subject to government-led institutional influences*" (Buckley, et al., 2007, p. 31). Together, this paints a picture that China is both capable and willing to influence the decisions of domestic private companies and investors. This has been suggested by the United States in the World Trade Organization, with repeated statements expressing their *"serious concerns over how they exercise influence over the operations and investment decisions of state-owned enterprises (SOEs) and private enterprises, including foreign-invested enterprises".*[1] Similar skepticism is echoed by national security bodies in Europe. The EU Commission (2020) has implemented a new screening system for investments, which was put in place from October 2020. The proposal included cooperation mechanisms among the member states, requirements for investment screening on security, public order, or issues of common concern – as well as allowing the Commission to issue warnings if an investment poses a security threat. Norway's Police Security Service (PST) states in their latest national threat assessment that *"Financial methods can therefore be used in some cases to achieve many of the same goals as covert intelligence operations. For example acquisitions and investment in Norwegian companies can also be used to influence Norwegian decisions and priorities*" (2021, p. 14). In addition, for the very first time they name a country specifically, with the reason that "*The Chinese authorities have the power to force Chinese companies to act in the interest of the state. Thus a company may have to conclude unprofitable agreements with foreign companies in order to acquire information and influence of interest to the Chinese authorities*" (2021, p. 14). The Norwegian Intelligence Service views Chinese foreign direct investments to be "*increasingly following China's strategic priorities, above all the ambition of technological self-reliance*" (2021, p. 11). The same tendency of increased concerns is shared by scholars such as Baldwin who attests that *"China has emerged as a major actor in international relations since 1985 and has made increasing use of economic statecraft"* (Baldwin, 2020, p. xi) – while Blackwill & Harris (2016, p. 11) label China *"the world's leading practitioner of geo-economics"*. Li et al. (2018, p. 669) highlights state control over private individuals and private companies as particularly relevant for China as "*at least in the Chinese context, government entities have a controlling influence even as minority shareholders as long no other shareholder holds a larger stake*". Their supplementary analysis reached the same results also if state's share were among the top 10

[1] WTO General Council Communication: "China's Trade-disruptive economic model" (WT/GC/W/745), 16th July 2018, p. 3. docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/GC/W745.pdf

shareholders. These results support the allegations that the Chinese government may exercise its public sector for strategic objectives.

There are some convincing examples of investment decisions of Chinese private firms and individuals being government-enforced. Following the Communist Party Congress in 2017, the party allegedly decided that Chinese investments in foreign football clubs were no longer acceptable – with the intention to move the investments toward Chinese clubs (China Soccer Observatory, 2019; Cockayne, Chadwick, & Sullivan, 2021). Suning Holdings Group, the owner of the Italian football club Inter Milan, is reportedly among those that have been forced to withdraw their ownership stakes (Eckner, 2021). Suning Holdings Group also owned the Chinese team Jiangsu Suning (also known as Jiangsu F.C.), that won the Chinese Super League in 2020, and then got their licenses revoked and had to "cease operations". Professor Simon Chadwick, who is part of the China Soccer Observatory research center at the University of Nottingham, claims that the Chinese government also demanded Dalian Wanda Group to sell their stake in the Atletico Madrid (Berwick, 2018). The owner of Dalian Wanda and once China's wealthiest, Wang Jianlin also invested heavily in Hollywood, acquiring six major studios – before the government supposedly decided that he had to sell the assets (Ma & Schwartzel, 2017). Another recent example in the football world is the Saudi Arabian takeover of Newcastle FC (Quinn, 2021). A different, yet related example of a suspected geoeconomic investment is the attempted acquisition of the Rolls Royce owned firm Bergen Engines. The purchaser was the Russian Transmashholding Group with alleged close ties to the Kremlin. Bergen Engines produces medium-speed liquid fuel and gas engines – including for the Norwegian Armed Forces. After attention in the media, the purchase was blocked by the Norwegian government, with the reason that Russia would *"gain access to underhand means to knowledge and technology of great military strategic importance to Russia."* (Norwegian Ministry of Justice and Public Security, 2021). However, the target firm does not have to produce arms or military equipment for the foreign acquisition to potentially be problematic.

So, although there are convincing examples of cases where government-enforced investments with geoeconomic motives have taken place – they are difficult to prove. David Baldwin, one of the those credited as the originator of the field, makes an explicit point about the term economic statecraft being used too loosely.[2] Traditionally, the conventional wisdom in academia has been that "*geo-economics suggests a linear means-end causality between mega-*

[2] He argues that three components must be fulfilled in order for measure to be economic statecraft: (1) the type of policy instrument used in the influence attempt must be economics; (2) the domain of influence attempt must be other international actors; (3) the scope of influence attempt must be some dimension of the target's behaviour – such as beliefs, attitudes, opinions, expectations, emotions, or propensities to act (Baldwin, 2020, p. 31).

economic policies and geostrategic contentions" (Li M. , 2020, p. 171). A linear means-end causality would imply that there was a direct "quid pro quo". In his pioneering book from 1985, Baldwin contended this view of economic statecraft as a single causal mechanism. My work will follow the very same chain of thought. I argue that foreign investments with certain features should be considered a possible geoeconomics tool, even without looking for direct links between the investment and the origin country's geoeconomic aims. That is, even if the investments' association with national strategic objectives cannot be proven, it is still a potential geoeconomic tool. In the new edition of his book, Baldwin claims that the "*strong scholarly consensus that such measures were useless"* he experienced in 1985 is now less widespread (2020, p. xi).

In this assignment I will therefore stay away from characterizing or claiming that the investments are meant to be used directly as a mean for coercion. Instead, I will regard them as a potential capacity that states could use. This approach fits well with Norris's intention to build *"a theory of economic statecraft that provides an explanation of how states use firms to pursue their strategic goals"* (Norris W. J., 2010, p. 3). To provide a nuanced picture of the possible drivers of Chinese investments, I will present a detailed theoretical framework for understanding foreign investments. In this, I will go into the perspectives from both the motive-based business theory and from geoeconomics. Together, my aim is to shed some light on what drivers that may contribute to the large number of Chinese investments to Europe. Europe makes an interesting case as it is the largest recipient of foreign direct investments, with about 35 percent of total investments in the world (UNCTAD, 2020). In addition, the available data of European firm is among the best.

3. Literature review

Investments in and acquisition of foreign entities have many advantages. The conventional motives for foreign investments include easing market access and increasing competitiveness, providing knowledge on production processes, technology, and foreign markets, and they can improve economies of scale and scope. All of these reasons constitute pure business motives (Perea & Stephenson, 2017). The economics and business theories of drivers for foreign investments are generally recognized as the main determinants of foreign ownership. Using Dunning's four-grouped taxology, I present the main determinants of business activities abroad, namely market-seeking, natural resource seeking, efficiency-seeking and strategic asset-seeking investments (Dunning & Lundan, 2008). The general consensus suggests that acquiring firms is largely motivated by pure business purposes. That is also the case for the 'strategic asset-seeking' group, where acquiring potential competitors or cornerstone-firms in related markets may be a way of improving the firm's long-term performance or value creation.

Even if financial motives are seen as the most important determinants of foreign investments, they can also be used to promote a foreign policy agenda. The idea that China could use outward foreign direct investments (OFDI) as a tool is strengthened by scholars claiming that "*OFDI from Chinese enterprises may have unique characteristics given the large extent of state control of the Chinese economy"* (Wang, 2015, pp. 1-2). In Section 3.1 I will present the theoretical foundation of geoeconomics, and how it explains motives that potentially may drive Chinese foreign investments. That includes what geoeconomics and economic statecraft is and how sending states may influence and benefit from these types of investments. In Section 3.2. I detail the business economics view of why firms establish, acquire, or invest in firms abroad. In Section 3.3 I provide a summary of the empirical studies on determinants for Chinese foreign investments. By presenting both the motive-based business theory and the theories of geoeconomics, I want to be transparent about the difficulty of labeling the motive for investments. Thus, my aim is to communicate how each of my findings could suggest a geoeconomics purpose – but also how they could be explained by business theory. In reality, investments may be motivated by a combination of the two. Since my research question is about characteristics in the target firms, I will focus on the "pull motivations" for foreign investments.

3.1 National strategic theories of foreign investments

As presented above, there are several sound commercial reasons for why firms and investors put their money into firms abroad. Still, many claim that Chinese investments are driven by other motives. In this section, I will raise the theoretical framework for why that may be the case. Geoeconomics builds on intuitions from mainstream political economy and institutional

political science. The modern understanding of geoeconomics is often credited to the work of Edward Luttwak (1990). He theorized that during the cold war, the economy was not only a cause for conflict between nations, but also an instrument. At the same time, Baldwin created the field of economic statecraft. In the following years, several proposed similar ideas, such as Pascal Lorot, Mark Munoz, Ian Bremmer, Christian Harbulot, and Paolo Savona (Csurgai, 2017; Scholvin & Wigell, 2018). Still, geoeconomics has by certain scholars been labeled as *"an understudied area in international politics."* (Li, 2020, p. 171). Further, when the term is used, it is often misused as a catchword to generate interest from a wider audience – without establishing the difference between geoeconomics and geopolitics (Scholvin & Wigell, 2018).

One of the focal points in geoeconomics is that the society and institutions around an actor matter. In the case of foreign acquisitions and ownership, the investor will be influenced by external pressure from other domestic and international actors. That could be a firm's customers, international partners, suppliers, the political institutions, market structures and so on. Several scholars have attempted to systemize the domestic influencers of cross-country investors, such as Norris (2016) and Xie et al. (2017). Most models use some form of principal-agent theories, where the basic idea is that the government can support or oppose behavior from private and commercial actors, through coercion or influence. A detailed theoretical framework on how and to what degree governments can influence its private investors can be found in Appendix B. The view that the environment around a firm matters for its decision-making is the basis of Porter's (1979) five forces. In the PEST analysis framework, the political sphere is particularly relevant. I argue that the influence does not need to be stated. It may be the case that investors "self-censor", for example to reduce the chance of stricter regulations.

The national strategic objectives of geoeconomics and economic statecraft

Although there are some variations to their definitions, most agree that geoeconomics is something similar to *"The use of economic instruments to promote and defend national interests, and to produce beneficial geopolitical results, and the effects of other nations' economic actions on a country's geopolitical goals"* (Blackwill & Harris, 2016, p. 20) – while economic statecraft is something like 'economic means to pursue foreign policy goals'. In their essence, the terms refer to using economic instruments to achieve outcomes that, in some way, are beneficial for the sending country. Norris describes economic statecraft as *"When states seek to encourage or discourage commercial actors to behave in ways that will generate the types of economic patterns that result in security externalities"* (Norris W. J., 2010, p. 48). As in the conventional economics, externalities are additional benefits or costs that the decision-maker do not fully internalize. Security externalities therefore cover the additional security

effects which the decision-maker do not account for. In my context, I will consider the firms and shareholders as the decision-makers and their country of origin as the external influencer. In the principal-agent theory, which is covered in Appendix B, this corresponds to the country of origin as the principal, and the shareholders as their agent. The idea is that investing abroad provides economic and strategic advantages for the firm or shareholder, as discussed in the business literature in Section 3.2. However, it may possibly also offer some security or geopolitical advantages for the country of origin of the shareholder. However, if the agent does not get these advantages included into their decision, either through laws or economic encouragement, they will invest less than is optimal for their country of origin. In this way, the commercial private actors "produce" less of the actions that provide their respective governments with additional benefits – as they do not include these benefits into their decisions. In his typology, the economic channel can impact security externalities in two ways. First, by using the economy as the mean – through being a 'coercive leverage' or 'interest transformation'. Second, by affecting the economy of the target state – either weakening or strengthening it. A more precise overview of the most important differences between geoeconomics and geopolitics can be seen in Table 1.

	Geopolitics	Geoeconomics
Means	Military	Economic
Target	Another international actor	Another international actor
Scope of influence	Target's behavior/views	Target's behavior/views
Visibility	Overt	Covert
Action-reaction link	Explicit	Implicit
Logic	Confrontation	Selective accommodation
Threat perception	High	Low / Medium
Target reaction force	Centripetal	Centrifugal
Target behavioral tendency	Counterbalancing	Underbalancing

Table 1 Overview of the differences between geopolitics and geoeconomics – based on table 1 from Wigell & Vihma (2016) and Baldwin's (2020) definition of economic statecraft.

I will be using the terms economic statecraft and geoeconomics somewhat interchangeably, meaning the use of economic tools to influence another state's behavior.[3] However, I do not claim that the measure must be used specifically in a direct means-end relation. In this sense, it may even be used as a form of soft power, where the sending state may use it with the hope that it may be beneficial later. This fits well with what can be described as the 'structural linkage' type of economic incentive, where the policy is meant to be unconditional 'general positive' or

[3] There are examples of using economic statecraft on non-state actors, such as quasi-states, transnational organizations, groups of countries, large multinational companies etc., but that is outside of my area of focus.

'long-term engagement' (Mastanduno, 2016). The logic is similar to that of sanctions theory, where the sanctioning actor *"expects instead that sustained economic engagement will eventually produce a political transformation and desirable changes in target behaviour"* (Mastanduno, 2016, p. 235). One key difference is however that economic statecraft is often indirect, while sanctions by intention are usually explicitly tied to a target country's behavior. This makes economic statecraft more difficult to analyze. If economic statecraft holds the explicit features of sanctions, it can be referred to as a 'tactical linkage'.

Some of the reason why economic statecraft can be efficient is that it may be used to 'divide and conquer'. This means that geoeconomic tools are often be targeted to split actors within a state or group of states, through benefits to some actors in the country, but not to others (Mastanduno, 2016). This tactic can be referred to as a "wedge strategy" or 'hybrid interference'. This strategy is said to be used in China's Belt and Road Initiative investments in Europe, reputedly creating frictions inside the union (Pardo, 2018). In addition, as economic statecraft is often implicit, it does not pose as threatening. In this way, the greater threat may come from the increased economic dependence and presence, rather than as coercion (Waage, Kvalvik, & Lindgren, 2021). This 'centrifugal' effect, where the different actors inside the target are pushed away from each other, is in strong contrast to the 'centripetal' effect often seen when someone is the target of geopolitics, where the actors within the target is pulled together (Wigell & Vihma, 2016). By that I mean that if a country experience that external actors are using geopolitical measures against them, it may often cause a 'rally around the flag' effect – making the country more united against the common enemy (Mastanduno, 2016). An example of divide and conquer would be if an external actor were to offer grand-scale investments to Europe during the financial crisis. While Germany would likely not accept or need support, it could be difficult for Greece to decline. As Greece and Germany both are part of the EU and the Eurozone monetary union, they often must reach a common solution for the expansiveness of fiscal policy. This could end up in an internal clash between the two countries.

Another advantage of the selectivity is that it may be more difficult for a target country or coalition to implementing balancing measures – as some of the actors within the target may support the geoeconomic policies of the sender. The target therefore often tends to underbalance their countermeasures. As a result, the target country may experience that parts of their *"foreign policy autonomy are traded for selective economic benefits"* (Wigell & Vihma, 2016, p. 8). Further, economic statecraft can be a first step, before escalating to stronger means of power. The reason is that going directly to armed conflict is seldom legitimate, and using less forceful measures is therefore easier to implement (Waage, Kvalvik, & Lindgren, 2021).

Investments as economic statecraft

Economic statecraft can be conducted in several forms, either directly by government decisions or through the country's citizens or multinational enterprises. It can be used positively as a 'carrot' or negatively as a 'stick' (Kahler & Kastner, 2004). Table 2 lists Baldwin's taxonomy for economic statecraft using capital. In my assignment, where I will be looking at outward investments, the use of state-owned enterprises and encouragement of private capital export seems most relevant. In addition, states could use controls on capital export, investment guarantees, or favorable taxation for domestic firms investing abroad. In this way, both investments and disinvestment are relevant applications. Furthermore, investments could be used is as a "sanction buster" - where a state can come to the rescue for a country in need of capital after experiencing economic sanctions. In this way, investments can reduce the effectiveness of other countries' foreign policy (Early, 2011).

Negative capital sanctions	Positive capital sanctions
Aid suspension	Providing aid
Freezing assets	Investment guarantees
Controls on import or export	Encouragement of private capital export or imports
Taxation (unfavorable)	Taxation (favorable)
Expropriation	Promise of the above
Withholding dues to international organization	
Threats of the above	

Table 2 Overview of capital economic statecraft. Source: table 3.1 and 3.2 in Baldwin (2020)

One common type of investments abroad is foreign direct investments (FDI). Foreign direct investments can be defined as *"the establishment of a lasting interest in and significant degree of influence over the operations of an enterprise in one economy by an investor in another economy"* (OECD, 2015). As both FDI and economic statecraft primarily are meant as long-term economic engagement in another country, FDI seems a highly relevant. As a result, FDI is also the most studied form of investments as economic statecraft. The notion of investments as a geoeconomic tool coincides with the 'strategic intent' definition which describe actions that are *"focusing on future opportunities and long-term objectives for global leadership beyond short-term strategic planning*" (Cui, Meyer, & Hu, 2014, p. 488).

Governmental influence and benefits for sending state

To substantiate that private FDI is part of the geoeconomic toolkit of states, one must (i) argue how states could exercise influence over private actors, and (ii) demonstrate how private investments can provide any substantial benefit for the sending country. The theoretical factors

and mechanisms that decides to what degree a government can exercise influence over its domestic actors is explained in Appendix B. In short, the theory says that *"Governmental control aligns the strategic goals between firms and governments such that governments provide firms with critical resources in exchange for firms' support of governments' strategic objectives"* (Li, Meyer, Zhang, & Ding, 2018, p. 663). The benefits for a sending state by influencing its private sector to invest abroad will be explained in the following paragraphs.

There are innumerable case-specific reasons for why a country may want put money abroad, either directly or through its citizens/firms. The geoeconomic viewpoint narrows it down to three main purposes: (i) forcing political change; (ii) achieving strategic benefits[4], and (iii) defending the 'freedom of maneuver' or policy space of the sending country (Waage, Kvalvik, & Lindgren, 2021). Additionally, it can deter future actions by setting an example. For countries receiving foreign investments, Theodore Moran (2013) highlights dependency on a foreign supplier, transfer of technology, and infiltration and sabotage as the three major national security threats. In a similar way, the Norwegian Defense Research Institute propose the following six categories of threat posed by economic statecraft: Facilitation of covert attacks and sabotages; Governmental influence; Governmental intelligence/espionage; Circumventing nuclear non-proliferation regulations; Protection of strategic interests; Changing of the balance of power (Waage, Kvalvik, & Lindgren, 2021). In their morphologic analysis, they assert that foreign investments can be a tool for exploiting each of the six threats.[5]

	High criticality	**Low criticality**
High plausibility	Block foreign acquisition, unless it is the only way for the target firm to become or remain internationally competitive	Allow foreign acquisition
Low plausibility	Allow foreign acquisition	Allow foreign acquisition

Table 3 This matrix is based the 'criticality test' presented in a decision-tree used by Moran in several studies (Moran, 2017).

As Wigell & Vihma state, governments that are exposed to geoeconomic policies tend to underreact. This is partly caused by lack of internal support for counteracting policies, as certain insiders welcome it. So, what should the target states do about it? Throughout his studies of foreign acquisition and national security, Moran suggest that states counteract the potential threats from foreign acquisition as shown in Table 3. The plausibility criterion is based on the chance that (a) the acquisition could lead to a possible leakage of sensitive technology to a foreign company or a foreign government, and (b) the chance that the technology may be used

[4] There are several ways to achieve strategic benefits. Waage et al. (2021) mention getting access to information, technology or resources that can improve their bargaining power or to use it for more 'serious, intended actions'.
[5] They divide foreign investments into greenfield FDI, merger FDI, acquisition FDI and portfolio investments, where all forms can be used for each of the six categories. This is illustrated on table 3.2 in (Waage, Kvalvik, & Lindgren, 2021) [in Norwegian].

or sold so that it could be harmful for the target country. The criticality criterion is a judgment of how damaging the potential leakage or harmful use could be for the target country.

3.2 Business economic theories of foreign investments

One of the fundamental assumptions of global economy in the 21st century is that firms and investors make decisions based on what they think maximize their objectives. Their objective might differ, but is commonly profit, shareholder value, market capitalization, public services, or social targets. One of these decisions an investing unit must make is whether to participate in value creation abroad, through economic activity or capital investments. Therefore, when analyzing what may drive ownership of firms in Europe, it is vital to elaborate on what may influence investors' decision. These issues can be found in the antecedent-area of the ADO framework (antecedents, decisions, outcomes), as explained by Paul & Benito (2018).

One of the main contributions to our understanding of how and why firms behave and interact in the global economy was presented by Navaretti et al. (2004). Most relevant for my study, they presented a sophisticated formalization of the determinants for the location choice of FDI, as well as their division of firm- and country-specific motives. Another influential work is done by the economist John Dunning. His eclectic paradigm framework, also called OLI, was developed to explain the advantages of economic engagement abroad within ownership (O), location (L), and internalization (I) (Dunning & Lundan, 2008). With this model, he systemized the factors influencing *whether, where,* and *how* the activity abroad should take place. More precisely, he proposed that firms investing or initiating economic activity abroad may be driven by being natural resources-seeking, market-seeking, efficiency-seeking, or strategic asset-seeking – or some combination of them. A summary of the main objectives, targets, and managerial challenges for these four categories can be found in Table 4. Further, Dunning mentions escape investments, support investments, and passive investments as motives that did not fit within these categories. Although Dunning is recognized as the main creator, several scholars have been using similar typologies, such as for scale effects, competition effects and knowledge effects (Perea & Stephenson, 2017). Dunning's framework is part of the paradigm focusing at 'firm-specific advantages' and 'country-specific advantages' (FSA/CSA). Other noteworthy theories of foreign investments include the springboard theories, the monopolistic advantage (internalization) theories, the Uppsala model and related hybrid models, and linkage-leverage-learning (LLL) models (Luo & Wang, 2012).[6] In addition to the abovementioned

[6] The springboard theories view international expansion, in particular for developing and emerging economies, as a starting gate to overcome disadvantages at home. The monopolistic advantage theories are based on firms wanting to invest in countries where they get the best tradeoff between firm-specific benefits and the internationalization costs. The Uppsala model builds on

motives, investments and ownership abroad may be caused by standard financial motives, such as expected return and risk diversification (Ross, Westerfield, & Jordan, 2015).

	Main objectives	Targets in destination country	Performance indicators	Internationalization determinants
Natural resource-seeking	Secure stable, low-cost, and high-quality natural resource supply	Supply of natural resources: • As commodities • As internal production inputs	• Market share in destination country • Financial performance of the subsidiary	Asset specificity (+) Uncertainty (+) Asset intangibility (+) Asset complementarity (+)
Market-seeking	Sustain or protect existing markets, or to exploit or promote new markets	Destination country market condition: • Market size • Market growth prospect	• Productivity of the whole organization • Costs of critical organizational processes	Policy barriers (+) Transportation costs (+) Easiness of imitation (-) Degree of patentability (mixed)
Efficiency-seeking	Achieve economy of scale and scope, and risk diversification	Low cost and availability of: • Labor • Natural resources • Capital	• Relative cost of inputs • Stability of supply	• Relative cost of inputs between countries • Transportation costs
Strategic asset-seeking	Pursue long-term strategic objectives – especially sustaining or advance global competitiveness	Unique, intangible, and organizationally embedded assets: • Advanced technology • Brand assets • Managerial know-how	• Upgrading of technology in parent • Organizational change in the parent • Acquired firms' products or brands successfully sold outside destination country	Degree of competition in market (+) Degree of transferability of knowledge through direct contact (-) Extent of organizational capabilities (+)

Table 4 Comparison of the main economic motives for FDI. Source: Columns 1 and 2 are from Table 1 in Cui et al. (2014) and column 3 is from table 1 in Meyer (2015). Column 4 is based on table 2 in Franco et al. (2010), with the author's own additions.

The questions of if, where, and how to initiate value creation abroad are covered in several fields of study – including the theories of international resource allocation, organizational theory, and financial theory. In the classical models of international economics up until the 1950's, the focus was mainly on *where* to undertake the activity. This often-assumed costless exchange of goods across borders, immobile input factors, and firms being bound to engage only in a single economic activity (Dunning & Lundan, 2008). The decision was then often *in what country the firm could produce its goods to the lowest costs*, usually explained by some form of trade or competitive advantage. Horizontal foreign investments, opening production abroad to supply to the local market, may be the most attractive if either tariffs or shipping costs are high (Antràs & Yeaple, 2013). Vertical foreign investments may be beneficial if large the company needs control over the supply chain. The economic decision between organizing economic activity through direct trade, greenfield investments, merger, or acquisition, can be referred to as the proximity-concentration tradeoff. This tradeoff is modelled by scholars such as Helpman, Krugman & Yeaple (2004), and Antras & Yeaple (2013).

path dependency, where foreign investments are regarded as a learning process, where the foreign commitments are sequential and evolve over time. Thus, one must consider the existing history to understand the location choice. The LLL-model assumes that firms invest in the foreign firms where they best can leverage external links to gain advantages. For more information, please see Table 1 in Luo & Wang (2012).

In today's global economy where supply chains are intertwined between countries, (relatively) free flow of capital, and new patterns of ownership and transactions taking place – investment decisions have become more complicated. Products can be designed and developed in country A, using resources from country B that got refined in country C, then being sent back to country A for manufacturing – before ending up at consumers in country E. With these types of crisscrosses of networks being common, there are also innumerable case-specific reasons for a given investment. Still, most case-specific motives fall into one of the four above-mentioned categories, which I will detail in the rest of this section.

Natural resource-seeking

For many firms, securing access to resources is one of their most important activities. Having access to natural resources of higher quality or at a lower cost than one's competitors may be the reason why some firms are more profitable than others (Dunning & Lundan, 2008). If the exploited resource access is valuable, rare, and costly to imitate, it constitutes a 'sustained competitive advantage' (Barney, 1991). With this logic, firms with tense competition could want to look for valuable resources abroad. As a result, it is likely that there will be though competition for the resource access abroad too. The key is that international resource access may be difficult and timely to reproduce – especially for firms that are small or lack international experience. If that is the case, the firms that manage to acquire the first or the best resources, may end up getting a competitive advantage.

Obtaining resource access from another country may be done in several ways, and could be considered similar to the market entry strategy decision. Firms may initiate direct procurement, securing licenses for extraction, participating in partnership with local entities, establishing a branch or subsidiary in the country, or acquiring a foreign affiliate. Economic theory suggests that firms choose the form that is providing the resources to the lowest prices, but it could also be based on what form is yielding the most secure access (Dunning & Lundan, 2008). In other words, foreign investments may be a way of obtaining privileged access to resources from another country – with the intention of becoming more profitable.

Market-seeking

The market-seeking motive for foreign investments is to make the foreign affiliation an export platform, to gain new or protect existing market access. Traditionally, this may have been fulfilled by exporting from the investing country to the destination country – but due to changing market structures this may no longer be the best solution. For instance, the occurrence of tariffs on export or import, non-tariff barriers, or other types of market mechanisms may make establishing local presence in a market more profitable than conventional export. One example could be in the market of a good that is costly to transport, limited economics of scale,

and high establishment costs. Thus, in order to reach the customers in the market, it may be better to establish or acquire a firm which is already in the market. Alternatively, one may invest in a (destination) country with the intention to gain access to the market of a third country (Dunning & Lundan, 2008). This could be due to it being geographically adjacent or having advantageous market access, such as the case of 'tariff-jumping' (Blonigen, Tomlin, & Wilson, 2004). For example, one may invest in Luxembourg not solely to get access to the Luxembourgish market, but rather as a way to reach Germany. Some claim that the understanding of foreign investments as an export-platform to third-countries has suffered from a theoretical focus on two-country models (Ekholm, Forslid, & Markusen, 2007). Export-platform would be relevant if the third country had beneficial legislative rules, compared to the home country. That could be the case for investments in Europe, where EU/EEA-members in certain areas enjoy less regulations and screening processes. In this way, establishing or acquiring a firm in Europe may be used as a gateway to the rest of Europe. Thus, the foreign investment could be used as a form of regulatory arbitrage (Frame, Mihov, & Sanz, 2019).

Another market-oriented aim of investing abroad may be to improve the firm's position. More specifically, having a closer relation to your market may help you adapt your products and services. For instance, suit your product to the needs and taste of the customers in the other country, learn local norms and practices, and gaining influence in potential regulatory changes. In the absence of local presence, the foreign firm may be facing disadvantages when competing with local entities that are more customized to that market. Similarly, and perhaps increasingly important, physically presence in the local market may be beneficial from a pure marketing or branding perspective. Thus, offshoring can increase the demand from a foreign economy. In addition, truly foreign firms may have a higher chance of experiencing discriminatory market practices from the local government, than if the economic activity is done in cooperation with or by a locally registered entity (Dunning & Lundan, 2008).

Efficiency-seeking

The efficiency-seeking argument is similar to one of the motives of the natural resource-seeking, namely gaining competitive advantage through lowering costs. There are two main types of efficiency-seeking investments. First, investments going to countries with similar market structures, to take advantage of the homogenous activities. That could be improvements of efficiency based on standard economic effects such as economics of scale and scope, economics of common governance, participation in clusters and so on. Second, efficiency improvements can arrive by investing in an inherently different country. This type of investment utilizes heterogenous activities, through learning and synergy effects, diversification of risk, international sourcing of inputs, processes and product specialization, arbitration of cost and

prices, and different factor endowments (Pindyck & Rubinfeld, 2018; Dunning & Lundan, 2008). The simple idea is to nest the total value creation chain in a way where each step of the process is made where it is most efficient. For example, the development and design could be done in country A, which has technological advantages – while the production is done in country B with abundance of electricity, before it is assembled in country C where the labor costs are low. In this way, the international chain is used to minimize the overall costs. This is often cheaper than completing all the steps in one place, even with the extra transportation costs. As this is a complicated process, it has traditionally been mostly used by large multinational enterprises in cost-driven markets (Dunning & Lundan, 2008). One may argue that, apart from certain processes such as research and development, this is not the most likely driver for Chinese investors – as they often hold cost advantages in China when compared to Europe.

Strategic asset-seeking

The strategic asset-seeking motive is explained as *"acquiring the assets for foreign corporations, to promote their long-term strategic objectives – especially that of sustaining or advancing their global competitiveness"* (Dunning & Lundan, 2008, p. 72). Dunning separates this motive as different from the rest. While the three others focus at capitalizing on cost or market advantages, often for short-term gain, this is not an important part of strategic asset-seeking. Instead, it focuses on keeping or improving the firm's relative 'ownership-specific advantages' compared to current or potential competitors. That is, to gain the benefits by unifying diversified activities or resources. As it may take a long time before one is able to capitalize on these investments, they are often driven by a long-term prospect. More specifically, this type of investment could be done either by strengthen a firm's own position directly or weaken that of the competitors (Dunning & Lundan, 2008). The former is quite straightforward, such as if a firm acquires new knowledge or technology. The latter may be more difficult to argue, but one example could be the case where the investing firm already has a capacity in-house, and completes an investment to keep a similar capacity out of the hands of their rivals. What constitutes a strategic asset may be broad, but in general it is all features that are unique, difficult to imitate, and that helps the firm separate from the rest of the market (Barney, 1991). To name some, it could be technology and knowledge, marketing capabilities, human and physical assets, brand and reputation, tenders and patents, networks and so on (Dunning & Lundan, 2008; Meyer, 2015; Zheng, Wei, Zhang, & Yang, 2016). In this way, strategic assets-seeking can help firms overcome institutional and market constraints at home. As a result, it may reduce the existing competitive disadvantages in the global economy (Luo & Tung, 2007). Additionally, a firm may invest abroad as a way to prevent potential rivals from

entering the market – especially if the target country can be a steppingstone to an important market for the investing firm.

The mechanism of obtaining technology and knowledge through foreign investments can take several forms. First, the investing firm may take advantage of the positive externalities from knowledge-sharing between the firms. Another way is when the investor uses the investment as a 'feedback mechanism' to transfer knowledge or technology from the target firm back to their headquarters. This is the form that China is often are accused for. Oppositely, it could also be a 'reversed technology transfer', where the investors bring existing knowledge with them to the newly acquired firm (Amann & Virmani, 2015). These investments may be even more applicable for Chinese investors as *"inefficient legal framework in the home country that pushes a firm out in search of an environment where they can pursue innovation"* (Ramasamy, Yeung, & Laforet, 2012, p. 20).

Some critics argue that the concept of strategic asset-seeking is redundant, calling it an *"unfortunate theoretical mistake",* as it can be captured by the three other motives (Rugman & Nguyen, 2014, p. 54). Further, they argue that any assets firms buy could be considered as strategic – making the category meaningless. Others support the inclusion, claiming that some investments are not covered by the rest of the motives, as Dunning framed asset-seeking as something that compliments the firm's existing core competencies. Several of Dunning's supporters however agree that the label 'strategic' may be ambiguous, and offer terms as 'knowledge seeking', 'technology seeking, 'asset augmenting', 'resource augmenting' (Meyer, 2015), or 'non-marketable asset seeking' (Franco, Rentocchini, & Marzetti, 2010).

A recurring problem is to define what is actually driving an investor. Dividing investments into four single categories of motives do of course come at some costs. First, the idea that investors only think about one thing when making their investments is doubtful. In reality, it is more likely that the investment decision is based on a combination. Second, these theories assume that the investors are truly rational, which is not always the case. Third, not all rational motives that may influence investment decisions are visible when analyzing the investments externally and ex-post. Examples of these unobservable factors could be that an investor may have a Polish friend that will help as a business partner – or she might have learned Portuguese in high school. A third pitfall is to threat investors of countries as equal when comparing their investments. As firms and countries move along their development path, some assets that previously had been attractive as targets, may no longer be. This could be due to changing comparative advantages or simply other needs when investing (Dunning & Lundan, 2008). Take China as an example:

50 years ago, it might have made sense to invest in primary sectors abroad, as they were more familiar with these industries – while they today may find it preferable to invest in other sectors.

One final point I want to mention is that foreign investments often involve more than purely financial capital – especially for FDI. Instead, many investments include involvement of technology, human resources, management skills, logistics systems and more. This idea was asserted by Stephen Hymer, and proves the point that investments are no one-way street (Dunning & Lundan, 2008; Amann & Virmani, 2015). In fact, as most investments are done with the expectation of profits – the investor has a strong incentive to provide the target firm with the best possible basis to succeed. Thus, often bringing more assets then taking back.

3.3 Empirical litterature on drivers for Chinese FDI

Empirical studies of motives and determinants for Chinese foreign investments is a relatively new subject. A paper from Buckley et al. dated 2007 is by many regarded as the first theoretically based empirical study in the field (Buckley, et al., 2018). Buckley et al. (2007) tested 12 hypotheses of drivers for Chinese outward foreign direct investments (COFDI), using aggregated data on Chinese investments between 1984 and 2001. They found significant effects of COFDI being positively correlated with the destination country's market size, inflation rate, increased political risk and increased Chinese exports to the destination country – and negatively correlated with Chinese imports from the destination country. As a symbol for the study's influence, it was given the prestigious JIBS decade award in 2017, from the Academy of International Business. The jury hailed it as a 'useful template for empirical research in the following years' (Verbeke, 2018, p. 2). In the following decade, many papers followed in their footsteps by studying the motives of foreign investments empirically. In this section I will present the main findings of some of those, focusing on the most relevant studies.

In their summary of empirical studies on drivers for outward FDI from emerging economies in the last decade, Caccia & Baleix (2018) list 18 studies that looked only at China and 12 examining China as one of several sending countries. Similarly, Anderson et al. (2020) revisited 13 studies of motives for Chinese FDI in their critical review of the reliability of using official FDI statistics. In addition, Paul & Benito (2018) cover 91 articles of COFDI in their review - while Li et al. (2018) included 30 studies of location choices by emerging market multinationals. Blonigen's (2005) review of the empirical literature on FDI determinants is useful, but somewhat outdated. By using these collections as a starting point, supplementing with other studies I have found, I believe I have a good coverage of the existing studies. A non-exhaustive list of the most important empirical studies, focusing on those where China is the sender and developed countries are the receivers, can be found in Appendix C.

The general consensus is that Chinese investments are supported by commercial factors. However, there are some examples where they find motives that differ. Ramasamy & Yueng (2020, p. 10) conclude based on several empirical studies, that *"Chinese firms have demonstrated strong market-seeking and strategic asset-seeking intentions in their OFDI activities (…). Natural resource seeking OFDI seem to be dominated by Africa, while research examining efficiency-seeking OFDI seem scanty."* Similar views are held by Dreger et al. (2015). As I want to avoid dwelling on motives that are already well-explored, I will focus at the strategic-seeking and geoeconomic motives, as these are more uncertain or unexplored. When doing that, I would like to make a few points clear. Even those investments that could be characterized as 'strategic asset-seeking' may be a perfectly innocent way to maximize a firm's profit. Furthermore, states too may have good and innocent reasons for wanting to influence the decisions of foreign investments or business activity. One case is that states may want to encourage investments abroad if they are perceived to be advantageous for competitiveness, long-term macroeconomic growth, or making the economy less exposed to business cycles. Examples can be drawn back to British investments in the United States in the 19th century (Dunning & Lundan, 2008). On the other hand, there are strong theoretical grounds for how investments, including private investments, could be used as part of a deeper national strategic aspiration. There is even support for the existence of states (explicitly or implicitly) encouraging or directing the actions of private actors (i.e., American sanctioning of investments to Iran).

Data quality problems for empirical studies of Chinese investments

Most empirical studies of the motives of Chinese foreign investments are based on official and publicly available aggregated data. The most used sources are from the Chinese government, such as the Ministry of Commerce (MOFCOM) and the State Administration for Foreign Exchange (SAFE) – or from intergovernmental bodies such as UNCTAD, OECD, and EUROSTAT. This type of investment data is found to have several flaws, which impacts the reliability of the studies' findings. One example is that Buckley et al. (2007), despite the fame and recognition, have received serious criticism for its use of this type of data. More precisely, official and aggregated data is claimed to do not account for tax havens and offshore financial centers (Sutherland, Hennart, & Anderson, 2020). The authors have recognized some of the feedback, and admitted that they would do things differently today. For example, they would change Hong Kong from being an independent actor to being part of China. As a result, cross-border investments between China and Hong Kong would no longer be regarded as foreign investments (Buckley, et al., 2018). Even if MOFCOM has implemented measures to comply with international standards (Amendolagine & Rabellotti, 2017), the problems of using official and aggregated data remain and it will be further detailed at the end of Appendix A.

4. Hypotheses development

In this thesis I want to find out what drives investors to buy or establish firms in Europe. More specifically, whether geoeconomic factors seem to be a more important for Chinese investors than for other non-Europeans. In the previous chapter I have presented a stringent theoretical framework for understanding the drivers of foreign investments from business theory and from geoeconomics. Although the theory is quite clear-cut, the reality of the motives for foreign investments are not. In many cases the investment is determined by some combination of motives. That is both the case for geoeconomic vs commercial interest – and for the various categories within the business theory. For the former, an example, could be that governments encourage foreign investments in order to tie closer diplomatic relations to a country – while the investors find the investment to be commercially supported. For this reason, it will in most cases be difficult, if not impossible, to disclose one single motive. With that in mind, I will focus on strategic asset-seeking motives – while at the same time not turning a blind eye to other explanations. Admittingly, even if I do find support for the hypotheses I develop in this chapter, it does not mean that they are the only relevant motives. All my hypotheses should be considered as "alternative hypotheses" – with the corresponding null hypothesis being that 'there is no difference between Chinese and other non-European investors'.

An inherent problem with comparing investment motives is declaring what motivated a given investor to become an owner in the target firm. Unfortunately, there are no tradition for registering an investor's motive when completing an investment transaction. Further, this paper is not meant to be about mind-reading. Therefore, I will have to manage with making a general procedure that could tell something about an investor's strategy - in as much of a structural and objective way as possible. As the overall research question is hard to tackle, I will try to shed light on it through formulating empirically testable hypotheses. This methodological approach is similar to previous studies, such as the important work of Navaretti, Venables et al. (2004). My hypotheses are by no means groundbreaking, but rather based on hypotheses that have been advanced in previous studies in recognized journals. My contribution is to extent the hypotheses to a dataset that is larger and of better quality, and to consider them from a geoeconomic viewpoint. That is not to say that these drivers are part of an explicit and definitive national strategy. Rather, I will use the measures to evaluate whether there is any support in the data of potential characteristics of geoeconomic investments.

Further, one must be careful to claim causality between characteristics of the investment and the investor's motivation. For instance, it is not possible to know whether a given characteristic occurred before or after the investment took place. However, one may still analyze what

motives the ownership portfolios suggest. One can also claim that if a firm changes in a way that does not suit the shareholder's investment strategy, she will move her assets elsewhere. In this chapter I will expand the overall research question into more precise and measurable hypotheses. In Section 6.3 I will present the methodology for how to transform and operationalize these theoretical hypotheses into measures that can be tested using my dataset.

4.1 Majority ownership

The first aspect I want to look into is whether Chinese investors seems to be driven towards owning the controlling interest. By definition, shareholders have their say in the decision-making process of a firm corresponding to their fraction of ownership. Similarly, they have the right to the share of profits (dividends) as they own. Therefore, the more a shareholder owns in a company, the larger control over the firm it may exercise. Having a controlling interest will allow the owner to seeing their own interest prevail in the business decisions of the firm (Vitali, Glattfelder, & Battiston, 2011). Further, it is suggested that acquiring fully ownership of a firm offers more access to embedded knowledge and technology and reduces transaction cost (Piscitello, Rabellotti, & Scalera, 2014). Controlling interest can be characterized in several ways, but most agree that it is something along the lines of *"the ability to determine the general policy of an enterprise, for example choosing appropriate directors"* (EU Commission Staff, 2019, p. 73). There is however no objective measure of when shareholders in practice are able to exercise control over a firm. In my study, I will apply the most commonly used criteria of having more than 50 percent of voting power (simple majority), as a determinant of control. This definition is not obvious. On one hand some prefer a stricter definition, such as full control, while regarding the simple majority threshold as de facto control. On the other, there are several examples of shareholders having a deciding mandate even without having an actual majority of the voting power. This is particularly relevant in public listed firms, with many inactive owners.

I will be using controlling interest as a suggestion of geoeconomic aims. This approach follows that of Babic et al. (2019) in their article in the Review of International Political Economy. To study the investment strategy of state-owned enterprises (SOEs) investing in Europe, they used majority-owned firms as a proxy for a control-seeking strategy, under the view that those investments "*are more likely to be associated with geo-economic and geopolitical ambitions, especially if they include strategic sectors*" (Babic, Garcia-Bernardo, & Heemskerk, 2019, p. 9). Although this is clearly a simplification, it is based on an owner's influence of the decisions of the firm. The idea is that if an owner does not have a controlling interest, it may be difficult to sway the firm into engaging in geoeconomic activities – while a majority ownership will enable them to. Babic et al. find that "*China shows a clear tendency toward acquiring majority*

stakes in their transnational invested firms (control strategy)". More specifically, 87 percent of the investments in Europe from Chinese SOEs were in firms where they have a controlling interest. This makes the basis of my hypothesis, namely that all Chinese investments, also those by the private sector, will overwhelmingly go to firms where they have a controlling interest. The similarities between the investment strategy of private investors and that of the Chinese SOEs is likely to be stronger than for most other countries – as the Chinese government is viewed to have a larger influence over its private actors. Therefore, I hypothesize that:

Hypothesis 1: Chinese investments are more heavily invested in firms where they have majority ownership than investments from other non-European countries

4.2 Technology

One of the most hypothesize views about Chinese investments is that they are used as a tool to gain access to strategic assets. Although strategic assets may entail many things, most studies focus on technology, knowledge, or knowhow (human resources). The main argument is that technology is a key driver for economic growth and competitive advantage (Porter, The competitive advantage of Nations, 1990; Schumpeter, 1934; Romer, 1990). Therefore, countries lagging behind in technological development may want to transfer knowledge from abroad into the country, to increase their global competitiveness. If internal innovation is costly or timely, firms from developing and emerging countries have a strong incentive to find ways to acquire intangibles, resources, and capacities from abroad (Li, Li, & Shapiro, 2012). Previously, direct imports were a viable option for countries to access the goods and technology they needed. In recent years, with better and stricter export controls in western countries, I argue that mergers, acquisitions, and foreign investments have become increasingly relevant. However, as discussed in Chapter 3, technology transfer is no one-way street. The mechanisms for how inward investment may increase the technology level domestically in the destination country is well theorized. Thus, the direction of the flow of the technology transfer is uncertain.

Acquiring these assets can be done in several ways, such as through investing abroad. One of the explanations for why Chinese investors may be particularly technology-seeking is due to obstacles at home. For example, Chinese firms are said to be experiencing an inefficient legal framework, which makes it favorable to be located in places where pursuing innovation is easier (Ramasamy, Yeung, & Laforet, 2012). Further, Deng (2009) theorized that, due to market obstacles, it is often better to imitate others' products and technology instead of developing innovative capabilities themselves. In this way, the Chinese investors behave as resource-exploring latecomers, by using acquisitions to close the technological gap (Blomkvist & Drogendijk, 2016). By making up for these deficiencies, Chinese firms may compete better

internationally (Ramasamy & Yeung, 2020). The view is further supported by the fact that the Chinse government has, through the Five-year plans (FYP) from the National People's Congress, expressed the desire to gain access to advanced technology abroad. In March 2021 the 14th five-year plan (2021-2025) was announced, once again explicitly focusing on increasing China's technological capacity.[7]

Already in the 1980s, studies found that Chinese acquisitions were targeted to countries with knowledge on how to operate internationally (Buckley, et al., 2007). For a long time, some claimed that this *"broad speculation"* is based on *"widely spreading anecdotal evidence"* (Duanmu, 2012, p. 67). However, in the last decade, the number of empirical studies has been rapidly increasing. The technology hypothesis is thus following previous studies. Among those explicitly hypnotizing this, Buckley et al. (2007), Ramasamy et al. (2012), De Buele & Van den Bulcke (2012), Blomkvist & Drogendijk (2016), and Ramasamy & Yeung (2020) tested whether Chinese investments were attracted to countries endowed with higher levels of proprietary ownership advantages. Further, Li, Li & Shapiro (2012) proposed that Chinese investments would have a greater propensity to countries with industry-specific comparative advantages – while De Buele & Duanmu (2012) and Ramasamy et al. (2012) hypothesized that Chinese investors were drawn to high-tech targets in institutionally strong or low risk countries. In addition, other studies have strong similarities to the hypotheses mentioned above, including when using technology- or strategic asset-seeking as control variables, or with China as part of larger groups of emerging or developing countries. The findings of the existing empirical studies are mixed, and the results are often vulnerable for variations in the models and samples. Most studies find significant positive effects of some measure for technology for attracting Chinese investments. To name some, De Buele & Van den Bulke (2012), Amighini et al. (2012) Amighini et al. (2013), Blomkvist & Drogendijk (2016), Jindra et al. (2016), Elia & Santangelo (2017), Quer et al. (2017), Fuest et al. (2019), Ramasamy & Yeung (2020), Du et al. (2020), and Anderson et al. (2020). Others find no significant effects, or even a significant negative effect. This includes studies such as Buckley et al. (2007), Hurst (2011), Ramasamy et al. (2012), Piscitello et al. (2014) and Dreger et al. (2015). Although the studies look at different hypotheses, and use different models or samples, they show that the picture is more ambiguous than some claim.

[7] In the most recent edition, they name the following 7 key areas:
(1) Next generation Artificial intelligence; (2) Quantum information; (3) Integrated circuits; (4) Brain Science and Brain-like research; (5) Genes and Biotechnology; (6) Clinical Medicine and health; (7) Deep Space, Deep Earth, Deep Sea and Polar Exploration (American Chamber of Commerce in Shanghai, 2021)

There are good business-reasons to invest in firms with frontier technology, and there are no short of researchers claiming that Chinese investors or MNEs use foreign investments to acquire strategic assets (Cui, Meyer, & Hu, 2014). Most seem to share the understand of Drager et al. (2015, p. 2) who suggest that Chinese investors *"target advanced technologies, well-known brands and management-practices beneficial for industrial and technological upgrading back home"*. However, some take this view even further, and assert that the technology transfer is used in a larger picture than just reaping financial returns. For the strategic asset-seeking to be geoeconomic, it must include political repercussions or meet national ambitions. For example, Macikenaite (2020, p. 9) argue that *"as China's domestic development objectives expanded, the state directed its companies to invest in strategic sectors and technologies overseas. Next, it has been able to promote the rise of Chinese companies to the ranks of the world's largest multinational corporations"*. This makes the basis for my hypothesis:

Hypothesis 2: Chinese FDI in Europe is more heavily invested in with firms with technological assets than FDI from other non-European countries

I will use this hypothesis for testing whether the investors seem technology-seeking, which could suggest a motive to transfer technology to their headquarter. One must however keep in mind that transfer of technology does not have to be for geoeconomic reasons. To help enhance our understanding of the different types of technology-transfers, Giuliani, Gorgoni, Günther & Rabelotti (2013) proposed a typology for classify multinational enterprises' subsidiary strategies.[8] For geoeconomic motives, the 'Predatory subsidiary' classification is the most relevant. The term is described as having a low degree of local embedment, combined with a bottom-up knowledge transfer stream. Here, knowledge is mainly taken from the subsidiary to the headquarters – similar to the allegations against China.

It has been claimed that the clearest type of geoeconomic and geopolitical investments are those that are majority-owned in strategic sectors (Babic, Garcia-Bernardo, & Heemskerk, 2019). To test whether this may explain Chinese investments, I will interact the two first hypotheses:

Hypothesis 3: The interaction between technology and majority ownership is more positive for Chinese FDI than for FDI from other non-European countries

4.3 Market power and market concentration

A commonly recognized feature of economic statecraft is asymmetrical interdependence. Therefore, one potential geoeconomic lever would be to use foreign investments to enhance this interdependence. This sender country could then exploit, or threatening to exploit, this

[8] Another model for technology transfer is presented by Blomstrom & Wang in their paper "Foreign investment and technology transfer: A simple model", from 1989.

dependence for national strategic objectives. To narrow that down, Knorr proposes four main ways a country can apply leverage against another state: (i) coercion, (ii) weakening other states' economic capacity, (iii) attaining monopolistic market power in the international economy, and (iv) achieving general influence (Smith, 2012; Knorr, 1986). This hypothesis is based on the third group; whether there may be signs of Chinese investors bulking up in firms with market power. For this, my method will include both firms with large market shares and firms in highly concentrated markets. The use of market share as a proxy for market power seems quite intuitive, where increased market shares increase the firm's market power. The link between geoeconomic capacity and markets of high concentration comes from Norris's second factor – market fragmentation. His argument is that the more concentrated a market is, the easier it is for the government of interest to monitor, coordinate and enforce compliance from the commercial actors. However, he also notes an opposite effect; as the firm's market power grows, its relative bargaining power vis a vis the government increases (Norris W. J., 2010). The idea is that the larger the firm is, either at home or internationally, the more capacity it has for withstanding the government's will. The capacity in mind can be financial, human resources, experience, support in the population, as a large employer, and so on. This is supported by Albino-Pimentel, Dussauge, & Shaver (2016) who finds that heterogeneity in firms' non-market capabilities make some more efficient in exerting political influence over government of the destination or origin country. They suggest that the capability arises from 'firm political competence' (experience in dealing with politics) and 'firm political connections' – which can derive from having close ties to government officials, through lobbying, campaign donations, or bribery.

Take the case of Facebook as an example. Due to its pure size and market power around the world, it could be an effective influencing tool for the US Government. However, its size and power also make it more difficult for the US Government to exercise influence or control over it. If Facebook experienced attempts from the United States to take part in geoeconomic activities that would not be beneficial for its business, it could for instance decide to move abroad. Thus, the effect of increased market power on geoeconomic potential has opposing predictions. A detailed description of governmental influence over private actors can be found in Appendix B. Although this typology is mainly used for coercion and influence over domestic actors, the chain of thought may be applied also for influence over foreign economies.

The issue of Chinese investors seeking less competitive markets is dealt with in previous studies, although it is far from well-covered. Using industrial organization theory, Slangen & Hennart (2007) present opposing theoretical predictions on the effect of concentrated markets.

On one hand greenfield investments to concentrated industries will have to be larger, as they must be able to compete with the few large incumbents. At the same time, the increased competition, and the potential predatory response from the existing firms, will reduce the prices and profits, making investors less willing to put large funds into it. In this way they predict that acquisitions may be targeted towards concentrated industries, while greenfield investments are prioritized in less concentrated sectors. In addition, it is important to note that governments may already have opposed foreign acquisitions of firms that dominate their industry (Slangen & Hennart, 2007). Cui et al. (2014) find no significant effect of industry concentration on strategic asset-seeking investments, but significant and positive for market-seeking investments. Less ambiguous is Dreger, Schüler-Zhou & Schüller's (2015) empirical study of Chinese FDI to the EU. They conclude that Chinese investors do prefer to invest in geographic regions with less competitive markets. This is explained by these regions having more restrictive institutions. The authors speculate that this tendency could be a risk-aversion measure. One may also argue that Chinese firms may be drawn to highly concentrated markets as these closer resemble the competition environment they are used to domestically. Based on the theoretical mechanisms and the previous studies mentioned above, I hypothesize that:

Hypothesis 4: Chinese FDI is more heavily invested in firms with higher market power than FDI from other non-European countries
Hypothesis 5: Chinese FDI is more heavily invested in firms in highly concentrated markets than FDI from other non-European countries

4.4 Critical infrastructure sectors

One of the main mechanisms for the potential use of economic statecraft is through having economic leverage. In Section 4.3 I argued how market power may provide leverage against the target economy. Another source of economic leverage, which arguably has received the most attention from politicians and government agencies, is investments in parts of the economy that is important for running the society. In Knorr's typology, the most relevant mechanisms for obtaining this type of economic leverage are through (i) coercion or (ii) weakening other states' economic capacity (Smith, 2012; Knorr, 1986). Foreign investments and ownership in domestic firms is proposed as one of the mechanisms in RAND's analytical framework of risks affecting critical infrastructure (Retter, et al., 2020). The more general idea is that economic statecraft is more effective if the target firm performs an important role in the society. The logic is that the potential strategic importance of foreign ownership is largest when it is in a sector of critical value to the destination economy. From geoeconomic theory, this is based on it yielding the highest dependency, which possibly can be leveraged against another state. The dependence arrives if the firm is of economic importance or plays a role in running the society. By economic

importance I refer to firms or sectors that are important for employment or export. The Dutch National Coordinator for Security and Counterterrorism (2018) also includes physical consequences, social impact, and cascade effects as risks.

The premise that certain assets or systems are important for a country is widespread among governments all over the world. Although the definition of criticality varies, it is often placed within one of three approaches. First, by defining 'critical sectors', which contain these sorts of assets, systems and networks. This approach is used by the US Cybersecurity and Infrastructure Security Agency, which has named 16 critical sectors. Second, some define 'critical infrastructure' by certain functions. This approach is used by the EU, where they in Article 2(a) of the Council Directive 2008/114/EC define critical infrastructure as *"an asset, system or part thereof located in Member States which is essential for the maintenance of vital societal functions, health, safety, security, economic or social well-being of people, and the disruption or destruction of which would have a significant impact in a Member State as a result of the failure to maintain those functions"*. Third, one may define the idea through 'critical processes', which is done by the Dutch National Coordinator for Security and Counterterrorism (Retter, et al., 2020). The three approaches are summarized in Table 5. Henceforth in my assignment I will refer to these notions as critical infrastructure sectors (CIS).

Critical sectors	Sectors whose assets, systems or networks are considered so vital that their incapacitation or destruction would have a debilitating effect on national security or the functioning of the economy and society
Critical infrastructure	An asset or system that is essential for the maintenance of vital societal functions or processes.
Critical processes	Processes that could result in severe social disruption in the event of their failure or disruption.

Table 5 The three main approaches to define criticality. The table is based on Box 1 in (Retter, et al., 2020)

In Europe, there are many examples of foreign investments creating concerns for national security. In general, it is ascribed as the motive for the *European Program for Critical Infrastructure Protection (EPCIP).* More specifically, European governments have been worried that investments from several countries, including China, may be harmful for their national security. In a report from the Danish Institute for International Studies, it is claimed that *"Chinese investment in nuclear and telecommunications infrastructures entails consequences for nuclear security and safety and information security respectively»* (Jiang, Tonami, & Fejerskov, 2016, p. 6). There is no shortage of anecdotal examples of investments in critical infrastructure – which often bring large concerns for the target country. The concern shared by government officials, such as shown in a press release by UK Government saying that *"There will be reforms to the government's approach to the ownership and control of*

critical infrastructure to ensure that the full implications of foreign ownership are scrutinised for the purposes of national security." (Reuters, 2016). President Duda of Poland has used a similar argument for the construction of the Baltic Pipe Project bringing gas from Norway, as it would provide the country to gain "*full independence from Russian deliveries*" (Warsaw Institute, 2020). Further, foreign control of critical infrastructure is often used as a justification for defensive protectionist policies. A recent example can be found in the dispute settlement system of the World Trade Organization, where Russia and the United States (Reinsch & Caporal, 2019) invoked trade-restrictive measures under the 'national security interests' exception of Article XXI in the General Agreement on Tariffs and Trade (GATT 1947).[9] The Trump Administration implemented 10 and 25 percent additional import duties on aluminum and steel from all countries apart from Canada and Mexico - supported by section 232 of the Trade Expansion Act of 1962 (Congressional Research Service, 2020).[10]

These anecdotes are also mirrored in surveys on the attitude to foreign ownership in the Nordic countries. The most common reasons for the skepticism towards Chinese ownership is "security risk" and "loss of control of national resources". People are most negative to investments in technology and telecommunications, infrastructure, and natural resources (Andersen & Sverdrup, 2020). As discussed above, investments to vital functions in society is of extra caution for the EU and European countries. Therefore, I would like to see if these sectors also seem to be exploited by investors from China – as the general perception may suggest. Therefore, I hypothesize that:

Hypothesis 6: Chinese FDI is more heavily invested in firms within critical infrastructure than FDI from other non-European countries

[9] The article states that "Nothing in this Agreement shall be construed (…) to prevent any contracting party from taking any action which it considers necessary for the protection of its essential security interests".
[10] "to decrease or eliminate the duty or other import restriction on any article if the President determines that such reduction or elimination would threaten to impair the national security"

5. Data

For a long time, studies of foreign investments have been harmed by a lack of *"sufficiently disaggregated data to permit formal analysis of the forces"* (Buckley, et al., 2007, p. 2). Consequently, studies of their drivers have primarily been descriptive, case studies of high-profile acquisitions, or quantitative based on official and aggregated data. Using aggregated data has been found to be strongly flawed (Anderson, Sutherland, Fan, & Yangyang, 2020). With new and improved access to information, the focus has *"shifted from a sectoral view of trade and foreign direct investments to a firm-based perspective"* (Helpman, 2014, p. 11). For this reason, I have opted for using firm-level data for my study, which is relatively unexplored. The main data source I will be using is the Orbis database of firm ownership and financial information, from Moody-owned Bureau van Dijk (BvD). The database contains all types of ownership stakes, including greenfield investments, mergers, and acquisition.

My dataset was extracted between the 1st and 5th of March 2021 and contains company and ownership data on 5.8 million European firms. Each firm has at least one, but potentially many, shareholders. Thus, the observations are at the ownership-linkage level, with a unique panel id for each pair of shareholder and target firm.[11] In my dataset, I have included all ownership. That is, ownership held by individuals, firms, asset managers or funds, and governments. Orbis has limitations for the number of observations that can be downloaded per query. Therefore, I have limited my data to three years, from 2017 to 2019. For the same reason, I have used a filter to narrow down from the total of 47 million active firms in Europe. As I follow the same companies and their owners over these three years, the dataset can be labeled as longitudinal. In this way, the observations are the current 'stock of investments' at three points of time, rather than investment flows. Due to the limitation restrictions, I divided the downloads into a company dataset and a shareholder dataset. The company dataset is appended by 209 queries with information about the characteristics and financial performance of the target firm. Similarly, the shareholder dataset combined 558 queries of information about the owners and their ownership stakes. The two datasets were then merged. Further I completed several data cleaning steps, and created additional variables needed for the analysis. A detailed description of the construction of my dataset, including lists of the downloaded and constructed variables is found in Appendix G. Furthermore, descriptive statistics about the Chinese investments in my dataset, with a comparative analysis against other investments can be found in Appendix E.

[11] As a result, my dataset is actually at the investment-level, which is even more disaggregated than firm-level. However, as most people refer to it as firm-level, I have kept the label.

The company dataset includes financial data, such as the turnover, net income, assets, equity, and debt of a firm. In addition, I have firm characteristics such as the main industry code, year of establishment, information on the company structure, number of patents owned and number of employees. The shareholder dataset has information on the owners and their direct and total ownership stakes. The direct ownership links provides information only on the closest owner. Since this is often a holding firm that may be registered in another country than the actual owners, I have also used the total ownership variable. That is, Orbis's calculated sum of direct and indirect ownership in the firm. For this reason, the total ownership measure will, in theory, allow for identifying the owner even when the there are several entities between the target firm and the ultimate/final owner. As may be noticed, there are no variable that directly gives provides the size of an investment. Consequently, I have had to create one myself – based on the ownership stake and a proxy for company size or value. More information on which variables I will use in the empirical analysis will be provided in the next chapter.

The process of constructing my database has been lengthy and time-consuming. However, some help was found in previous studies that have used the Orbis database. Most importantly, I have used the EU Commission Staff's paper "Working document on Foreign Direct Investment in the EU" (2019), Babic et al. (2019), and Kalemli-Ozcan et al. (2019). Although they were of great inspiration, they are perfect guide for using Orbis. Therefore, I have had to take many decisions in constructing and processing my data. To the best of my knowledge, I have not taken any steps that is likely to impact the results. To be as transparent as possible about the steps I have taken, I have in Appendix G2-G5 detailed the procedure of collecting, cleaning, and processing the data, in addition to the construction of new variables.

Data quality of Orbis

Few datasets, if any, are perfect. That is also the case for Orbis, which should not be deemed fully representative for firms in Europe or fully reliable. Still, Orbis is often regarded as the preferred of all the available sources. As detailed in Appendix A, this is particularly when compared with official and aggregated data which are found to be insufficiently detailed, biased, and struggling with coverage and harmonization. BvD brands its database as "*The World's most powerful comparable data resource on private companies*", with firm-level data for more than 270 million companies around the world. This view is supported by the fact that it is frequently used by academics, government institutions, credit agencies, and businesses. For instance, the EU Commission Staff (2019, p. 79) label it as *"the richest database available for European firms"*. Further, Fons-Rosen et al. (2021, p. 3) describe it as the *"only harmonized multi-country dataset that has accounting data and ownership information"*. A research group from the OECD views Orbis as "*a rare source of (...) firm-level data*" (Bajgar, Berlingieri,

Calligaris, Criscuolo, & Timmis, 2020, p. 3). When compared with data from Eurostat and OECD, Orbis provides satisfying representativeness for financial and ownership data. In terms of gross output, Orbis captures about 80-90 percent of all gross output from Eurostat. The same figure for the number of firms is higher than 50 percent (EU Commission Staff, 2019, p. 76). In a comparative study of Orbis and OECD data, Fons-Rosen et al. (2021, p. 37) state that they are *"not a perfect match; however, the similar magnitudes are reassuring"*. Bajgar et al. (2020) find that Orbis covers some European countries well, while the coverage for the rest is worse. In addition, the database disproportionately covers larger, older, and more productive firms.

There are two main data quality issues: (i) representativeness/coverage and (ii) reliability. Most of the issues are outside of Orbis's area of responsibility. First, there is no clear golden standard inside the EU on accounting reports. Consequently, there are heterogenous regulations in the different countries when it comes to which and how companies report their business information. Some countries have lower thresholds for when companies are required to report. For this reason, there are more Romanian than German companies in my dataset.[12] Similarly, the accounting items required to be reported differ between countries. When countries report differently, it may lead to a misrepresentation in the dataset. Orbis is rapidly improving its coverage. Therefore, for the later years, as in my dataset, the coverage should be better. Additionally, BvD improves the coverage by harmonizing the business reporting to make international comparisons easier – such as through the standardized *global format* variables. For the second, BvD spends a lot of time in making the database as reliable as possible. One measure is using multiple sources such as annual reports, web sites, private correspondence, and official regulatory bodies (i.e., tax returns) to provide, review, and verify information (EU Commission Staff, 2019). The reader should however be aware that there are differences in the coverage and reliability among the providers, and between the variables. In my study I have tried to prioritize those that are described as more reliable. In addition to data gathering, Orbis creates several variables. These are well covered as they are calculated by Orbis. As their definitions often seem arbitrary and subjective, I have chosen not used them.

The most relevant alternatives to Orbis are Financial Times' fDi Markets dataset and Thomson Reuters's SDC Platinum dataset – as well as the Emerging Multinationals' Events and Networks Database (EMENDATA) which combine the three. As the latter is merged together from three sources, it is said to have some problems with harmonization (Amendolagine, Cozza, & Rabellotti, 2015). I have not had access to any of the other sources.

[12] The two other countries that seems most underreported in the number of firms is Switzerland and the Netherlands.

6. Methodology

To make well-founded assessments of whether an investment is motivated by national strategic motives, one would likely need to study each investment individually. And even then, it may be difficult to reliably decide whether the investment is fully commercial or partly geoeconomic. As I will study ownership of all firms in Europe, individual assessments are not feasible. Therefore, I will study potential geoeconomic motives based on features in the target firms' periodic statements, normally from the annual reports.

Even though my hypotheses are based on assumptions about Chinese investments – studying China alone will be of limited value. For example, it will not be surprising that, holding all other things equal, Chinese investments in firms with technology assets will be larger than investments to those without. So, even if I found a positive and significant effect of technology based on the Chinese sub-sample, it does not answer the question I am interested in. What I really want to find out is whether the accusation, that Chinese investments are more national strategic than investments from other non-European countries, is correct. Therefore, to answer my research question, I cannot employ my methods on the China sub-sample alone. Rather, I must compare investments from China with those of other investments. It is worth noting that what I am really studying is the driver for the size of the investments, given that an investment has taken place. In trade theory this is known as the intensive margin (the size of the trade for the trading firms), rather than the extensive margin (whether the investment has taken place).

When comparing the investments from different countries, I want to compare the same types of investments only. This idea is often labeled as "comparing apples with apples". In my case, I will only include investments that are foreign and extra-European. Excluding domestic investments is both because they are outside my question of interest, and because they may be inherently different than cross-border investments. As the European destination countries in my sample are all part of the EU or closely tied to it through EFTA, these 'intra-European' investments can be viewed as quasi-domestic. The quasi-domestic nature could come from factors such as similar standardization, legislation, traditions, and geographic proximity. Since domestic investments are likely to be correlated with several of the variables of interest, the findings would be biased. Therefore, when I study whether Chinese investors seem different than others, I will only compare them with investments from other non-European countries. Therefore, the question is *whether the effects of the variables of interest are stronger for Chinese investments, than for investments from other non-European countries.* By Chinese investments I refer to investments where the direct or total shareholder is from Mainland-China, Hong Kong, or Macau – keeping ownership from Taiwan as independent.

To examine the hypotheses from Chapter 4, I have chosen a dual method. This dual method consists mainly of a sophisticated linear regression model – combined with comparing the relative share of all investments located in portfolio investments, minority FDI and majority FDI. In the regression approach, I develop a model where I include variables for each of the hypotheses, combined with an interaction for Chinese ownership, and test whether the interaction significantly impact the size of the investments. As will be further explained, I will be using each firm's total asset, weighted by the shareholder's ownership stake, as the proxy for the size of a given shareholder's investment. For hypothesis 2 to 6, this seems unproblematic – as I will estimate the effect of changing each independent variable on the size of the investment. For hypothesis 1 however, it may be more troublesome. Being a majority ownership investment will, by default, require that the shareholder has an ownership stake at more than 50 percent. In this way, the size of the investment is also directly dependent on the ownership stake. Despite the correlation coefficient of 0.38 is not alarming in itself, endogeneity problems such as from reverse causality by construction still seems likely. Therefore, I have opted for another main method of examining this motive, where I do not experience the same concern that the estimated effect of majority ownership on the size of the investment will be invalid. Consequently, I will use the method developed by Babic et al. (2019). This will be explained closer in Section 6.1. For robustness checking, I will also run an alternative specification of the more sophisticated regression method where I include a coefficient for the majority interest hypothesis. In Section 6.2 I will introduce this econometric approach which is inspired by previous empirical studies. Further I will describe the econometric method and clustering technique I will apply. In the following three sections, I will describe how I have constructed the variables that I will be using for formulating investment strategies and in the econometric analysis. Section 6.3 and 6.4 detail the dependent and independent variables – including how I conduct the logarithmic transformations of the variables. I will end the chapter by describing the control variables in Section 6.5.

6.1 Investment strategy

To test my first hypothesis, whether Chinese investments seem driven by a desire to have the controlling interest, I will be using the approach developed by Babic et al. (2019). In their study, they formulate the investment strategy for each country's state-led foreign investments. By state-led foreign investments they refer to the investments coming from a country's governmental bodies. This strategy categorization is based on every investment being defined as one of three types: (1) investments with less than 10 percent are defined as financial portfolio investments (FPI), suggesting a financial strategy; (2) investments of more than 50 percent ownership are defined as majority-owned FDI, suggesting a controlling strategy; (3)

investments between 10 and 50 percent ownership are defined as minority-owned FDI, suggesting a mixed strategy. Using these three types of investments, each country's investment strategy can be defined on a scale from purely financial (F) to purely controlling (C), as illustrated in Table 6. My formulation of investment strategies is based on the average between 2017 and 2019. This means that I have calculated the ownership tie of each country per year within the different investment types, and then found the mean. Babic et al., conducted their mapping using the turnover-based investment tie. That is, the size of the investment is the ownership-weighted part of the firm's turnover, measured in billion Euros. As I will discuss in Section 6.3, I have opted for the asset-based investment tie. My choice is based on what seems most appropriate from a theoretical perspective - and also because the asset-based investment tie outperformed the turnover-based investment tie on assumption compliance (homoskedasticity and normality) and the number of observations.

Strategy	Code	Definition
Financial	F	More or equal to 90% of total investments go to portfolio investments (less than 10% of voting power)
Dominantly financial	FD	Between 90 and 50% of total investments go to portfolio investments
Mixed financial	MF	Under 50%, but at least a plurality of total investments goes to portfolio investments
Mixed	M	At least a plurality of total investments goes to non-controlling foreign direct investments (between 10 and 50% of voting power)
Mixed control	MC	Under 50%, but at least a plurality of total investments goes to firms where shareholder has controlling interest
Dominantly control	CD	Between 90 and 50% of total investments go to firms where shareholder has controlling interest
Control	C	More or equal to 90% of total investments go to firms where shareholder has controlling interest (more than 50% of voting power)

Table 6 Classification of investment strategies and their definition. Based on table 3 in Babic et al. (2019).

With the procedure described above, I end up with investment strategies for all countries in my dataset, which may be used for a comparative analysis. First, I will compare China directly to the weighted and non-weighted average of all non-European countries – before ranking China against other major non-European investing countries. In this way, one will be able to find out whether China is relatively control-focused compared to others.

6.2 Econometric model

There are several ways to compare the regression coefficients of different sub-samples. One way is to run individual regressions on each sub-sample (country or groups of countries) – which can then be compared using t-tests or chow-tests, or confidence intervals. The approach I have opted for is to identify differences between sub-samples (countries) by pooling them together and using interaction terms (Wooldridge, 2020). In my model, this approach would imply interacting (multiplying) a dummy for China with all the variables of interest. Thus, I will end up with one variable for the *main effect* of each mechanism and one interaction term

for the *additional effect* of Chinese ownership – which reflects my hypotheses of interest. The main effects (non-interacted) are included as control variables in my model specification in equation (2). If any of the estimated coefficients for the interaction variables are found to be significant, it will support the hypothesis of the corresponding effect being different for China. More precisely, the conclusion will be determined by whether the additional China-effects are significantly different from zero at a five percent significance level (Wooldridge, 2020). Furthermore, I will conduct a logarithmic transformation of the dependent variable and some of the independent variables. This process will be explained in detail in Section 6.3 and 6.4.

Model specification

The main model for my empirical analysis is based on equation (1), with the control variables in equation (2). Each observation is the investment *i* in a given firm *f* in sector *s*, in year *t*, operating in destination country *d*, with a shareholder from country of origin *o*.

$$\begin{aligned}\ln\left(FDI_{ifsdo,t}\right) = \; & \beta_0 + \beta_{h2} * \ln\left(TA_{f,t}\right) * CN_o + \beta_{h3} \ln\left(TA_{f,t}\right) * MO_{i,t} * CN_o \\ & + \beta_{h4} \ln\left(MP_{f,t}\right) * CN_o + \beta_{h5} \ln\left(MC_{sd,t}\right) * CN_o + \beta_{h6} CIS_s * CN_o \\ & + Controls + (a_i + u_{ifsdo,t}),\end{aligned} \tag{1}$$

where $\ln(x)$ is the natural logarithm of the variable x after the log-transformation, $FDI_{ifsdor,t}$ is the investment size, CN_o is a dummy equal to 1 if the shareholder is Chinese and 0 otherwise, $TA_{f,t}$ is technology assets, $MO_{i,t}$ is a dummy equal to 1 if the shareholder is the majority owner and 0 otherwise, $MP_{f,t}$ is the market power measure, $MC_{sd,t}$ is the market concentration measure, and CIS_s is a dummy equal to 1 if the target firm is in a critical infrastructure sector and 0 otherwise. $Controls$ are the control variables, while a_i is the unobserved "investor-firm link"-specific error, and $u_{ifsdor,t}$ is the idiosyncratic error.

$$\begin{aligned}Controls = \; & \beta_7 \ln\left(TA_{f,t}\right) + \beta_8 \ln\left(TA_{f,t}\right) * MO_{i,t} + \beta_9 \ln\left(MP_{f,t}\right) + \beta_{10} \ln\left(MC_{sd,t}\right) + \\ & \beta_{11} CIS_s + \beta_{12} \ln\left(FSize_{f,t}\right) + \beta_{13} \ln\left(Solv_{f,t}\right) + \beta_{14} \ln\left(ROA_{f,t}\right) + \\ & \beta_{15} \ln\left(MSize_{sd,t}\right) + \beta_{16} \ln\left(DGDP_{d,t}\right) + \beta_{17} \ln\left(DGDPPC_{d,t}\right) + \\ & \beta_{18} INF_{d,t} + \beta_{19} \ln\left(Rest_{d,t}\right) + \beta_{20} \ln\left(OGDP_{o,t}\right) + \beta_{21} \ln\left(OGDP_{o,t}\right) + \\ & \beta_{22} \ln\left(Dist_{do}\right) + FE_{year} + FE_{Continents},\end{aligned} \tag{2}$$

where $Fsize_{f,t}$ is the target firm's number of employees, $Solv_{f,t}$ is the solvency ratio of the target firm, $ROA_{f,t}$ is the return on assets of the target firm, $DGDP_{d,t}$ is the destination country's GDP, $DGDPPC_{d,t}$ is the destination country's GDP per capita, $INF_{d,t}$ is the destination country's inflation, $Rest_{d,t}$ is the destination country's FDI restrictiveness score, $OGDP_{o,t}$ is the origin country's GDP, $OGDPPC_{o,t}$ is the origin country's GDP per capita, $Dist_{do}$ is the

geographic distance between the destination and origin country, FE_{year} are year dummies, and $FE_{Continents}$ are dummies for the continent of origin. All the variables in this econometric regression models, including their precise measure and source, can be found in Table 7. In addition, in the bottom of the table you find the additional variables for the majority ownership hypothesis, which I include in an alternative specification for robustness analysis.

Dependent variable	**Measure**	**Source**
Foreign direct investment: $\ln(FDI_{ifsdo,t})$	Logarithm of the stock of the investment tie in thousand USD at time t (asset-based)	Author's calculation based on Orbis
Variables of interest	**Measure**	**Source**
H2: Chinese technology assets: $\ln(TA_{f,t}) * CN_o$	Logarithm of intangible assets in million EUR	Orbis
H3: Chinese majority owned technology assets: $MO_{i,t} * \ln(TA_{f,t}) * CN_o$	Interaction between logarithm of intangible assets in million EUR and ownership stake above 50%	Orbis
H4: Chinese market power: $\ln(MP_{f,t}) * CN_o$	Logarithm of the firm's share turnover in a country-sector-year market	Author's calculation based on Orbis
H5: Chinese market concentration: $\ln(MC_{sd,t}) * CN_o$	Logarithm of Herfindahl-Hirschman index of country-sector-year market	Author's calculation based on Orbis
H6: Chinese ownership in a critical infrastructure sector: $CIS_s * CN_o$	Firm being defined in an industry that is regarded as a critical infrastructure sector	Author's calculation based on Orbis
Control variables	**Measure**	**Source**
Main effect control variables $\ln(TA_{fs,t})$, $MO_{i,t} * \ln(TA_{fs,t})$, $\ln(MP_{f,t})$, $\ln(MC_{sd,t})$, CIS_s	Hypotheses control variables without Chinese interaction	Orbis / Author's calculation based on Orbis
Target firm control variables Firm size: $\ln(FSize_{f,t})$ Debt to assets: $\ln(Solv_{ft})$ Profitability: $\ln(ROA_{ft})$	 Logarithm of number of employees Logarithm of the solvency ratio (in%) Logarithm of the return on assets (in%)	 Orbis / Author's calculation based on Orbis
Sector control variables Market size: $\ln(MSize_{std})$	 Logarithm of total turnover in country-sector-year (million EUR)	 Author's calculation based on Orbis
Destination country control variables Destination GDP: $\ln(DGDP_{dt})$ Destination GDP per capita: $\ln(DGDPPC_{dt})$ Destination inflation: INF_{dt} FDI restrictiveness: $\ln(Rest_{dt})$	 Logarithm of GDP (in constant billion 2010-USD) Logarithm of GDP per capita (in thous. 2010-USD) 3-year moving average of annual inflation (in%) Logarithm of "All types of restrictions" index	World Bank's tables NY.GDP.MKTP.KD, NY.GDP.PCAP.KD, and FP.CPI.TOTL.ZG. OECD
Origin country control variables Origin GDP: $\ln(OGDP_{ot})$ Origin GDP per capita: $\ln(OGDPPC_{ot})$	 Logarithm of GDP (constant billion 2010-USD) Logarithm of GDP per capita (in thous. 2010-USD)	 World Bank's tables NY.GDP.MKTP.KD and NY.GDP.PCAP.KD
Destination-origin control variables Distance: $Dist_{do}$	 Population-weighted geographical distance in km from country of origin to destination country	 CEPII's GeoDist database
Year and region control variables Year fixed effect Continent fixed effect	 Dummies for year 2018 and 2019 Dummies for all continents, but Europe[13]	 Orbis Our World in Data
Additional variable for robustness analysis	**Measure**	**Source**
Variable of interest: H1: Chinese majority ownership: $MO_{i,t} * CN_o$	 Dummy equals 1 if ownership stake above 50%, 0 otherwise	 Orbis
Main effect control variable: Majority ownership: $MO_{i,t}$	 $MO_{i,t}$, without Chinese interaction	 Orbis

Table 7 Summary of all the included variables in the econometric models. All the monetary figures are in current values at time t, unless otherwise is specified.

[13] The European countries are other European countries that are not part of EU28 or EFTA

Method of estimation

My dataset follows European firms and their owners over three years and is longitudinal/panel data. In my study I will use each shareholder-target firm link as the panel id, while year is the time dimension. There are several possible methods I could use for this sort of dataset. Again, I have been inspired by previous empirical studies. A large majority of these studies use either linear models with the investment-level as the dependent variable or maximum likelihood models. The latter is often conditional Logit or Probit models with binary dependent variables for whether an investment has occurred. As I use level-output as the dependent variable, rather than a dummy for the investment taking place, the most used methods seem to be pooled OLS (POLS), random effect (RE) and fixed effect (FE). Each of the methods has their perks and disadvantages. Furthermore, I have considered Tobit regression and the Heckman two-step selection model. Tobit regression is useful when there are limitations for which values the dependent variable can take (Wooldridge, 2020). One example of this censored threshold is in the ownership stake, which can only be from 0 to 100 percent. Heckman's method can be used when suffering from sample selection bias. For my study, I have chosen RE, as I find it to be the best method available, given my dataset. The next paragraphs will detail why.

To start of I will consider OLS. Although OLS is efficient, it will be strongly unfavorable, as it is likely to be the most biased. Under the Gauss Markov assumptions, OLS yield what is known as the best linear unbiased estimators (BLUE). The assumptions for OLS to be causal and efficient are: (i) linearity in parameters, (ii) random sampling, (iii) no perfect collinearity, (iv) homoskedasticity, and (v) zero conditional mean (exogeneity) (Wooldridge, 2020). In my study, the linearity assumption seems unproblematic. Further, the random sampling assumption seems acceptable due to the large sample and alleged good representativeness of Orbis. More on this topic is discussed in Chapter 5. Next, the assumption of no perfect collinearity is well justified by large variation in the variables. It is worth nothing that my dataset only has positive ownership shares. Thus, the estimators are only valid for positive values of the dependent variables. Heteroskedasticity does not lead to biased results, but it may make them inefficient. For this reason, with heteroskedasticity the results cannot be trusted for inference. Heteroskedasticity can be tested using a Breusch-Pagan test (a specific version of the White test), which tests for non-constant residuals, under the null hypothesis of homoskedasticity (Wooldridge, 2020). When conducting the test on my models, I find strong evidence of heteroskedasticity. As a consequence, I will be using robust standard errors. More specifically, I will use clustered standard errors, to account for heteroskedasticity within the clusters. I will describe my clustering method later in this section. The last requirement is the exogeneity assumption. Endogeneity is often caused by omitted variables, functional form

misspecification, measurement errors, simultaneity, and reverse causality (Wooldridge, 2020). Endogenous independent variables correlate with the residual and the dependent variable, which result in biased estimators. Although a variable cannot be proven to be exogenous, one can substantiate that it is likely to hold. Helpman, Melitz & Yeaple found that endogeneity is considered a common problem in empirical studies of outward FDI (Cozza, Rabellotti, & Sanfilippo, 2015). Therefore, it seems difficult, if not impossible, to fully overcome this assumption in my study. As a result, I cannot confidently claim that my estimates are causal.

Even if the endogeneity cannot be removed entirely, there are measures that can reduce it. One of the ways is by reducing or removing the time invariant unit specific unobserved heterogeneity. That is, some individual constant characteristics in each of the investment-shareholder link. There are two sources for omitted variable bias: (i) correlation between the independent variables and the time invariant unobserved heterogeneity (a_i), and (ii) correlation between the independent variables and the idiosyncratic error ($u_{ifsdor,t}$). I have opted for two ways of controlling for such unobserved heterogeneity. First, I have used what Yoo and Reimann (2017) describe as 'quasi-fixed-effect', by including home characteristics of the investors. By including explanatory (control) variables that are not themselves of interest, the model will be able to remove some of the variation that could lead to biased estimators. In addition, it will reduce the overall unexplained variation in the model. When there is less variation, the precision of the estimates will increase. The second approach is to use an econometric method that remove some of the time invariant unobserved heterogeneity. While OLS and POLS do not remove any of the unit specific error (a_i), RE and FE implement procedures to remove some or all of the ownership-link specific variation. Although FE is preferred, as it removes the time invariant unobserved heterogeneity entirely, it has some disadvantages which make it inconvenient for me. The most obvious is that FE do not allow for estimation of time-consistent variables. (Wooldridge, 2020). That is, for example dummies or other characteristics that are constant over time. In my study, that is a problem as I am not allowed to estimate the coefficient which I will use to answer hypothesis 6 – as the critical infrastructure dummy of each firm is time-consistent. Another problem with FE is that it relies only on within-group variation. As the home country of the investor is fixed for all the years, it may be problematic to base the estimation only on within-unit variation. For this reason, it seems less convincing/useful for comparing the investments characteristics of different countries. A better method may therefore be POLS or RE, as they are more efficient than FE and use both within-unit and between-unit variation. Consequently, they do not face the potential problematic sides of only using within-unit variation (Wooldridge, 2020). It is, nevertheless, worth remembering the important flaw of RE and POLS when compared to FE,

namely the assumption of no time-consistent unobserved characteristics. Therefore, for RE or POLS to provide causal estimators, the unit specific fixed effect must be uncorrelated with the independent variables, while that is not needed for FE (Wooldridge, 2020). Neither method can however give unbiased estimations if the remaining part of the idiosyncratic error term is correlated with the dependent variable and some of the independent variables. For example, if risk aversion is correlated with investment size and also with some of the variables that are used as proxies for the hypotheses, such as shareholders' valuation of intangible assets, there results will be biased no matter the method that is used.

As discussed above, I consider FE to be inconvenient, as it only uses within-unit variation. Therefore, the two best remaining candidates are POLS and RE. Choosing between the two may be difficult, as both require that the time invariant unobserved heterogeneity is uncorrelated with the independent variables. In addition, one can correct for heteroskedasticity in both cases using either robust or clustered standard errors. While POLS is using standard OLS on panel data with clustering, RE has some features that makes it preferred. Most importantly, it is closer to the FE estimation, as it considers the panel structure of the data and removes some of the troublesome time invariant unobserved heterogeneity (a_i). Therefore, if the time invariant error term is correlated to the explanatory variables, RE will be less biased than POLS. For the RE procedure to be good, there should be many observations and relatively few time periods – which is the case here (Wooldridge, 2020). Therefore, RE is my main method. It is worth noting that, as it turns out, the results from random effect and pooled OLS are remarkably similar. Some of the models ran with POLS can be found in the regression tables in Appendix F.

To summarize, FE is theoretically preferred over RE if there is correlation between the time invariant unobserved heterogeneity and the independent variables. To check for this, I run a Hausman test on several model specifications, which indicate that such correlation exists. This is unfortunate, as it means that one cannot claim that the RE results are causal. On the other hand, RE is more efficient than FE, as it keeps more degrees of freedom (Wooldridge, 2020). In total, I find RE to be my preferred method as it is more reliable for claiming causality than POLS – while being efficient and allowing me to estimate the effects of all my variables of interest. Although RE cannot guarantee causality, the findings will still provide interesting insights to the relationships between the hypothesized effects and Chinese ownership.

Clustering

As briefly discussed, my dataset is likely to be exposed to serial correlation within similar observations. That is, the observations are not completely random and independent. Rather, they are often somewhat related, through sharing some sort of intrinsic commonalities with

other observations. This serial correlation can arrive from many sources, such as firms within the same country and industry experiencing the same market mechanisms. Consequently, there may be a correlation between the residuals of investments within these groups – which makes the results less reliable. One of the most common ways to account for this issue is to cluster the standard errors. In this way, the models can be used for inference even if heteroskedasticity exists (Wooldridge, 2020). Although the need for clustering is theoretically well-established, it is less clear at which level or group to cluster at. One general rule is however to cluster at the most aggregated level – while making sure there are enough cluster groups. Another principle is to cluster at the treatment selection level – if such does exist (Cameron & Miller, 2015). More informally, it should be considered where serial correlation seems most likely to appear.

In my study, these principles point in opposite directions. The closest I come to having a 'treatment' variable is the China-dummy. Thus, if the clustering were to be based on the treatment selection principle, it would suggest that the 'country of origin'-level. That is, allowing for serial correlation within observations from each of the 143 non-European origin countries in my sample. Alternatively, the principle of clustering at most aggregated level would point at clustering at the destination country level, which would give 32 clusters. Although this is close to the suggested minimum threshold of groups, it is somewhat low. To get more groups, the destination country could be combined with the most aggregated industrial classification (NACE level 1), giving 672 groups. This clustering level is further supported by most of my other variables of interest being allocated on firm or industry level. As the firms are nested within industry and destination country, the combination would allow for correlations within firms in the same industry in each of the destination country. I believe this form of correlation seems to be the most problematic. Therefore, I have chosen to use the "destination country-NACE section"-level in my main model. Furthermore, I run robustness checks using destination country-level, which can be found in Appendix F4.

6.3 Dependent variable

A major methodological issue using firm-level ownership data is that most firms do not have a valuation. For listed firms, the total market capitalization can be used – however these firms only account for a small share of all firms. As I want to use both listed and non-listed companies, I will have to develop a better covered proxy for the size of an investment based on the firms' financial statements. There is not any correct way of doing this. The most common approach is to calculate an investor's investment ties as the shareholder's share of the 'size' of the firm – given that an ownership exists (the intensive margin). The greater challenge is choosing which value to use for the firm's size. I will conduct my econometric analysis using total assets as the

measure for size. Thus, every shareholder's investment tie will be the voting power-weighted part of the firm's total asset. The concept can be defined as the following:

$$asset\ based\ investment\ tie = ownership\ share * firm's\ total\ asset$$

With this calculation of the investment there are two things the reader should be aware of. First, it is not a measure of the investment size per se. Rather, it is closer to being a measure of the size of the firm or the amount of resources the investor has fixed in a firm. This is clearly a simplification, as it does not yield a clear picture of the size of the capital an investor has invested in the firm. Using the asset-based investment tie is done in several studies, most noteworthy by the EU-commission in their report of inward FDI to Europe (EU Commission Staff, 2019) and by the UK Office of National Statistics (2020). Other studies have used a similar measure, with total turnover instead of total assets. This turnover-based approach is done by Kalemli-Ozcan (2019) and by Babic et al. (2019). In theory, using the turnover will inflate the investments in high-turnover sectors, such as trading firms, while using total assets will enhance the investments in firms with large assets, such as banks. The reason why I mainly will be using the asset-based measure is that it has about 20 percent more observations and it seems slightly more used. A third option could be to use equity. More information about the advantages and concerns when using the different measures is discussed in Appendix G4. Second, one should be aware that this definition leads to a data structure where all the observations are investments that have taken place. This may seem obvious, but it makes for an important caveat. Each observation is the size of the investment, given that there is an investment. In this way small investments in essence can be regarded as less than no investments. For example, several small investments in companies within a critical infrastructure sector would suggest less of a "critical infrastructure" motive than not investing in these companies at all. Although this in theory is unfortunate, several recognized studies still rely on this approach as the best available.

Further, I have chosen to conduct a logarithmic transformation of the dependent variable. The main reasons are to increase normality, reduce outliers, better comparing observations with large level-differences, and to interpret the coefficients as approximately changes in percent, elasticities, or semi-elasticities (Wooldridge, 2020). The existence of outliers is typical in firm-level datasets, where a few firms may even be large enough to individually impact the results. There is support for this in the data – with the mean of the linear asset-based investment tie being 70.7 million euros, while the median is only 194 thousand euros – with the largest value being almost 100 billion euros.[14] These numbers for the turnover-based investment tie is even

[14] The largest investment in the database is Qatar Investment Authority's ownership of the London Stock Exchange

more extreme. The logarithmic transformation may also achieve a normal distribution of the residuals of a regression, even if there is not have normality with linear parameters. Although this can also be fixed through clustering – that is not always enough. In Appendix F2 I have included QQ-plots of the dependent variables before and after the log-transformation. They show that the residuals in the models using linear dependent variables are not normally distributed – even when clustered. Rather, they are largely over-dispersed distributions relative to a normal distribution, and appear in a flipped S-shape. This is confirmed by the Shapiro-Wilk test for normality. After the log-transformation the positive excess kurtoses are almost completely dealt with, although there is now a slight negative (left) skewness. For this reason, I have log-transformed the dependent investment-variable in all models.

An alternative approach is using the price of the investment as the dependent variable, to analyze which factors increase an investor's willingness to pay. This has however not been possible with my dataset. Another possibility would be to use a binary dependent variable that would be equal to 1 if an investment took place, and 0 otherwise. Using conditional or random effects probit/logit models one could measure how changes in the independent variables influence the probability of an investment taking place (Wooldridge, 2020). This approach would be based on a maximum likelihood procedure, most of which does not account for the size of the investment. Thus, it would put large importance on very small investments, which is a large majority of the investments in my dataset. Oppositely, the disadvantage of considering the size of each investment is that it will give more weight to resource-intensive industries with larger investment ties (Amendolagine & Rabellotti, 2017). Those maximum likelihood models that do account for both participation and size become fairly complex. Overall, I find my approach to be the most appropriate setup to answer my hypotheses, balancing simplicity, suitability to my dataset, and unbiasedness. The random effect method is also one of the most used methods for this type of study.

6.4 Independent variables of interest

This section will describe the operationalization of the variables of interest that will be used to test the hypotheses. These measures are meant to be observable and measurable proxies that can be used in my econometric models, to test the hypotheses presented in Chapter 4. As was the case for the dependent variable, there are likely certain problems with the independent variables too – such as skewedness of distribution and the existence of outliers. As a general rule of thumb, skewedness scores greater than 1 or less than -1 are considered highly skewed, while scores between -0.5 and 0.5 are approximately symmetric. As can be seen in Table 24 in Appendix F, the skewness values of several of independent variables are very high, with six of

them above 50. This indicates the variables being extremely right-skewed – and likely with existence of outliers. Log-transforming the dependent variables was straightforward, as their values were all positive, by definition. It is however more complicated for the independent variables, as several of them may take zero or negative values. Therefore, I have implemented two procedures to log-transform the independent variables, as can be seen in equation (3) and (4). The procedure in equation (3) is an often-used logarithmic transformation where the smallest possible observation is added to all observations of that variable. For example, for number of employees I have added 1 employee, for the monetary variables I have added one cent etc. This procedure allows log-transformation when there are zero-values, such as the amount of intangible assets. However, it does not take negative values, which would end up as missing. Therefore, I will use the generalized log-transformation in equation (4) to deal with variables with negative values. This procedure maintains the sign of the variables – while achieving the transformation to reduce outliers and increase normality as wanted. Despite a few of the variables still being outside the preferred interval (-0.5 to 0.5), Table 24 in Appendix F shows that the transformations are successful in strongly limiting the non-normality.

a) Log-transformation for variables with zero-values	$x_{trans} = \ln(x + \lambda)$	*(3)*
b) Generalized for variables with negative values	$x_{trans} = \ln\left(x + \sqrt{(x^2 + \lambda)}\right)$	*(4)*

x_{trans} is the independent variable after the transformation, that I will be using in my models, x is the independent variables before the transformation, and λ is a constant equal to the smallest observed value for that variable. This approach has been used and recommended in previous panel data studies of FDI (Busse, Nunnenkamp, & Spatareanu, 2011; Busse & Hefeker, 2005). As a consequence of these transformations, my model becomes a log-log model. Thus, the estimators for the non-dummy variables will be interpreted as elasticities. An overview of the skewness values before and after the transformations for all the variables included in my main model can be found in Table 24 in Appendix F. I have used procedure a) for all variables apart from $ROE_{f,t}$, $Solv_{f,t}$, $MP_{f,t}$, and $INF_{d,t}$.[15] For three former I have used procedure b), while inflation has a better normal distribution without log-transformation. As a consequence, the inflation coefficient will be interpreted as a semi-elasticity. In Table 23 I have added a correlation matrix of all the variables in my regressions. From there, multicollinearity does not seem to be too troublesome, with 0.78 as the largest correlation.

[15] For $ROE_{f,t}$ and $Solv_{f,t}$, procedure b) is preferred as it retains the negative values – while it is used for $MP_{f,t}$, even though it does not hold negative values, as it gives the best skewness value.

6.4.1 Majority ownership

To confidently test whether investors are seeking a controlling interest, it would be preferred to have specific information on each investor's preference for ownership structure. As there are no reliable way of finding out if an investor is explicitly seeking the majority of a firm's voting stock for the sake of achieving control, using their ownership portfolio is likely the best indicator. My method for testing controlling interest is based on the approach of Babic, Garcia-Bernardo & Heemskerk (2019, p. 10), where they *"take the cases of portfolio investment (below 10% ownership stake) as an indicator of a financial interest and everything above 50.01% as an indicator of a controlling interest"*. This definition is illustrated in Figure 1 – with all investments above 50 percent of the voting power as a majority ownership-investment, and all those below as a minority ownership-investment.

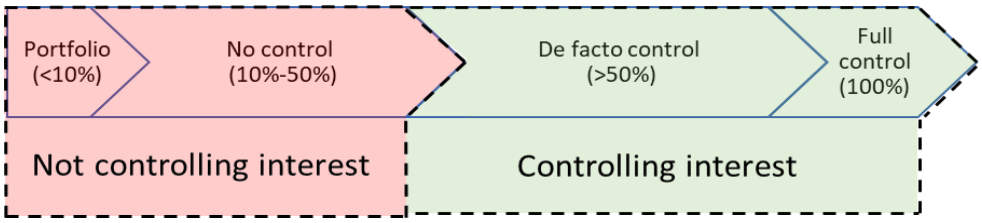

Figure 1 Definition of controlling interest. Based on figure 2 in Babic et al. (2019)

Although I find using conservative threshold of above 50 percent of the voting power as the best proxy for controlling interest, it has some challenges the reader should have in mind. First, this implies that all shareholders are independent actors. However, one should consider that investors may be coordinated – so that they together can constitute a majority. Consequently, two closely connected firms or individuals may exercise de facto control together, without it counting as majority in my definition. For most circumstances, this definition seems like a fair and accurate assumption. Yet, there are some examples where it would be more accurate to consider the interconnectivity between several shareholders. For example, if several entities of the same corporate group or different bodies of the same government hold a majority of the voting power together, it could be argued that this should be counted as a controlling interest. Similarly, it is plausible that a certain investor may own the same company as different shareholders. For example, both as a private person, and thorough a company or holding company. However, my dataset does not provide a reliable way of making these types of considerations. Despite finding some cases manually where it seems more appropriate to combine two observations as the same shareholder, I have chosen not to. The reason being potential biases from only undertaking this step for the most obvious cases – as some governments and corporate groups are more transparent than others. Some of these scenarios are accounted for by using total ownership – but there are still possibilities for getting around this measure.

A second issue is that one may argue minority shareholders may effectively control a firm, even without doing so on paper. That is when the minority in practical have a majority of the *active* owners. This is based on practical considerations, as large part of owners, particularly in publicly listed companies, do not use their voting power or act coordinated. The purchase of Daimler (Mercedes-Benz) by the Chinese firm Geely is considered enough to control the target company, even though the Chinese shareholder only owns 9.7 percent of the total voting shares (EU Commission Staff, 2019). This argument clearly demonstrates the flaw of using the high threshold of majority of the votes. An option could be to use a smaller threshold than 50.01 percent. Nevertheless, I will use the definition suggested by the EU Commission staff, that a majority of the voting share may be used as a proxy for control. By using this definition, any significant finding seems more robust than with smaller threshold.

A further possibility would be to use the state control hypothesis and proxies from Li et al. (2018). They regard ownerships where the largest owner (or one of the top 10) is a Chinese governmental entity as a proxy for Chinese state-controlled investments. The main reason why I am not using a dummy for whether one of the main owners is governmental is because I expect there to be biases in which countries are the most transparent on this form of ownership.

6.4.2 Technology

In a similar way as for the control-seeking hypothesis, one would prefer to directly compare the valuation of technology by Chinese investors and non-Chinese investors. It is however difficult, if even possible, for investors to truthfully provide information about the degree technological access is the true motive. Therefore, a testable and observable proxy must be assigned. Traditionally, studies on technology-seeking investments have used aggregated information on country-level. Most commonly the number of patents,[16] followed by a measure for research or high-tech intensity.[17] There are however challenges in using aggregated country-level data – most prominently that there may be other factors driving investments to high-tech or knowledge-intensive countries. Therefore, when using country-level measures of technology one cannot confidently claim that the investments actually go to the firms where there are technology or know-how. I have therefore opted for using firm-level information on technological assets.

[16] Number of patents is used by Buckley et al. (2007), Ramasamy et al. (2012), De Buele & Dunmu (2012), De Buele & Van den Bulcke (2012), Blomkvist & Drogendijk (2016), Quer et al. (2017), and Fuest et al. (2019). The most used source is WIPO (such as table a58 from World Intellectual Property Indicators 2020).

[17] For example, the destination country's share of GDP spent on research is used by Luo & Wang (2012), Amighini et al. (2012; 2013), and Cui & Jiang (2012) – while Ramasamy et al. (2012), Dreger et al. (2015), and Ramasamy & Yeung (2020) use the destination country's high-tech industry sector, either as share of GDP or as share of total export. The most used sources are the World Bank's WDI on high-technology export, and Comtrade.

Although the number of patents is the most used, and perhaps best proxy for the technological assets of a firm, I will not be using it in my study. That is as it is only known for about 10 percent of the firms in my dataset – and Orbis only provides current information (at the date when the data was downloaded), limiting the methods I can use for estimation. The approach I find to be the best is that of Cozza, Rabelotti & Sanfilippo (2015, p. 47), using *"intangible assets as a proxy for asset-seeking motives"*. Intangible assets are 'non-physical' assets, such as patents, trademarks, copyrights, goodwill, brand recognition etc. The main benefit is that it is well-covered in the dataset and allows for variation over time. Using intangible assets is perhaps less convincing as a proxy of technology, but it has both theoretical support and is used in empirical studies. Theoretically, intangibles is used as a measure for technology, knowledge or strategic assets by Deng (2009), Li, Li, & Shapiro (2012), Cui, Meyer & Hu (2014), and Buckley, Elia & Kafouros (2014). Perea & Stephenson (2017) emphasize the importance of intangibles from knowledge-intensive industries as these assets are difficult to replicate, making mergers and acquisitions the only way of accessing these assets. Empirically, my approach is based on Amendolagine et al. (2015), who used Orbis's data on intangible fixed assets larger than zero as a measure for 'technology driven FDI (TFDI)' and the ratio of intangible fixed assets to total assets as a measure for 'propensity to innovate'. The latter is also used by Zhou and Guillén (2015) and Elia & Santangelo (2017) under the name 'Intangible asset intensity', and by Cozza et al. (2015) by the label 'INT/TOT'. The use of intangible assets as a measure of 'technology' assets is further supported by Montresor, Perani & Vezzani (2014) finding that *"intangible assets is associated with companies giving high priority to the development of new products/processes"* (Amendolagine, Cozza, & Rabellotti, 2015, p. 466). It should be noted that most firms report 'intangible fixed assets' based on the historical cost method. This means that it is a measure of how much a firm has invested in research and development, and intellectual properties – not a measure of the still-relevant current stock. The best alternative to intangibles is likely sectoral classifications for high-tech or knowledge-intensive services. [18]

6.4.3 Market power and market concentration

The next area of potential geoeconomic behavior I want to look at is whether Chinese investors seem to be targeting firms that hold large market power or operate in highly concentrated markets. The basis of the hypothesis is presented in Section 4.3, and builds on Knorr's view that obtaining 'monopolist market power' in another country is one of the main ways of exercising economic leverage. The argument is that the larger market power a firm has, the more it can be used to leverage a country for desired behavior. First, I will use the market share

[18] For this approach I would use Eurostat's list of high-tech industries and knowledge-intensive services: https://ec.europa.eu/eurostat/cache/metadata/Annexes/htec_esms_an3.pdf. Similar procedures are done by Sutherland, Anderson & Hertenstein (2018) and Piscitello, Rabellotti & Scalera (2014).

of a firm as a direct proxy of market power. Second, I will use the concentration in the market a given target firm operates in. That is, the more concentrated (less fragmented) a market is, the more market power is held by the actors that are in the market. To translate the market shares into a usable measure for the condition of competition in a market, I will use the Herfindahl-Hirschman index (HHI). The HHI-score formula can be found in equation *(5)*,

$$HHI - score = \sum_{i=1}^{n} (MS_i)^2 \qquad (5)$$

MS_i is the market share of firm i in decimals – in the market with n number of firms. When considering this hypothesis, I will regard a market by a country-sector-year limitation. By that I mean that a firm will be included only in the market of their main industry, in the national market of the destination country of the investment, in a given calendar year. The industry will be given by the 4-digit "classes" level of the NACE Rev. 2. For example, the market for car manufacturing in Germany in 2017 will be labeled "DE-2900-17". Aggregating a market based on sector-country-year is proposed by Kalemli-Ozcan et al. (2019), who also used the destination country and the 4-digit NACE Rev. 2 classification. Even though I find their approach to be the best available, it comes with some ramifications one should be aware of. First, the market definition is based on a firm's primary industry classification. That leaves out the possibility that a given firm may supply their products or services in several industries – and also that the total size of the market may be smaller or larger than my measures suggest. Using the 4-digit industry level classification also do not account for the possibility that firms in similar, yet different industries, may be competitors. As there are 615 industry classes in my definition, this is likely to be the case. One such case may be "4100 – Construction of buildings" and "4120 – Construction of residential and non-residential buildings". To limit this problem, I run some robust-checks using 2- and 3-digit industrial codes. A second issue is the choice of a national sphere of the markets – not allowing for competition across the borders. This is a simplification that is hardly reasonable to fully trust. Especially in the closely integrated European market, it is hard to believe that there are definitive borders between countries. For example, petroleum producing firms do not only compete with firms in the same country. Although some of this is corrected for by large multinational companies often using subsidiaries in each country they are present in, it will nevertheless remain problematic. However, considering a market only based on 'sector-year' is problematic too, as it would imply that all firms that are in the same industry in Europe were competitors. This would for example lead to the grocery industry, which is often viewed as highly concentrated domestically, to seemingly be very competitive. In total, I find the domestic industry definition to be the least bad.

The Herfindahl-Hirschman index (HHI) is the sum of squared shares of all firms in a given market. The HHI-score ranges from 0 to 1, where the larger the HHI-score is, the less competition (more concentrated) the market is. If a firm is the only actor in the market (monopoly) the score will be 1, while if two firms share the market equally the score will be 0.5, and so on. The US Department of Justice (2010) define markets with HHI-scores of less than 0.01 as highly competitive, 0.01 to 0.15 as unconcentrated, 0.15 to 0.25 as moderately concentrated, and those above 0.25 as highly concentrated.

The HHI-measure is used in studies by Cui, Meyer & Hu (2014), Bajgar et al. (2019), and Gutierrez & Philippon (2017). The main advantage with the HHI-score is that it accounts for the whole market. While this in theory is preferred, it comes with some empirical challenges that should considered. Although the Orbis database is the best-covered database available, it still has a slight bias towards the largest and most successful firms (Bajgar, et al., 2019). Therefore, if smaller firms more often are not included, it may overestimate the market concentration. Alone, this may not be too problematic, but if the bias correlates with industries or destination countries, which likely correlates with country of origin – the results may be biased. On the other hand, it may be argued that the smallest companies are not very relevant when considering the overall competition. The best alternative to using the HHI-score would be using concentration rates (CR).[19] Using CR would require choosing the number of firms to include, which is quite ambiguous. Additionally, due to the way it is defined, CR do often not distinguish between markets with and without a long tail of firms with smaller market shares. In this way, it may exaggerate the measure, making HHI often preferred (Cavalleri, et al., 2019).

6.4.4 Critical infrastructure sectors

Although the idea that certain areas of an economy is critical for running society is straight forward, it may be more difficult to determine what those areas are. There are no single, objective definition of which functions or processes that are of 'criticality'. The most precise would be to judge the role each firm plays individually. As this is impossible considering the information in my dataset, I have chosen to define a list of critical infrastructure sectors (CIS), based on sectoral classification. Using this approach of making a distinction at industry-level comes with some costs. This generalization places all firms in a sector as either within or outside CIS. More realistically, some companies within a sector plays a role in the critical infrastructure in the country while others do not. Consequently, some firms that are defined as CIS should not

[19] Concentration rate is the sum of market shares for a given number of actors. Normally it is defined as CR(X), where X is the number of the largest actors in the market. The CR measure is a cumulative aggregation of the largest firms, so the larger value of X, the larger the CR will be. Kalemli-Ozcan et al. (2019) used CR(4) and CR(8) in their study of market concentration, while Bajgar et al. (2019) used CR(4), CR(8), and CR(20).

be – while others that should be are not included. This drawback is even more clear as the dataset only contains a firm's primary industry code. Thus, they may have activities outside their main industry. Another challenge is that countries have different views of what is of criticality. As my list is meant to grasp the view of the whole of Europe, it seems most appropriate to make a common list for all countries in my dataset. This approach adds the challenge that some sectors may be critical for certain countries, but not for others. For example, the coal industry in Norway is likely not critical, while it is in Poland. Consequently, it is included for all countries. To make a common definition of categories for all European countries, I have based the proposed list of CIS on the principles from the EU Commission (2019). They include functions such as the power grid, transport network, information, communication, and financial and satellite systems. In addition, many countries have defined more specific lists of which functions, processes, infrastructure, or systems that are critical. As countries differ, and some are quite liberal in which sector to include, it would be possible to define almost all parts of the economy as critical. This is the basis for the "Total defence", a concept of the whole of society having a part in the collective defense. This idea has dominated preparedness strategy in countries such as Sweden, Switzerland, Singapore (Singapore Ministry of Defence, 2019) and Norway (Norwegian Ministry of Defence, 2018).

As the general terms in the EU Commission's Programme are quite broad and lack an exhaustive list of industries or criteria, I have utilized sectoral definitions from Norwegian, Danish, French, Swedish, Dutch, German, British and American governmental agencies. Their definitions of which sectors, functions and processes that are critical can be found in Table 14 in Appendix D. Most of these lists are also quite undetailed and difficult to use for the precise classification needed. Therefore, I have used a report by the Norwegian Directorate for Civil Protection (2017), which propose 14 main groups of critical infrastructure, based on 'food, water, heat, security and suchlike' as the basic societal needs. Additionally, they offer some guidelines and descriptions for what sort of functions within each group that is critical. I will use these categories and descriptions to classify each sector as accurately as possible. As previously mentioned, I will extend the description to apply to all European countries. For example, I will include other forms of energy supply that is not mentioned in the Norwegian report. When classifying sectors, I have tried to be conservative – with the view that 'a sector is not critical, unless it seems evident that it'. For instance, within NACE division (level 2) "26 - Manufacture of computer, electronic and optical products", I have only included NACE group (level 3) "263 - Manufacture of communication equipment", while the remaining (261, 262, 264, 265, 266, 267, 268) are not included. In other words, when only part of the area seems to be relevant as critical, the rest of the area is not included. Using this approach, I end up with

assigning 181 of the 615 NACE 4-level codes as part of critical infrastructure. The whole list of the included sectors, and to which vital function in society they contribute, can be found in Table 15 in Appendix D. 23 of the European countries in my study was part of OECD's report (2019) on Critical infrastructure governance. There, the sectors that most countries included as critical were Energy (23), ICT (22), and Transport (22) – as illustrated on Figure 2. The full list of which sectors each country defines as critical can be found in Table 14 in Appendix D.

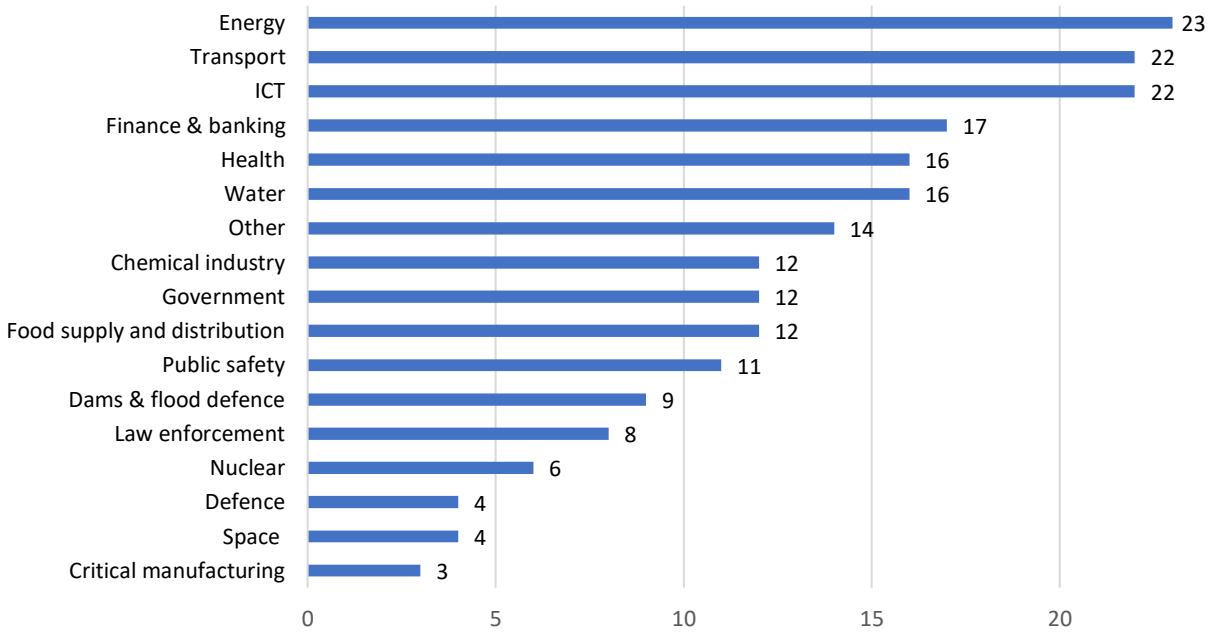

Figure 2 Number of European countries that includes each sector in their definition of critical infrastructure. The figure is made based on the results for the European countries in Annex 3.C in (OECD, 2019).

6.5 Other independent variables (control variables)

This section will go through the control variables that is used in the main models. There are two main purposes for including control variables. First, it isolates the effect of the variables of interest from those that are explained by other factors. That is, removing the variation explained by other factors of the investment that is not directly part of my hypotheses. Without control variables the results would likely be strongly biased, caused by omitted variable bias. Second, control variables help increase the precision of the estimates, through explaining more of the variation in the observations. However, it would not be correct to include all the variables in my dataset, just to eliminate as much variation as theoretically possible. The more variables that are include, the smaller the sample is, as the regressions require all the included observations to have known (no-missing) values. In addition, there is always the chance of the variables being 'bad controls', which would make the results more biased (Angrist & Pischke, 2009). Alternatively, the controls could be irrelevant, which would harm the efficiency of the estimations (Wooldridge, 2020). The selection of which control variables to include is based on specific mechanisms I want to control for. For this reason, I only include controls that are

theoretically well founded or are commonly included in empirical studies of drivers for investments. I have divided the control variables into the following levels: target firm, target sector, destination country, origin country, sender-receiver relationship, and additional year and region control variables. All the controls will be included in my main model, while I will run additional models for robustness checks where some are left out.

Target firm control variables

The first group of control variables is characteristics of the acquired firm. That is, features of the target firm that may explain why investors would want to invest. The motive-based business theory suggests that traits such as the size, financing and profitability of the firm are three mechanisms that impact an investment. Therefore, I want to include variables that cover these aspects. For the size of the firm, I will use the number of employees as measure. For the financing mechanism I will use the firm's solvency ratio (the amount of equity to total assets), which is an often-used measure of the ability to meet its long-term liabilities. Another option could be the short-term current ratio (the amount of current assets to current debt). As my empirical analysis focus on foreign direct investment, which mainly is thought to be for long-term, solvency ratio seems most relevant. For the profitability aspect I will use the firm's return on assets (ROA). Another commonly used measure is the return on equity (ROE). I prefer ROA as ROE has much more extreme values (outliers) and as it is better covered in the dataset.

Sectoral control variables

For the sectoral control variables, I want to control for the size of the market. This is based on the market-seeking argument from economics and business theory, which hypothesize that larger markets will be a pull factor for investments. As explained, I define a market as country-sector-year. For this, I will use NACE-level 4 (the most disaggregated level).

Destination country control variables

The next group of control variables is that of the destination country. Two of the most used control variables in previous studies are the destination country's gross domestic product (GDP) and GDP per capita. For this I have used World Bank's national accounts data. The theoretical justification for this mechanism is also the market-seeking motive. Another common control variable is the annual inflation rate in consumer prices. This is often included as a measure for the condition of the economy, often as a proxy for investment risk. Since investment decisions normally take some time, simultaneity between the inflation and investment is seldom the case. Therefore, I will use the three-year moving average of the inflation of t-2, t-1, and t, for a given year t. This grasp the likeliness that high inflation in one year will be taken into account for potential investors in the coming years. Additionally, I include OECD's FDI restrictiveness

index, which gives each country an annual score of from 0 to 1, with 1 being the most restrictive. I will use the overall indicator called "All types of restrictions".[20] I will include this to remove any effect on investment size that comes from FDI legislations. As the score is not reported for Bulgaria, Cyprus, Liechtenstein, and Malta, I will run models without FDI restrictiveness for robustness checking.

Country of origin control variables

Investments are determined by pulling and pushing factors. Some of the push motives may be inside the country of origin. Therefore, I add some of these into the model specifications as control variables. There are many variables that could be relevant for this purpose. I have chosen to limit the models to only including the GDP and GDP per capita of the country of origin.

Origin-destination control variables

In addition to the factors stemming individually from the countries involved, their bilateral relationship may also influence the investment. This is the focus in the gravity models of international economics, where the most used variable is the geographical distance between the origin and destination countries (Anderson J. , 2011). The idea is that the larger distance there are between the countries, the more difficult it is to invest – thus being a proxy for investment costs/barriers. Although distance is likely to lead to less cross-border investments on aggregate, it could make each investment that takes place larger. Other alternatives could be to include binary variables for cultural proximity, common language, common history, common border, or trade flows between the countries. In my model, I will use the population-weighted distance (PWD) between the countries from CEPII's GeoDist Database. Alternatively, I could use the simple distance between the countries, which is the distance between the most important cities in the two countries. I find the PWD-measure as the best proxy for distance, as it accounts for the share of the population that lives in each of the cities. In this way, the most populated cities are weighted more heavily when measuring the total distance.

Year and regional fixed effects

The final group of controls is binary fixed effects. In my main model I have used dummies for year and for the continent of the origin country. By controlling for the time variation, the model eliminates any impact coming from general trends in investments. Similarly, by including dummies for the continents one can make sure that any difference in Chinese investment characteristics do not come from an 'Asian commonality', but rather is country specific. The classification of continents is according to Our World in Data.

[20] This score is an average of (i) foreign equity limitations, (ii) screening or approval mechanisms, (iii) restrictions on employment of foreigners as key personnel, and (iv) operational restrictions (https://www.oecd.org/investment/fdiindex.htm).

7. Results

This chapter presents the results obtained using the two methods presented in Chapter 6. Section 7.1 provides the results investment strategy results of China and other selected non-European countries, which address the majority ownership hypothesis (H1). Next, in Section 7.2 I will I present the results from the main regression model, addressing the remaining hypotheses. More specifically, the econometric analysis will examine the hypotheses about technology (H2), the interaction between technology and majority ownership (H3), market power (H4), market concentration (H5), and critical infrastructure (H6). I will also include the results from some of the robustness tests. In Chapter 8, I will discuss the results and their relevance for answering the research question – in addition to how they compare other studies.

7.1 Investment strategy results

Based on the method of Babic et al. (2019), I have formulated investment strategies for all non-European countries – which is meant to help answering hypothesis 1 regarding majority ownership. However, to focus on the countries of economic importance, I remove countries with less than 10 investments or less than 1 billion Euros in asset-based investment tie. Another reason to remove those countries is that it seems questionable to infer a country's strategy based on a very small sample of investments. This filtration eliminates 108 countries – leaving 61 countries. Table Table 25 in Appendix F provide each of the 61 countries' number of investments, investment sum, shares of investments allocated in FPI, minority FDI and majority FDI, as well as their investment strategy. Still, some countries are more of interest than others. Therefore, I have highlighted the 13 highest ranked countries by total assets seperately on Table 8.[21]

The main variable of interest is in the 7th column, namely the asset-based investment strategy – ranked from financal (F) to controlling (C) – which are based on the definitions in Table 6. To start off, it can be seen that China has a score of "CD - 72". This means that Chinese ownership is categorized by a "dominantly control strategy", with 72 percent of their assets held in target firms where the Chinese owner has the majority share. In itself, this may seem to suggest that Chinese owners are driven by a controlling interest. However, to be able to answer my hypothesis, one must compare China to the investment strategy of other investors. As seen in Table 8, the weighted average of all non-European countries is "CD - 56",[22] while the unweighted average is "CD - 64". This corresponds to China having 12.5 and 28.5 percent

[21] I have not included offshore financial centers, even if their number is large enough to be included. The reason is that they are not of particular interest, as these are often used as pitstops for other countries' citizens. This step rules out Bermuda, Cayman Islands, Singapore, British Virgin Islands, and Bahamas.
[22] The weighted average is calculated using the sum of asset-based investments, so that larger countries are more influential.

higher share of their investments in firms where they are the majority owner compared to the world average. Thus, Chinese owners do indeed hold a larger share of their investments in firms where they have the majority of the voting power, than other non-European countries. It is however difficult to say whether the difference is meaningful. Therefore, it could be useful to also compare with the major non-European countries only. Out of these 13 selected countries, China has the third most "controlling" portfolio of investments. Overall, this yields some support to the hypothesis that Chinese investors seek controlling interest, but it is far from obvious that they are considerably more motivated than others major investor countries.

Origin country	Number of investments	Total inv., AB (bn. EUR)	FPI, AB (%)	Minority FDI, AB (%)	Majority FDI, AB (%)	Strategy, AB	Strategy, TB
United States	92 545	10 645.6	46	6	48	MC - 48	MF - 49
Japan	7 725	832.9	20	9	70	CD - 70	CD - 82
Canada	11 323	768.6	44	9	47	MC - 47	FD - 58
China	17 534	560.8	14	14	72	CD - 72	CD - 82
South Africa	2 700	381.4	23	14	63	CD - 63	CD - 71
Qatar	384	321.0	15	78	6	M - 78	M - 71
Australia	5 335	254.4	29	5	66	CD - 66	CD - 57
Brazil	1 648	210.2	3	1	95	C - 95	CD - 88
Russia	21 702	172.4	10	22	68	CD - 68	CD - 58
India	4 607	144.7	1	4	96	C - 96	C - 97
Mexico	538	98.8	4	26	70	CD - 70	CD - 64
United Arab Emirates	1 799	98.3	12	38	50	CD - 50	M - 49
South Korea	1 656	87.9	13	1	85	CD - 85	C - 96
Total non-European (unweighted)	265 213	17 883.1	13	23	64	CD - 64	CD - 64
Total non-European (weighted)	265 213	17 883.1	35	9	56	CD - 56	CD - 53

Table 8 Investment portfolio for selected non-European countries, including the number of ownerships, total investment sum, the distribution of their investments, and investment strategy. Column 3 to 7 uses asset-based (AB) investment-tie, while column 8 is the turnover-based (TB) investment strategy. All numbers are based on based on the average from 2017 to 2019.

To increase the validity of these findings I have replicated the analysis using the turnover-based investment tie, as was done by Babic et al. (2019). The result is provided in the rightmost column in Table 8. Using this measure, China has an investment strategy of "CD - 82" – which is more controlling than the asset-based strategy. Similarly, the weighted and unweighted non-Europan average is "CD - 53" and "CD - 64", respectively. Thus, China's share is 55 and 28 percent higher than the global averages. For this measure, China ranks as the shared 4th most controlling, out of the 13 largest investing countries. The conclusion closely resembles the one for the asset-based investment tie – with China having a larger share in majority owned firms than the world average, but it does not stand out as the 'worst'. As this method is relatiely simple, and do not account for other factors that can explain this pattern – I have included the majority interest variable into an alternative spesification of my main regression model for robustness checking. The regression results will be presented in the upcomming section.

7.2 Regression results

The primary method for my assignment is the econometric regressions, as presented in Section 6.2. As described, my results are estimated by linear models using random effects. Table 9 shows the output from my main model (column 1), which will answer hypothesis 2 to 6. If the hypotheses were true, it would be expected that all the coefficients of interest are positive and significant. The table also provides the results from the specification with the additional hypothesis 1 variables (column 2), which will be used to supplement the simple 'investment strategy method'. In addition, in Appendix F4 I have included outputs from 14 regressions for robustness testing, where I have altered the specifications.

	(1) RE: $\ln(FDI_{ifsdo,t})$	(2) RE: $\ln(FDI_{ifsdo,t})$
H1: $MO_{i,t} * CN_o$		0.285**
		(0.126)
H2: $\ln(TA_{f,t}) * CN_o$	-0.044*	-0.029*
	(0.025)	(0.017)
H3: $MO_{i,t} * \ln(TA_{f,t}) * CN_o$	0.001	0.008
	(0.024)	(0.014)
H4: $\ln(MP_{f,t}) * CN_o$	0.049*	0.041*
	(0.028)	(0.023)
H5: $\ln(MC_{sd,t}) * CN_o$	-0.023	-0.028
	(0.038)	(0.044)
H6: $CIS_s * CN_o$	0.655**	0.539**
	(0.283)	(0.216)
$MO_{i,t}$		1.135***
		(0.07)
$\ln(TA_{fs,t})$	0.076***	0.035***
	(0.011)	(0.006)
$MO_{i,t} * \ln(TA_{fs,t})$	-0.056***	0.004
	(0.011)	(0.006)
$\ln(MP_{f,t})$	0.223***	0.219***
	(0.019)	(0.019)
$\ln(MC_{sd,t})$	0.08**	0.077**
	(0.035)	(0.033)
CIS_s	0.093	0.09
	(0.101)	(0.097)
Observations	165 175	165 175
Overall R^2	0.693	0.712
Cluster	Sector in destination country	Sector in destination country
Year FE	YES	YES
Continent FE	YES	YES
Target firm controls	YES	YES
Sector controls	YES	YES
Destination controls	YES	YES
Origin controls	YES	YES

*Standard errors are in parentheses. *** p<.01, ** p<.05, * p<.1*

Table 9 Regression results from my main model (column 1) – and the specification including the additional hypothesis 1 variables (column 2). The whole regression output for my main model can be found in Appendix F3.

We can start by examining the results of model 1, which are based on 165 thousand observations. The estimators of the logarithmic variables, namely all except hypothesis 6, as well as the corresponding non-interacted effect, can be interpreted as normal log-log coefficients. That is, being elasticities where a coefficient of 0.1 indicates that the investment size increase by 0.1 percent if the independent variable increases by one percent. The estimators for the effects with dummy variables, should be interpreted as an additional percentage level increase in the size of the investment, if the dummy is equal to 1 – as in a normal log-lin model. For example, the estimated additional effect for a Chinese-owned firm in a critical infrastructure sector, which address hypothesis 6, sector is 0.655. This indicates that the investment size will be approximately 65 percent larger for a Chinese owner in CIS, compared to owners from other countries. However, this approximation is most precise for small changes (Wooldridge, 2020). The formula for calculating the precise interpretation of dummy variables in this type of setup can be found in Box 1. The relevant coefficient here, 0.655, is too large for the estimate to be a good approximation. The precise estimate is 93 percent.[23] For the rest of the coefficients the approximation is relatively accurate.

Precise interpretation of the dummy variables

To get the precise estimate, one starts by setting up a general equation $\log(Y) = \beta_0 + \beta D + u$, which can be expressed as $Y = e^{\beta_0 + \beta D + u}$.

The change in Y when the dummy D goes from 0 to 1 gives us: $e^{\beta_0 + \beta + u} - e^{\beta_0 + u}$, which can be expressed as $e^{\beta_0 + u} * e^{\beta} - e^{\beta_0 + u}$. This expression can be simplified to $e^{\beta_0 + u}(e^{\beta} - 1)$.

The percentage change in Y when the dummy D goes 0 to 1 is:

$$\frac{Y_{D=1} - Y_{D=0}}{Y_{D=0}} * 100 = \frac{e^{\beta_0 + u}\left(e^{\beta} - 1\right) - e^{\beta_0 + u}}{e^{\beta_0 + u}} * 100 = \left(e^{\beta} - 1\right) * 100$$

Box 1 Step-by-step process for getting the precise formula for interpretating the dummy variables in my regression results.

Further, one can look at whether the estimators are statistically significant. Using a five percent significance level marked with two stars, out of the variables of interest, only the coefficient addressing hypothesis 6 is statistically significant (p-value of two percent). This supports the hypothesis that Chinese owners are more associated with target firms in sectors of critical infrastructure. Further, the estimate for hypothesis 2 is -0.044 and statistically significant at a ten percent significance level. This contradicts my hypothesis of Chinese investments being more technology-seeking than others. Oppositely, the coefficient addressing hypothesis 4 is positive and significant at a ten percent level (p-value of 7.7 percent). The estimate suggests

[23] With the beta coefficient 0.655, the precise estimate is: $(e^{0.655} - 1) * 100 = 93\%$

that a one percent increase in the target firm's market share, increases the size of the Chinese investment by 0.05 percent. This bolster the hypothesis that Chinese investors are more associated with target firms with market power. Noticeable is also the main effects of the hypothesis mechanisms, without the Chinese interaction. My model predicts positive and statistically significant effects of increased technological assets, increased market power, and increased market concentration. The effect of increased technological assets in a majority-owned firm is however negative and significant. In total, the model explains about 70 percent of the total variation.

Column (2) displays the result of the model for robustness checking, where the variable addressing the majority ownership hypothesis (H1) is included. The first thing to notice is that all the signs and conclusions are the same as in my main model – which is reassuring. Second, the estimated effect for the variable used for hypothesis 1 is strongly significant and positive. With a coefficient of 0.285 the model estimates that the investment size increases by approximately an additional 28.5 percent if the majority owner is Chinese, given that there is a shareholder with a controlling interest. Again, the approximation is only precise for small changes. In this case, the model more precisely estimates the investment size to increase by a third.[24] The general effect of majority ownership, without the Chinese interaction, is also significant and positive. Although one should be careful with putting too much trust into this specification, the findings strengthen the picture from Section 7.1, To summarize, the evidence supports hypothesis 1 and 6 – while it is not possible to infer a conclusion for the remaining four hypotheses.

In addition to the two included models, I run plenty regressions for additional robustness testing, where I alter the control variables, clustering technique, and estimation method. In total, I run 14 alternative specifications of the main model. The regression outputs and a discussion of each model can be found in section F4 of the Appendix. Admittingly, the results vary under the different model specifications. However, the conclusions are fairly robust – and I never find opposite signs being statistically significant for any of the hypotheses. Thus, the alternative specifications broadly encapsulate the image from the main model – where only the majority ownership and the critical infrastructure hypotheses are reasonably supported.

[24] With the beta coefficient 0.285, the precise estimate is: $(e^{0.285} - 1) * 100 = 33\%$

8. Discussion

In this chapter I will be analyzing the results presented in Chapter 7 – using the theoretical framework and empirical review in Chapter 3. The chapter is divided into sections for each group of hypotheses. For each of these hypotheses, I will provide a short summary of the findings and how what they matter for the answering their respective hypothesis. Thenceforth, for the hypotheses where there are previous studies available, I will compare them with my findings. As part of that, I will point of the similarities and differences that may explain why my findings match or differ from these studies, or from what I expected. In addition, I will debate potential hypothesis-specific limitations in the dataset and methodology, which may reduce the generalizability of the findings. In the last section of this chapter, I will review my study as a whole. I will start by arguing what the hypotheses say about my research question, and how my study contributes to the academic field. I will end my discussion by exploring the general limitations for internal and external validity.

8.1 Majority ownership

My chosen approach to assess the majority ownership hypothesis is the investment strategy method developed by Babic et al. (2019). The results in Chapter 7 suggest that Chinese investors have a more control-oriented strategy than the average of other non-European investors. In addition to the investment strategy method, I ran an alternative specification of my main model for robustness testing. This specification, which includes the majority ownership variable and its interaction to Chinese ownership, supports the findings from the investment strategy method. This robustness model demonstrates a positive relation between Chinese ownership and having a majority stake – after controlling for other factors. The estimated effect is statistically significant at a five percent significance level and is fairly robust to altered specifications. Thus, both methods seem back the hypothesis that *Chinese owners are more heavily targeted to majority-ownership than investments from other non-European investors.*

My investment strategy results are similar to those from Babic et al. (2019) for Chinese state-led investments. In their study, using the turnover-based investment tie, they found China to have a "CD – 87" strategy. In my study, China ends up with "CD – 72" and "CD – 82", for asset-based and turnover-based investment tie, respectively. The important difference in my setup is that I have included ownership held by private businesses and citizens too – while Babic et al. only looked at ownership held by governmental bodies. In my study, the ownership held by Chinese governmental bodies accounts for a negligible share of the total number of Chinese

investments.[25] Consequently, the state-led investments do not drive the results for the whole Chinese population. Therefore, it is interesting that the investment strategy for all investments is fairly similar to that of the state. As I have never seen econometric models including majority ownership, I have nothing to compare the results of the robustness specification (model 2) with. As this specification may be a first, one must be careful with putting too much faith to it. A potential issue is that, by definition, increasing the ownership stake will also increase the investment size - holding all other things equal. Although a correlation coefficient of 0.38 between the investment size and the majority-ownership dummy does not suggest any problems, more research should be done before reliably using this type of specification.

There are however a few issues the reader should be aware of, that may harm the confidence of these findings. First, the simple investment strategy method does not control for any other factors that influence investment characteristics. Thus, it should be regarded more equivalent to a measure of 'correlation', rather than reliable causality. As part of that, one cannot claim that it is the majority stake itself that motivates the investments. Another issue is that it is not possible to know how the ownerships occurred – as the observations are only 'current' ownership stocks. That is, the ownership could arrive from foreign firms or individuals acquiring European firms - but it may also be foreign shareholders establishing an entity in Europe. In the latter case, a 'controlling' position is likely less linked to the implicit concern that "foreign owners want to control value entities in Europe, in order to use it for geoeconomic leverage". Even if it could reliably be claimed that Chinese investors are more motivated by having a majority of the voting power, one must be careful about implying what the justification may be. If the shareholders believe that the firm will prosper, they will likely want to own as much of it as possible.

With the limitations discussed above in mind, the results do favor my hypothesis. In other words, I will make the case that my findings confirm that Chinese investments seem more heavily concentrated in firms where they hold a controlling interest. With the ongoing discussions and concerns in the western world about China's geoeconomic ambitions, the results are interesting – despite not being able to infer what the reason for these patterns may be. The aim of my study was never to reliably reveal the inner motivations for investments, but rather to examine whether firm-level data can substantiate the claims. For this purpose, I will argue that my findings do provide a clearer understanding.

[25] 90 out of the 17 534 different Chinese investment positions between 2017 and 2019 have shareholders with "Public" or "Public authority, state, government" shareholder entity. Babic et al. used the two groups in their definition of state-led capital.

8.2 Technology

Most studies of determinations for investments find technology to have a positive impact on the size or number of investments. This is also found in my findings, where the main effect of technology without the Chinese interaction is positive and significant at a one percent significance level in all 16 of my model specifications. However, contrary to the hypothesized assertation, most of my results suggest that technology is less important for Chinese investors than other non-European investors. In my main models, the effect is significant at a ten percent significance level – not too far away from the often-used five percent level. The effect does reach the needed level in some of my robustness-checks, and none of my 16 specifications estimates a positive effect. Together, my main model estimates that increased intangible assets in the firm is associated with increased investments for Chinese investors (the positive effect of the non-interacted variable is larger than the negative effect of the interacted Chinese variable). This finding is somewhat unexpected, as technology is one of the most studied hypotheses for Chinese investments to developed countries – most of which predict a positive effect. To name some, De Buele & Van den Bulcke (2012), Blomkvist & Drogendijk (2016), Jindra et al. (2016) and Quer et al. (2017), find technology to be positive and significant for investments from China or emerging countries. On the other hand, Fuest et al. (2019) find no effect of intangible assets. Buckley et al. (2007) find a negative, but insignificant effect of technology – while Ramasamy et al. (2012) concludes the effect to be negative and highly significant for private investments.

Similarly, there are not any substantial support for hypothesis 3, namely that Chinese investors are technology-seeking in firms where they hold the majority of the voting power. To repeat, the logic is that this sort of technology-seeking is stronger related to geoeconomic intentions (Babic, Garcia-Bernardo, & Heemskerk, 2019). It is closely related to what is described by Giuliani et al. (2013) as ‘Predatory subsidiary’ type of technology-transfer. The argument is that when having a controlling interest, it may be easier to facilitate transfer of technology. In my main model, the variable is positive with a p-value of 0.96 – far away from being significant. Two of my robustness-checks (model 10 and 13) find the effect to be positive and significant at a five percent level, while it is close in one additional model (6). These three models share the exclusion of target firm control variables. Thus, when controlling for financial characteristics of the target firm – the effect is gone. So, although one should not completely ignore that it is significant in the mentioned specifications – it is expected that a significant effect at a five percent level is found once in every 20 cases by randomness alone. The lack of a significant effect is not too unexpected, as the only study mentioning this interaction between majority ownership and technology to be relevant is Babic et al. (2019). The sign of the general

effect of majority ownership of intangible assets is ambiguous, being negative in some models, including my main model, while it is positive for others.

So overall, while one cannot say that Chinese-investors are not technology-seeking, the results suggest that it is less important for Chinese than other non-European investors. There are however some issues to making a conclusion. First, I have only used one measure of technology, intangible assets – which is no perfect proxy. In fact, intangible assets can be historic investments in research and development, intellectual properties, trademarks etc. Thus, it may not have any relevant actual value anymore. The same may be the case for the number of patents a firm holds, which is the most used and perhaps best measure of technology. Interestingly, Fuest et al. (2019) run models including both intangible asset and patents – where the former has no estimated effect, while the latter has a significant and positive effect. Thus, it may be that the expected pattern would be caught if another measure of technology was used. On the other side, the intangible assets measure is both in theory and in empirical studies regarded as a good proxy for technology. Thus, if there was a clear technology-effect, it should expect the model to capture it without the inclusion of patents. As mentioned earlier, I have opted not to use patents as I did not have access to historical data – and that the variable is only covered for about 10 percent of my observations.

Second, the causal chain of how the intangible assets appeared in the firm can be questioned. Is it believed that the technology had been accumulated before the shareholder acquired the firm – or did the owners prioritized spendings on research and development after the investment? If the former is the case, it is more logical to label the investment as a potential technology-transfer. If the latter is the case, it seems fairer to regard the owner as contributing with technology. I will however argue that no matter how the intangible assets occurred, having links to the firm opens the possibility of using it as a source of technology and knowhow. That is especially the case if the owner establishes partnerships or business corporation with an entity at home, which is often the case in my dataset. Third, although there are intangible assets in all sectors of the economy, including in hospitality services, it is heavily located in certain sectors. If Chinse investments are more often within these service sectors, it can create some bias. This characteristic is partly corrected for in my regressions through the use of clustering. Next, the majority of technology assets is likely not of interest in a geoeconomic perspective. It may therefore be that the average effect of technology is non-existing or negative, while technology in certain strategic sectors may be highly relevant. Thus, I am not making claims about the heterogeneity of the effects in different sectors – only the aggregate effect. For example, it could be the case that Chinese investors are motivated by technology in the seven prioritized areas of

their five-year plan – such as artificial intelligence, quantum information, integrated circuits, brain science, biotechnology, space, deep earth, or deep sea. Finally, it must be remembered that the "other non-European investors" group is highly diverse. In particular, the United States (as the largest non-European investor in Europe) is influential. As American investors are often located in technology firm, either through American firms having subsidiaries in Europe or through owning firms originating in Europe, this alone may influence the portfolio of the whole other non-European group. In this way, it may actually be that if isolating the American investors, China could seem technology-seeking compared to the remaining investors. Therefore, when considering the technology hypothesis, it is important to be aware of what to compare China to.

To be perfectly clear, my results cannot unambiguously confirm or deny these hypotheses. I will however conclude that the widespread concern that China is using investments to acquire technology is not evident. In fact, other non-European investors seem more interested in technology assets. One must also bear in mind that there are several sources of technology transfer – with foreign investment being just one of them. For instance, technology can also be transferred to the host country, such as through requirements of cooperating with a local firm in order to gain market access.

8.3 Market power and market concentration

In my study, I have hypothesized that when compared to other non-European investors, Chinese investors were particularly motivated by achieving market leverage. As measure for market leverage, I use the market power of the target firm, as well as the concentration of the markets they operate in. This assertion builds on the leverage mechanism of geoeconomics. The argument, as presented by Knorr (1986), Norris (2010), and Smith (2012), is that one can achieve more influence over the destination country if the target firm plays a more central role in the market. This influence will likely grow if the firm's market share or the market concentration increase. The latter is a result of a more concentrated market yielding less competition. However, as described in Section 4.3, the effect of the firm increasing its market power can also be ambiguous. On one hand, as the firm increases its market share or experience less competition, it will have more leverage against the target country. On the flipside, increased market power will also make it more difficult for governments to exert geoeconomic influence. The logic is that the stronger the firm's position is, the more bargaining power it holds vis-à-vis any governments that want them to participate in potential geoeconomic activities.

An example of firms exploiting their market power for political ambitions was recently seen in Brazil, where 34 large financial firms, led by Storebrand Asset Management, threatened to

exclude Brazilian firms from its portfolio if they do not live up to the demands for ethical and environmental conduct in the Amazon rainforest. Due to the pressure, the Brazilian government is said to have given 'clear commitment' to make 'real impact' (Taraldsen, 2020).

The results from my study indicate partial but non-conclusive support for these views. To start with the market concentration, measured by the HHI-rate, I find little hold to my hypothesis. While most of my specifications estimate the effect to be negative and far from significant – the specification without origin country controls (model 9), predicts it to be positive and significant at a one percent level. The latter would be in line with the existing evidence from Dreger, Schüler-Zhou & Schüller's (2015). This means that without isolating for the effect that arrives from origin country factors, there is support for my hypothesis. However, when taking origin country characteristics into account, the effect disappears. The same conclusion with no significant effects of market concentration on strategic asset-seeking investments, was drawn by Cui et al. (2014). Additionally, it is interesting to note that the 'general' effect of increased concentration rate is positive and significant. The effect is robust, being significant at a one percent level in all but model (7), (12), and (14) – two of which exclude sector controls. Thus, it seems like the assertion of the mechanism itself holds.

The picture is a bit more ambiguous for the market power hypothesis, where most of my specifications estimate a positive and significant effect. Out of my 16 models, the estimated coefficient in question is significant at a one percent level in four (3, 6, 10, 13), at a five percent level in an additional four (5, 7, 11, 14), and at a ten percent level in another five (1, 8, 9, 15, 16). Yet, one cannot automatically conclude that the market power hypothesis is supported. Although half the specifications suggest the effect to be positive and significant at the required confidence level, my main model do not. And after all, there is a reason why it is the main model – namely that I believe it to be the most appropriate specification. Also, here it should be kept some attention to the positive and significant general effect of increased market power. This effect seems very robust, being significant at a one percent level in all of my specifications.

Furthermore, one cannot make conclusions on the effect simply based on whether the coefficients are estimated to be significant. For the market concentration hypothesis for instance, it is relevant to discuss factors that may limit the generalizability of the findings. As mentioned in Chapter 5, despite it being viewed by many as the best available source on firm data, Orbis has its flaws. First and foremost, its coverage of small firms is far from perfect. As that is likely to be the case also for my study, this may impact the HHI-scores. Although I do not have any information that suggest this being biased either towards or against my hypothesis, it still weakens the validity of my study. The very same argument can be used for the market

power hypothesis. Under-coverage of small firms is not problematic if the under-coverage is fully randomized, as sample size is not an issue. However, if it differs within other characteristics the results may be affected. Thus, cannot claim that the effects are unbiased.

8.4 Critical infrastructure sectors

Foreign investments in critical infrastructure have received attention and skepticism in Europe. Part of the reason is likely that the host economy is more vulnerable when the targeted firm is part of important societal functions or public order. Despite there being innumerous examples of allegations of China targeting critical infrastructure, mostly based on anecdotal evidence, there are to my knowledge no available empirical studies using large firm-level data. In line with the hypothesis, my findings support the belief that Chinese investments are larger in firms in critical infrastructure sectors. In fact, 12 out of the 16 model specifications, including my main model, estimate the effect to be positive and significant at a one percent level. Furthermore, two additional models find the effect to be significant and positive at a five percent level. Only one of the 16 specifications do not reach the ten percent significance level. Thus, this hypothesis is the most robust in my study. Interestingly, the general effect of the firm being in a critical infrastructure sector for all of the non-European investments seems absent. Out of the 16 specifications, only one reach the five percent level – with one more at the ten percent level. Out of the six hypotheses, this is the only one that is supported for China, while there is no general effect of the mechanism. The "China specific" characteristic of this hypothesis is interesting – as it may suggest that this could be a motivation that distinguish Chinese investors from others. The potential 'inherently different motives' claim is the building-block in most of the allegations about Chinese investments as a geoeconomic tool.

However, before making the conclusion above, there are certain issues that need to be discussed. In addition to the general problems of representativity, external validity etc., which are common concerns for all variables, the main issue with the variable in question, is the definition of criticality. As debated in the methodology chapter, the most convincing would be to individually evaluate whether each and every firm is part of critical infrastructure, based on which assets they hold and functions they deliver. To make it even more precise, one should allow for only parts of a given firm's activity to be within critical societal functions. Given the available information, these firm-level assessments are not possible. The only realistic approach is to base the definition of criticality on the firm's main sectoral classification. Thus, the problem for me has been to determine a clear-cut list of which sectors or functions that should be included as critical. As it is beyond the scope of my study to examine and discuss this in detail, I have made a rough sectoral definition. This procedure was two-folded: (1) which areas

should be included, and (2) within each area, what functions are regarded as critical. For the first question I have been somewhat on the "inclusive" side of the scale, including more sectors than the average of the countries on Table 16. In this way, I am closer to the definition used in the UK, France, and Norway. For the second question however, I have been more conservative. As mentioned in Section 6.4, I end up with 181 of the 615 NACE level-4 sectors being defined as within critical infrastructure. Although it is far from objective and perfect, I find it to be a good assessment of critical infrastructure, based on the descriptions and definitions used by several of the European destination countries themselves. Further, I am not aware of any bias in the definition that should impact the results. I have run the models with one alternative list of critical sectors, excluding production and manufacturing of beverages, without any noticeable changes.

A final problem is that all the firms' sector classifications is based on their main industry code. This neglects the chance that firms may have a significant share of its business outside the main sector. This could lead to a firm being classified as having more business in a critical sector than it actually does – and oppositely, it could have some business in a critical sector without it being caught by my dataset. As previously, I am not aware of any bias caused by this.

8.5 Geoeconomic determinants overall

To summarize, I find strong support for the critical infrastructure (H6) and majority ownership (H1) hypotheses, with both being robust to alterations in the specification. The critical infrastructure hypothesis is significant and positive in my main model and in almost all the robustness specifications. The majority ownership hypothesis is supported by the Chinese investments being relatively more heavily located in firms with a controlling interest compared to the weighted and un-weighted average of all other non-European firms. This is also the case both for the asset-based and the turnover-based investment tie. In addition, for the alternative specification of my main model where I include the variables addressing the majority ownership hypothesis, I find the coefficient to be positive and significant at a five percent significance level. This estimate is highly robust to changed specifications. Next, although non-conclusive, the estimators of the variables corresponding to the technology (H2) and market power (H4) hypotheses are quite robust. In my main model, the coefficient used for the technology hypothesis is estimated to be negative at a ten percent level, while the one for the market power hypothesis is positive at the ten percent level. In several of my robustness specifications they are even more significant. Some variations in confidence levels between different specifications should not come as a surprise when running several models. It is also reassuring that the models never estimate opposite effects that are significant. I have not found support for the two

remaining hypotheses. The relevant estimated coefficients are not significant in the main model, and they seem sensitive to small alterations in clustering technique, the estimation method used, and control variables included.

Another question is whether the significant effects can be considered meaningful. In other words, are the size of the effects of *economic* significance? Often, it is possible to conduct formal methods for measuring the common effect size – with Cohen's D as most used (Cohen, 1988).[26] In this situation, this type of formal test is not applicable. First, as it does not work with the investment strategy measure. Second, as it is too unreliable when the variables of interest are interacted with the same dummy as the group used for comparing the effect size. Thus, one must rely on more informal considerations. To start with the majority interest hypothesis, this study found that China had 8 (asset-based) and 18 (turnover-based) percentage points more of their investments in firms where they have majority ownership compared to the unweighted world average. When compared to the weighted world average the same numbers were 16 and 29. Considering the large numbers of investments, I argue that this is a considerable difference – and enough to be regarded as meaningful. Similarly, the precise effect for the China and majority ownership interaction (corresponding to H1) in the robustness model was an additional 33 percent. This implies that the interaction being present increases the size of a given investment by a third – which I will consider a highly meaningful effect. The same exercise can be done for the precise effect of the critical infrastructure coefficient, that was found to be 93 percent in the main model. This means that the additional effect of Chinese owners in critical infrastructure corresponds to almost a doubling in the size of the investment. I view this to be meaningful both on an individual and aggregate level.

So, with the discussion above in mind, I want to take a step back and discuss how the hypotheses help answer the overall research question of whether *potential geoeconomic factors are stronger determinants for Chinese foreign investments to Europe than for investments from other non-European countries.* As I have been transparent about, it will not be possible to assert any direct cause-effect links between the geoeconomic intentions of a country and the location choice of their investments. Consequently, the support of the majority ownership and critical infrastructure hypotheses is not enough to prove that geoeconomic factors are stronger determinants for Chinese foreign investments than for other investors. However, my results confirm that there seem to be certain differences in some investment characteristics, which are

[26] $Cohen's\ d = \frac{ME_1 - ME_2}{SD_{1,2}}$, where ME_i is the mean effect on group i and $SD_{1,2}$ is the standard deviation of the pooled sample, where scores above about 1 is considered large (meaningful).

consistent with geoeconomic motives. Thus, the findings imply that the investments potentially are motivated by geoeconomics.

Although the findings suggest that there are differences in some of the characteristics which could imply geoeconomic motives, it is not possible to confidently link these characteristics to geoeconomic intentions. There are several alternative explanations for why these characteristics may be stronger for China than for other non-European investors. For example, Chinese investors may be more risk averse. If so, investing in critical infrastructure, which likely have more 'stabile' market conditions, may be a way of reducing investment risk. Second, it may be that these characteristics really is explained by Chinese owners investing in firms that are similar to what they are used to. For example, Chinese owners may be more used to operating in concentrated markets, in firms with large market shares, or where they have a majority of the votes. If Chinese owners have less experience with publicly listed companies (where they only have a small share of the voting power) in highly competitive markets, they may be less willing to invest in those companies in Europe. Similarly, it may be that Chinese owners are more used to operating in markets where there are close connections to the government, compared to other non-European investors. This is likely to be the case in critical infrastructure sectors in Europe. Thus, Chinese owners may be more willing to invest despite the presence of government regulations than other investors are. In other words, although I have found significant differences in characteristics of the investments, other non-geoeconomic explanations cannot be ruled out.

Contribution

The results of this study are only causal and generalizable under several, strict methodological terms and conditions. Some of these limitations are already discussed, and some will be covered in the end of this chapter. Despite of there being limitations, I will argue that my study contributes to expanding our understanding of location choice determinants of extra-European investments. First, I expand the study of Babic et al. (2019) from only looking at state-owned foreign investments to all investments – including those from private investors. Despite the largely increased sample size, it is interesting that there are relatively small differences in the investment strategies. This could suggest that there is some sort of coordination between the government and the private foreign investments – although the direction of influence is uncertain. Next, some of my hypotheses have previously only been studied using aggregated data. Therefore, my study adds to the literature by investigating those hypotheses using a more disaggregated and higher-quality data source. This is particularly important for China, as their

official and aggregated FDI data is shown to be biased – especially due to Chinese investments to Hong Kong being defined as foreign (Anderson, Sutherland, Fan, & Yangyang, 2020).

Another contribution of my study, which I consider the main contribution, is the methodological aspects. There are often a lot of skepticism about investments from certain non-European countries, such as China, Russia, and the Gulf-countries. Despite the claims that these countries use investments to champion national strategic (geopolitical) objectives are fairly accepted, there are surprisingly little evidence of geoeconomic use of investments. Most examples tend to be from qualitative studies, often examining a very limited number of cases. Quantitative empirical studies of geoeconomic determinants are however a relatively uncharted territory. The reason is likely because it is difficult to find convincing hypotheses and measures of national strategic ambitions. I do not think I have solved these issues - far from it. Still, I think my study, more precisely my hypotheses and my proxies for those measures, may be a very small step forward in the right direction. There is however a long and winding road left, and the field needs more work before anyone convincingly can allege causal and conclusive results.

Limitations to internal and external validity

In order to reach the conclusive inferences, there are two main issues that arise: internal and external validity. Internal validity refers to what extent a study can establish a reliable causation between the explaining factor and the outcome. In my study, that would mean that the motive in the hypotheses is directly impacting the size of the investment. External validity regards whether the findings are expected to be predicative outside the current context. More specifically, whether I would expect my findings to be replicated for another or a larger population. The two criteria often contradict each other and must be balanced: the more specific and 'controlled' a study is, the more internally valid it is likely to be, but at the same time, it will be more difficult to believe that the results will be generalizable. So, can I confidently claim internal and external validity? The short answer is no. In this sub-section, I will go through some of the general issues that are not specific to any of the hypotheses.

An issue that is easy to neglect, is the 'postdiction trap' or 'hypothesizing after results are known' (HARK). The problem is possible hindsight bias, where one first gathers some results, and then end up explaining them using the results that was found. Similarly, it is easy to fall into the confirmation bias, which could arise from modifying the method to what validated my hypotheses. I have attempted to prevent this by developing the hypotheses and method before even starting to analyze the data and results. In this way, I have tried to make the most correct choices of measures, methods, and procedures, without knowing how it would impact my findings. Still, some adjustments are always needed during the analysis process. For me, this

includes choosing the clustering level, the estimation method, and the control variables. These variations are included as part of the robustness analysis. Still, I strongly committed myself to pre-determined hypotheses and variables of interest before going into in-depth analysis. This approach can be described as a 'Ulysses pact'.

An opposite issue that must be considered is that I formulated the hypotheses for the expectation that they are relevant for China. Consequently, it would not really be a surprise to find that some of the hypotheses were to be confirmed. I believe that formulating several and diverse hypotheses helps reduce some of this problem. In addition, I have formulated my hypotheses based on what is a common view among politicians, academics, or governments – while my methods are developed on the basis of previous studies. Although the problem is not gone, my study is after all aimed to examine whether some of the most wide-spread views of Chinese investments are supported. The problem of postdiction and confirmation bias would be more troublesome if I only studied a narrow China-specific hypothesis and used it in a comparative analysis. In this way, I would likely find that China indeed is "worse" than the other comparable countries – which should not be a surprise given that the hypothesis was developed specifically for China. By including several hypotheses, I can look into a larger specter of motives, which could reduce some of the issue of "China specificity".

Furthermore, I want to rise the problem of multiple hypothesis testing – a form of p-hacking. This arrives as I test six hypotheses under several model specifications. The more hypotheses that one test, the higher is the chance that some of them, by pure randomness will end up significant, even if no actual effect exists. With a five percent significance level, it is by randomness alone, expect that one in every 20 cases are significant, even if there is no actual effect. This is often described as a type 1 error, where a false positive is accepted. The problem is by no means specific to my study. Most of the studies in my empirical review investigate multiple hypotheses. For example, the cornerstone study by Buckley et al. (2007) had twelve hypotheses, in addition to several variations within some of the hypotheses. Nevertheless, I have implemented a few solutions to reduce the problem. First, I decided early that my conclusion should be based on my main model specifications – and that the additional models were only meant for robustness checking. Second, I chose measures and hypotheses before running the final model – and limited the number of specifications. For the latter, I decided not to run models with other proxies for the hypotheses (such as concentration rates or patents) or other measures of investment. Studies using several versions of each hypothesis will further increase the chance of committing a type 1 error. Additionally, it is possible to adjust the significance level to the number of hypotheses, such as with the Bonferroni correction. For

transparency and simplicity reasons, I have opted not to. This does however mean that one must be aware of the implications of including several hypotheses.

Next, I want to briefly go back to discussing the omitted-variable bias, which is a well-known problem that I. In short, the problem refers to situations where some of the factors that cannot be controlled for, correlate with some of the variables of interest. If one considers how investments really work, there are two factors that seems particularly problematic. First, investments are not a one-time happening, and even if the ownership-decisions are dynamic, they are likely to be lagging. This is some of the idea behind path dependency theories. The simple notion is that the behavior today is influenced by historical factors, and thus something that should be controlled for. For example, whether some investors have former ties to the target firms, countries, sectors etc. One of the ways to control for this could be to include dummies for common language, shared historical ties, or the number of existing owners from the country of origin in the destination country. This is done in a minority of the studies I have used for inspiration. By the same logic, one should also try to control for 'firm path dependency'. By that I refer to the history of owning the target firm itself may influence. For instance, it may be the case that an investor keeps the ownership in a firm, even if they would not have invested in it today (had the investment historically not taken place). More specifically, that would be to control for changes that has happened since the ownership occurred. This would allow for studying the characteristics at the time of the investment, and not the effect of ownership. Some of these problems are reduced by clustering, which takes care of the serial correlation.

The second factor I want to highlight is further variables for market-seeking motives and some evaluation of future value. The former is regarded as important in almost all studies I have found, and thus something that should be controlled for. The very best would be to include the actual current value of the firm. As this is not possible, I have included variables for profitability, return on assets, and firm size. To include variables for future value follows the intuition that investments normally are not based on the current value today, but rather what the investor thinks the firm may be worth in the future. There is no simple way of including this – but it could help including variables on trend or growth.

What would suggest internal and external validity?

I have now argued why it is not possible to trustworthily claim that the findings are conclusive, causal, or generalizable. However, there are several features of my study that makes such claims more reliable than would otherwise be the case. One can start by reflecting upon what speaks for the results being internally valid. First, I have included control variables for most of the well-established location choice determinants. In this way, I reduce the unexplained part of the econometric model – which again reduces the chances of omitted variable bias. Next, I estimate

the coefficients the using random effect estimation – which removes some of the time invariant unobserved heterogeneity at the investor-target firm level. Furthermore, I have implemented a log-transformation, which helps reduce outliers and increase the normality. Additionally, I have used clustered standard errors, which further protects against heteroskedasticity and serial correlation within and between target firms in the same industry and destination country. Finally, my dataset is of better quality and more disaggregated than most previous studies, which should improve the precision of the results. Despite all these features, and without any clear indication of biases, I still cannot claim causality.

The next step is to regard the arguments supporting the generalizability of the findings. Whether the results are likely to be replicated if the study was expanded to another sample will likely depend on what one considers as the population. Would I expect the same results in a study using a larger sample of inward FDI to Europe from non-European investors? For that I would say: "likely, yes". The main reason being the sheer size of the dataset the results are based on, covering a large share of the European firms. If the population however is considered to be intra-European investments or investments to other destinations than Europe, I find it highly unlikely that the results are predicative. The simple reason is that there are probably other reasons for wanting to invest in Europe compared to investing in other places. For example, for African countries natural resources may be more important, while developing Asian countries could provide efficiency reasons (such as cheaper labor). These differences are supported both by the well-established business theory and in empirical studies. Consequently, my findings are not predicative for other than extra-European investments. On the other hand, Chinese investments to North America could likely be more comparable to Europe. The results could therefore have some generalizability outside of my sample.

9. Conclusion

In this study, I examine potential geoeconomic determinants for the location choice of investments to Europe coming from non-European countries. More specifically, I examine whether certain investment characteristics that could suggest geoeconomic intentions seem stronger associated with Chinese investments than for other extra-European investments. The backdrop of this research question is the growing skepticism in the Western world against foreign investments. Particularly China has gained the spotlight, with their outward FDI growing rapidly for years, including a tripling in the past decade. Although the claims are broad, most of the accusers would subscribe to the idea that the investments are not fully commercially driven. The views are not only held by nationalists or protectionists – also politicians, academics, governmental bodies, and security organizations have been jumping on the bandwagon of skepticism. On the other hand, others call it *"broad speculation"* based on *"widely spreading anecdotal evidence"* (Duanmu, 2012, p. 67).

In order to shed some light on my research question, I formulate six hypotheses, which I use as proxies for geoeconomic motives. These include majority ownership, technology assets, market power, highly concentrated markets, and critical infrastructure sectors. These hypotheses are based on theories of geoeconomics or economic statecraft. Although these fields are relatively new, the theoretical mechanisms are well-founded. However, there are numerous things driving investments. To cover both the geoeconomic perspective and the commercially-driven views of investments – I also provide a detailed framework from the motive-based business and economics theories. Despite well-established theories of motives for investments, determining what drives a given investment is difficult. Even more so when aggregating all investments from each country. Therefore, trying to define what the investment strategy of a country is will, at best, be highly speculative – no matter how sophisticated the methods and dataset are.

In my thesis I combine two methods to test what is referred to as the intensive margin of investments. First, for the majority ownership hypothesis, I use the investment strategies created by Babic, Garcia-Bernardo & Heemskerk (2019). By aggregating all the investment-ties from each country, they compare the shares of each country's investments located in FPI, in minority FDI, and in majority FDI. Ranking countries according to similar measures, I find that China has a relatively large degree of majority FDI, which to some extent support the hypothesis about Chinese investments being driven by controlling interest. Second, for the rest of the hypotheses I have developed an econometric model. In this model, I use the asset-based investment tie as a measure of the investment size. Furthermore, I include several independent variables of interest addressing the different potential geoeconomic motives. These are interacted with a

dummy for China, to test whether China seems more driven by certain motives than other non-European investors are. In addition, I add control variables that are meant to isolate for other factors that are known or highly expected to impact the location choice. I estimate this using a linear random effects model. Moreover, I develop an alternative specification for robustness testing where the variables addressing the majority ownership hypothesis are included.

Using this dual-method, and with all the terms and conditions discussed in my thesis, there seems to be certain differences in some investment characteristics that potentially could imply geoeconomic motives. More specifically, my study supports Chinese investments being stronger associated to firms where they hold a controlling interest and to firms in critical infrastructure sectors – compared to other non-European investors. Furthermore, I find partial, although non-conclusive, support for market power being more important for Chinese investors than for others. Oppositely, the technology hypothesis is rejected; with my results even suggesting that intangible assets are less important for Chinese investors. This is somewhat surprising, as the view of Chinese investments as technology-seeking is among the most endorsed. For the two remaining hypotheses the results are not even close to significant.

Even if I find support for some of the hypotheses, this cannot be taken as definitive evidence of Chinese investments being part of a larger geoeconomic strategy. Theoretically, there are too many alternative explanations for what drives investments. Empirically, there are unavoidable issues with endogeneity. The latter arises from likely omitted variable bias, and potential simultaneity and reverse causality. That being said, I have implemented several steps to reduce the biases. Most importantly, the random effect method accounts for unobservable effects. In addition, I have done extensive robustness checks. Although there are some variations in the results, overall, the results are fairly robust – which is reassuring. I therefore believe that the findings demonstrate interesting patterns of Chinese foreign investments in Europe. Some of which have not been shown before. Even though my findings do not provide unambiguous evidence of certain geoeconomic motives playing a role, they are consistent with it.

I will also argue that my study may enhance our understanding of the field. Fist, most of the quantitative studies examining geoeconomic motives have used official and aggregated data. These are found to be highly biased, especially for China. My study explores the same questions, using a larger dataset of better quality. Therefore, although not conclusive, the findings are interesting. Second, there has long been methodical struggles for examining these questions. Although my study is far from perfect and may have issues with internal and external validity, I think it makes a small step on the long and winding way forward in the process of answering these questions.

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Appendix:

A. Development in aggregated foreign investments

Aggregate data on foreign direct investments has been available for quite some years. While aggregated data is useful for certain purposes, it also has some clear limitations. In this section of the Appendix, I will demonstrate some of the things aggregated data can be used for. I will start with information on the recipients of foreign direct investments, before detailing the senders. The main purpose for using official and aggregated data is to gain an understanding of the overall trends in cross-border investments. That is, examining to what extent different countries are involved in the globalized world economy, which countries are net sender or net receivers, the types of goods and services that are traded etc. In addition, it can be useful as a benchmark on how much of the total investments that firm-level data manage to capture.

Receivers of foreign direct investments

Using data from the United Nations Conference on Trade and Development (UNCTAD, 2020), Figure 3 displays the aggregated inward positions of FDI between 2010 and 2019 in billion USD, by each region of the world.[27] As can be seen, Europe is the largest receiver, followed by North America and Asia.[28] On the other side of the scale, Africa and Oceania receive the least FDI. Further, one can see that Europe, North America, and Asia are also the regions where the investments liabilities have increased the most in the past ten years. For these figures, intra-continental investments between countries within the same region do count as FDI.

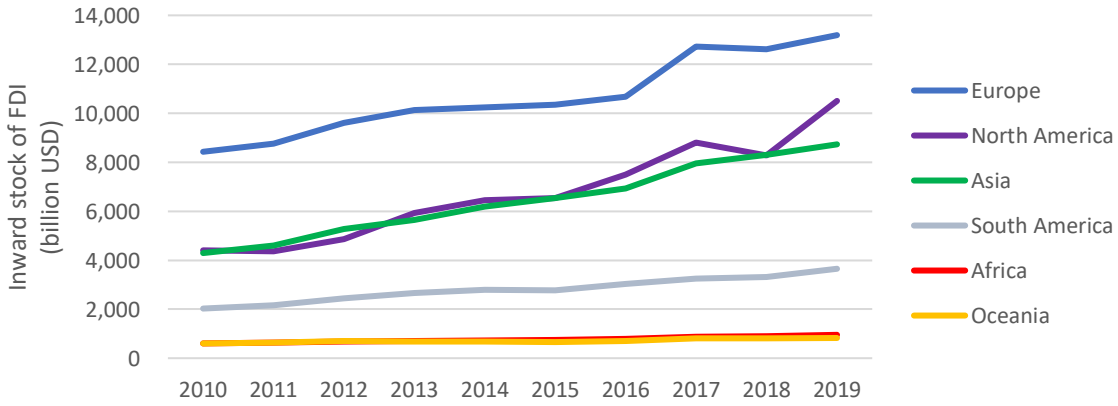

Figure 3 Inward stock of foreign direct investment in billion USD, divided into each world region (UNCTAD, 2020).

Next, as my research topic is about inward investments to Europe, it may be useful to take a look at the trends for each country in my sample, which can be found in Table 10.[29] As can be seen, the largest receivers in Europe are the United Kingdom, the Netherlands, Switzerland,

[27] As UNCTAD publish their numbers divided on developing and developed countries – I have used definitions of continents according to Our World in Data: https://ourworldindata.org/grapher/continents-according-to-our-world-in-data?overlay=data
[28] Here intra-regional investments between actors inside the regions is also included
[29] Note that Liechtenstein is not reported by UNCTAD, Eurostat, nor OECD – and is therefore not in the table.

and Ireland. In 2019, investments to the European countries in my dataset covered 12.6 of the 13.2 trillion US dollars that went into all of Europe.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Austria	161	153	165	179	176	160	151	196	202	206
Belgium	473	484	562	625	556	549	534	602	556	566
Bulgaria	45.0	45.7	48.6	50.3	45.5	43.5	43.0	51.0	50.4	51.9
Croatia	32.2	29.0	30.1	30.4	29.5	24.4	24.7	28.7	27.9	29.9
Cyprus	260	283	350	386	385	388	389	437	428	445
Czech Republic	129	121	136	134	122	117	122	156	164	171
Denmark	96.1	98.1	97.9	93.9	95.8	92.0	99.4	117	107	106
Estonia	15.6	16.3	18.9	22.0	20.9	18.9	19.7	23.9	24.8	27.5
Finland	86.7	89.2	96.6	88.8	93.1	81.7	79.9	90.0	71.5	78.4
France	631	699	680	761	700	687	695	819	821	869
Germany	956	998	1 077	968	860	782	795	963	934	953
Greece	35.0	29.1	24.8	25.8	21.6	24.1	24.6	33.4	34.9	40.5
Hungary	91.0	85.6	104	109	100	86.3	82.7	93.6	95.8	97.8
Iceland	11.8	12.7	10.4	7.4	7.9	7.9	9.8	10.1	8.9	8.7
Ireland	286	290	383	415	430	890	841	1 058	1 000	1 120
Italy	328	355	375	365	353	340	353	425	428	446
Latvia	10.9	12.1	13.5	15.9	15.1	14.7	14.3	17.5	17.4	17.9
Lithuania	15.3	16.0	17.6	19.3	16.7	15.8	16.0	19.6	19.5	20.4
Luxembourg	172	226	158	164	229	201	202	189	154	128
Malta	130	146	166	184	173	167	172	206	206	206
Netherlands	588	611	663	779	1 453	1 399	1 411	1 693	1 685	1 750
Norway	177	179	212	193	166	150	149	148	145	167
Poland	188	164	199	232	211	186	189	238	229	237
Portugal	121	111	123	150	140	137	134	165	154	162
Romania	68.7	69.5	76.3	83.6	75.3	70.4	74.6	91.0	92.9	97.1
Slovakia	50.3	52.0	55.1	58.0	49.7	46.0	47.6	59.5	57.1	59.8
Slovenia	10.7	11.5	12.2	12.3	12.4	12.6	13.7	16.7	17.3	18.1
Spain	628	629	592	649	597	562	591	702	736	752
Sweden	353	358	382	396	324	317	317	368	344	340
Switzerland	648	721	781	822	813	890	1 122	1 353	1 355	1 351
United Kingdom	1 068	1 158	1 440	1 513	1 582	1 531	1 461	1 806	1 930	2 075
Total	7 866	8 251	9 052	9 531	9 853	9 990	10 176	12 176	12 098	12 596

Table 10 Inward FDI stock in selected European countries, from 2010 to 2019, in billion USD. Source: (UNCTAD, 2020).

Senders of foreign direct investments

Similarly as above, one can take a look at outward foreign direct investments, by each region of the world. As is illustrated on Figure 4, Europe is also the largest sender of FDI, with North America and Asia following. Noticeable is also that cross-border FDI from the three regions have increased over the past decade – with the largest increase Asia. The investments from South (and Latin) America, Africa and Oceania are relatively minor in the larger picture.

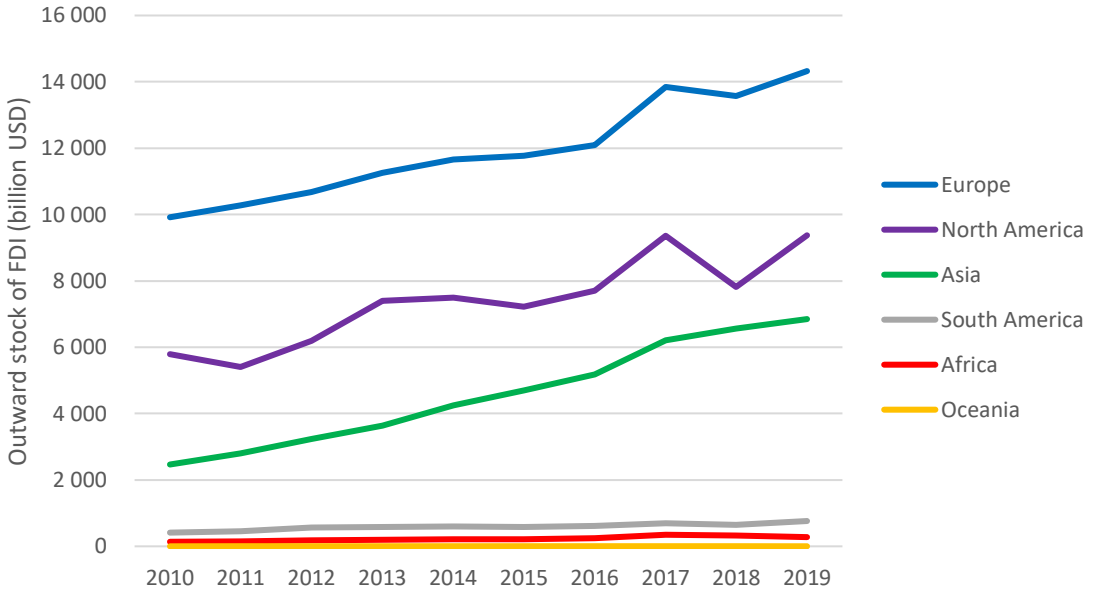

Figure 4 Outward stock of foreign direct investment in billion USD, divided into each world region (UNCTAD, 2020).

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
United States	4810 32%	4514 29%	5223 32%	6254 37%	6320 36%	6059 33%	6412 34%	7829 40%	6453 31%	7722 36%
China	1453 23%	1662 21%	1925 22%	2172 22%	2633 24%	2935 26%	3215 28%	3947 31%	4166 29%	4259 29%
Japan	831 15%	956 16%	1038 17%	1118 22%	1152 24%	1229 28%	1315 27%	1498 31%	1567 32%	1818 36%
Canada	984 61%	892 50%	972 53%	1150 62%	1169 65%	1156 74%	1290 84%	1532 93%	1366 80%	1652 95%
Singapore	467 195%	502 180%	573 194%	623 202%	681 216%	740 240%	837 263%	1002 293%	1026 275%	1106 297%
British Virgin Islands	377 N/A	432 N/A	484 N/A	588 N/A	674 N/A	747 N/A	778 N/A	831 N/A	870 N/A	911 N/A
South Korea	144 13%	172 14%	203 16%	239 17%	261 18%	286 20%	310 21%	361 22%	405 23%	440 27%
Russia	336 22%	316 15%	333 15%	385 17%	333 16%	290 21%	343 27%	389 25%	347 21%	387 23%
Cayman Islands	75.2 1809%	82.7 1977%	84.7 1974%	105 2377%	128 2807%	204 4323%	213 4332%	221 4296%	226 4088%	233 N/A
Mexico	117 11%	113 10%	151 13%	144 11%	150 11%	145 12%	146 14%	175 15%	154 13%	230 18%
Brazil	149 7%	160 6%	204 8%	204 8%	210 9%	185 10%	203 11%	240 12%	208 11%	224 12%
South Africa	83.2 22%	97.1 23%	112 28%	129 62%	146 42%	155 49%	176 59%	277 79%	246 67%	208 59%
India	96.9 6%	110 6%	118 6%	120 6%	132 6%	139 7%	144 6%	155 6%	167 6%	179 6%
United Arab Emirates	55.6 19%	57.7 16%	60.3 16%	69.1 18%	80.8 20%	97.5 27%	110 31%	124 32%	140 33%	155 37%
Thailand	21.4 6%	37.7 10%	49.4 12%	58.3 14%	63.0 15%	70.4 18%	86.5 21%	110 24%	124 24%	137 25%

Table 11 Outward FDI from the 15 largest non-European countries from 2010 to 2019, in billion USD and as share of GDP. Source: UNCTAD (WIR2020 Annex table 4. FDI outward stock, by region and economy, 1990-2019) and the World Bank (NY.GDP.MKTP.CD). Note that the World Bank does not report the gross domestic product of the British Virgin Islands.

Disaggregating the data into country-level provides a clearer picture of which countries that accounts for the largest cross-border direct investments. In my assignment I focus on investments into Europe from countries outside of Europe. Therefore, in Table 11 I have listed the 15 largest non-European senders of FDI, for the period between 2010 and 2019. The most eye-catching may be that United States and China is by far the largest senders of FDI. Second,

it may be surprising that countries such as Singapore, the British Virgin Islands and the Cayman Islands are among the largest exporters of foreign direct investments. The reason is that these are tax havens and offshore financial centers, which are often used as pitstops for investors from other countries. This is particularly noticeable by the fact that Cayman Islands outward FDI is 40 times larger than its gross domestic product. Further, it can be seen that Chinese FDI has almost tripled over the past decade. This rise of cross-border investments has been labeled as remarkable (Knoerich & Miedtank, 2018). Also in Table 11, I provide outward FDI as share of the country's gross domestic product. This can be regarded as a measure of how much of a country's value creation that is exposed globally. For China, FDI as share of gross domestic product (GDP) has increased from 22 percent to 29, even with the GDP growing rapidly.

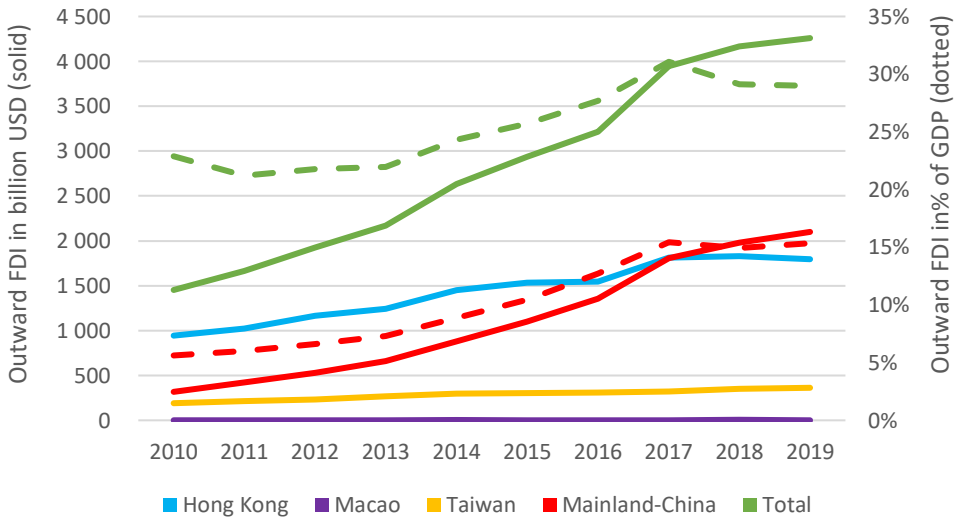

Figure 5 Outward FDI from Mainland-China, Hong Kong, Taiwan, Macao, and total for all regions, in billion current-USD, and the share of outward FDI as share of GDP for Mainland-China and total for all regions. Source: UNCTAD (WIR2020 Annex table 4. FDI outward stock, by region and economy, 1990-2019) and the World Bank (NY.GDP.MKTP.CD).[30]

As the country of interest in my thesis, I want to take a closer look at China. As mentioned, China's total outward stock of foreign direct investments has almost increased by the threefold over the past ten years. However, if splitting China's cross-border investments into that of Taiwan, Hong Kong, Macao and Mainland-China, a further pattern can be noticed. Ten years ago, a large majority of the FDI coming out of China was from Hong Kong, with only about 20 percent from Mainland-China.[31] Over the past decade, FDI from Mainland China has increased by 6.6 times, and is now the largest contributor. This development in aggregated assets of FDI in billion US dollars is illustrated in Figure 5, by the solid lines and the left axis. The figure also shows the trend in the 'intensity' of outward FDI as share of the GDP, shown by the dotted lines and indexed on the right axis. This intensity-figure is sometimes interpreted as a measure

[30] As the World Bank do not report the gross domestic product for Taiwan individually, I have used Statista to find Mainland-China's GDP. Source: www.statista.com/statistics/727589/gross-domestic-product-gdp-in-taiwan/

[31] UNCTAD separates China from Hong-Kong, Macau, and Taiwan. In Table 11, I have defined China as the sum as the three regions and mainland-China.

of how much foreign investments is 'prioritized'. The colors are the same for the dotted and solid lines for Mainland-China and in total for all of China. As a share of GDP, the outward FDI from Mainland-China has gone from 6 percent in 2010 to 15 percent in 2019. These numbers fit well with those published in the "FDI in figures" from October 2020 (OECD, 2020). Given that Mainland-China's assets of FDI has increased by 660 percent in ten years, one can note that the rise is mainly driven by the tripled 'prioritization'. Further it can be noted that Hong Kong has a stock of foreign FDI of about four to five times its GDP, suggesting it is used as a form of financial center for investment into and from China.

The limitations of using aggregated data

As demonstrated, aggregated information on cross-border investments can be a useful tool to analyze patterns and trends in globalization and economic integration. However, it also has some clear shortcomings. First, publicly available aggregate data of FDI has a low level of details. In my hunt for finding what drives FDI, I need at a minimum information on the amount of FDI received by each country, the amount sent by each country, the flows between countries, and in which industries those investments are going to. This level of detail is not publicly available for aggregated data, where most sources only provide at most two out of those components. In addition, it does not provide any more information on other financial or ownership characteristics. Another issue is that certain countries and sectors are often missing, due to confidentiality restrictions. Second, official and aggregate include data from one European country to another European country as a 'foreign' investment. This makes it less useful for my study of investments from outside of Europe into Europe. Third, when using aggregate numbers, variations in reporting standards is a great concern. These variations include which companies having to report, which investments that counts, and whether they should report according to historic or current value of the investments. As a result, there may be quite a different set of samples for the included countries – and it may therefore be hard to compare. Even with the initiatives to align the reporting between countries, and the creation of 'comparison tables', inter-country comparison is timely and only semi-reliable (IMF, 2003). Fourth, the existing international standards do not require companies to report information on the ultimate owner, including their citizenship. In OECD data, this is done on a voluntary basis, while Eurostat, IMF, and UNCTAD do not report information on the ultimate owner (EU Commission Staff, 2019, pp. 68-69). This is the very reason why countries such as Singapore, British Virgin Islands and the Cayman Island are among the largest investing countries in the world. This is a problem if there are any bias in which countries that are using financial centers – or in which investments that are facilitated through these pitstops. This problem has been particularly great for China, as their investments to Hong Kong often are regarded as foreign.

Data quality problems specifically for Chinese aggregated data

In addition to the general problems of aggregated data that is already discussed, there are certain challenges arising specifically when analyzing Chinese investments and ownership. The lion's share of empirical studies of Chinese outward investments uses official and aggregated FDI data. As discussed in the empirical literature in Section 3.3, the most used sources include Chinese governmental sources such as MOFCOM and SAFE – and intergovernmental bodies such as UNCTAD, OECD, and EUROSTAT. In addition to having its applicability limitations, with the use of official aggregated data some data quality challenges arise. According to Anderson et al. (2020), these problems are even more troublesome for Chinese investments and ownership. They claim that a weakness of empirical studies of the determinants of Chinese foreign investments, is the *"limited critical evaluation given to the way in which Chinese OFDI data is collected and employed*" (2020, p. 0). Similarly, Sutherland et al. (2020, p. 1) state this type of study "*suffers from serious shortcomings in its treatment and use of foreign investment data".* The main reason is indicated to be due to Chinese investors frequently using so-called 'special purpose entities/vehicles' in tax havens and offshore financial centers as a pitstop for their foreign investments. This view is also held by Fuest et al. (2019, p. 2), who states that "*Chinese acquirers appear to (…) conduct more deals in tax havens and offshore financial centers*". The two main justifications for why that is the case are 'round-tripping' and 'onward-journeying'. The first is when firms use a foreign holding-entity to invest in their own country, to be treated as a non-domestic firm to gain legislative advantages. This was particularly pertinent in China's early economic reforms, where there were strong incentives for foreign companies to invest in and operate in China. This incentive is slightly reduced after the tax rates for foreign and domestic firms were harmonized as part of the Enterprise Income Tax Law in 2008. However, the phenomenon of still exists, as Chinese companies may use it to circumvent the remaining unfavorable domestic regulations. The second is when investing in a third country, an entrepôt, to gain beneficial access or regulations to the target country (Anderson, Sutherland, Fan, & Yangyang, 2020; Aykut, Sanghi, & Kosmidou, 2017). For my studies the second, also known as 'capital in transit' or regulatory arbitrage, is the more relevant. One example is the Netherlands, that due to favorable regulations receive over 90 percent of its foreign investments from China, through special purpose entities. Also, Bermuda, the British Virgin Islands, Cayman Islands, Cyprus, Luxembourg, Singapore, and Switzerland are mentioned for similar reasons (Sutherland, Hennart, & Anderson, 2020). The use of financial pitstops is one of the main reasons why firm-level data is preferred over official and aggregated data. For China this is particularly a problem as Hong Kong is often labeled as an independent state, so that investments to and from Mainland China is regarded as foreign.

Even though there are some features of my dataset that reduce the problem, it is still something I must consider. In Orbis, most of the data is being reported by the European destination countries. As a result, there are no intentional information hold-back. Another step I have taken is to include 'total ownership', which provide information on the final or ultimate owner. This is more appropriate than using direct ownership only, which is very prone to being misled by holding firms in another country. In their suggestion of an alternate approach of measuring genuine foreign investments, Anderson et al. (2020) do suggest the use of firm-level data with global ultimate ownership as a way to reduce the bias. Similarly, Sutherland et al. (2020) use Orbis as a way to illustrating the flaws with using official data. However, the reliability of Orbis's shareholder country information is far from perfect. For example, a considerable share of the shareholders is not assigned a nationality – some of which can be found to be clearly linked to a country.[32] Consequently, this signifies itself in two ways. First, I have to be transparent about it being a potential problem in my database. Second, it may actually result in my database being more accurate than the statistics of the UNCTAD, World Bank, OECD, and IMF, who generally report only on direct ownership (Anderson, Sutherland, Fan, & Yangyang, 2020).

B. Theories of government influence

Foreign investments can be used both by government and by private investors. It seems straight forward to argue that state-led FDI is simpler to use for strategic purposes – due to the ease of coordination. Still, one can argue that private investments too can be a latent tool. Even if firm-specific drivers likely are the most important – the society and institutions around the firm may also matter. That seems even less far-fetched if the government has a high degree of influence over their citizens and firm. For that to happen, the state must be able to influence and control domestic commercial actors. China is one example, where it has been said that *"in Chinese foreign policy, the commercial and political aspects are often intertwined"* (Norris W. J., 2010, p. 248). This close relationship makes China an interesting case to study, especially from an empirical context to see whether the tight link on paper makes an impact in real life business investments. If the goals of the state and the private actor coincide, no governmental influence is needed. The crucial question is therefore not only whether, but also in which circumstances and to what degree, the Chinese government is able to encourage or force private firms and individuals to conduct a business decision that is not compatible with its own goals. The empirical study from Buckley et al. (2007) on Chinese outward FDI from 2007 found that

[32] These firms have identification codes starting with XX, YY, or ZZ, instead of the country's ISO code. In some circumstances it is possible to find which country the shareholder is from, when digging into its profile in Orbis. As there are thousands of these profiles, and most of them not containing definitive proof of nationality, I have chosen not to manually correcting them. This whole process is described in detail in Appendix G.

outward direct investments were significantly positively associated with governmental encouragement and liberalization policies in 1992. Although this is not surprising in itself, they interpret it as a sign that *"Chinese government policies have a significant influence"* on Chinese outward FDI (Buckley, et al., 2018, p. 22).

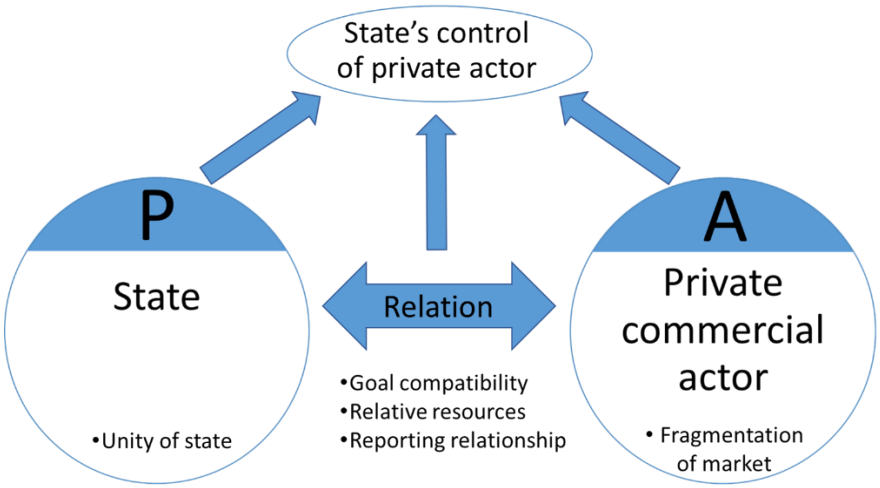

Figure 6 Model for the factors influencing the state's control of its domestic private commercial actors using principal-agent theory. The figure is based on figure 2 in Norris (2016).

To explain the degree to which private commercial actors is beholden to the Chinese government's influence, Norris (2010, p. 310) uses the well-developed principal-agent theories. These are based on the conflict between the principal and the actor that is authorized to act on their behalf, the agent. The mechanism is that the goals or aims of the principal and the actor may be incompatible. In this way, if the principal is not able to control or disclose the behavior of the agent, the agent may act in its own interest. Norris comes up with five factors to decide the effectiveness of governmental influence, as illustrated in Figure 6– with the state as the principal and the private commercial actor as the agent. The factors are also summarized in Table 12. With a political economy view, one may regard it as a model of potential factors that could influence the investments. For my assignment, the basic argument is that the state should be considered as an influencer.

(1) <u>Compatibility of goals between state and private actor</u>

The closer the objectives of the private actor are to that of the government, the more influence will the principal be able to exercise over its agent. In most cases, the private actor will have commercial interests – but it may not be purely driven my profits. A decisive factor is whether the goals of the principal and the agent are mutually exclusive.

(2) Commercial structure of the market

The more fragmented the market is, the more demanding it will be for the government to monitor, coordinate and enforce compliance. On the other hand, industries with high degree of market concentration, with few and large firms, may be easier to direct.

(3) Unity of the state

The more united the internal actors inside the government are, the more capacity it has to exercise power. These divisions may be inter-bureaucratic (between departments), between levels (centralized vs decentralized), and across factions (for example between hawks and doves in foreign policy). This follows an idea similar to Allison's bureaucratic politics model, where the governmental decisions are based on the relative balance of power inside the state (Allison & Halperin, 1972). For example, the Ministry of Commerce may want to liberalize markets as much as possible, while the Ministry of National Defense may want them more controlled. In this issue, the department with the larger relative power will have a stronger influence on the final decision.

(4) Relationship between state and private actor

The more direct the relationship of reporting between the state and the private actor is, the easier it will be for the principal to influence its agent. Norris points out three attributes of this relationship: the ownership arrangements, the management arrangements, and the financing structure. This idea seems obvious in the case where the state is the direct majority-owner of the private actor – also known as state-owned enterprises (SOEs). Then, the state can control important business decisions such as appointing the board or management of the firm. Similarly, if the state is the major financer, controlling the firm will be easier.

(5) Relative distribution of resources between the state and the private actor

The more capabilities the state has, compared to the private actor, the larger its scope in influencing its agent will be. The more endowments the state has – such as budgets, human resources, and experience with directing commercial activities – the easier it will find it to direct its domestic private actors. Contradictory to (2), a higher market concentration may make the agent relatively more resourceful – thus making them harder to influence.

Independent variable	Observable indicator	High value	Low value
Market structure	Number of firms, market share, pricing power	Highly competitive and many actors	Concentrated among few, large firms
Unity of state	Bureaucratic divides, personal factions, center-local tension	Fragmented	Unified
Reporting relationship	Government owner, state management, state funding	Nonexistent	Direct
Relative sources	Expertise / knowledge, budget endowments, personnel counts	Favors commercial actor	Favors state
Goal compatibility	Profit motive, state defines goals, mutual exclusivity of state and actor goals	Divergent	Convergent

Table 12 Determining value of factors that determine governmental influence. Source: Table A.1 in Norris (2016).

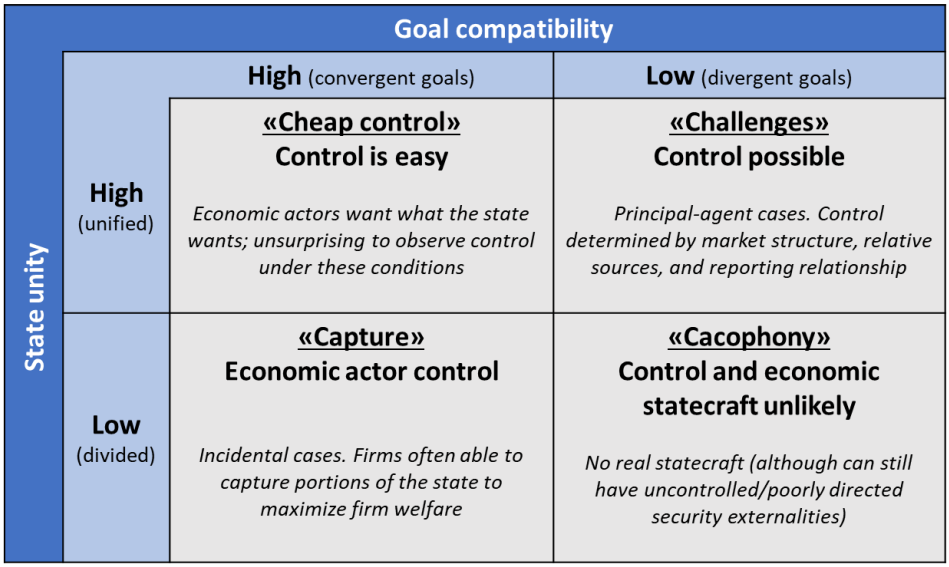

Figure 7 Categories of governmental influence on private actors, determined by the degree of goal compatibility and state unity. Source: Figure 2.4 and Figure 2.5 in Norris (2016).

These factors should however not be regarded individually. One way to consider the interconnectivity between the factors is by combining two scales. For example, one can create four categories within the combinations of goal compatibility and state unity, as illustrated on Figure 7. The governmental influence over private firms is strongest in the case of high state unity and high goal compatibility. This follows the logic that the agent itself share the views of the government. On the other hand, situations where there is low state unity and low goal compatibility – governmental influence is unlikely. A similar approach can be used to consider the combination of all the five factors. Therefore, to display the interconnectivity of all factors, one can use a decision tree, as shown on Figure 8.

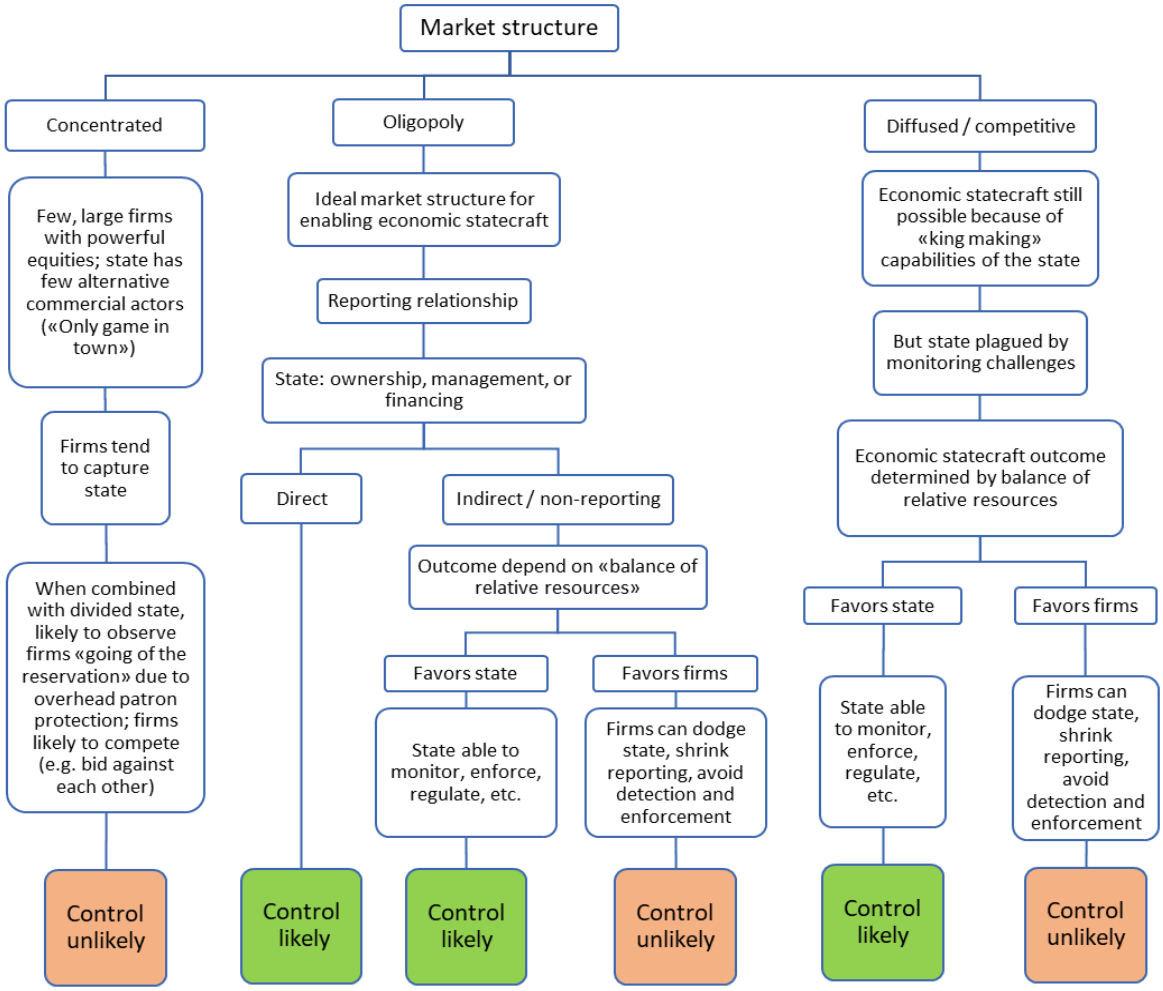

Figure 8 Economic statecraft decision tree, illustrating the factors deciding the government's likeliness to be able to exercise influence over its commercial actors. Source: Figure 2.3 in Norris (2016).

Other attempts at formalizing the factors influencing the degree of governmental control are theorized by Xie et al. (2017) and Deng (2009). The former highlights political environment, institutional and regulatory environment, and tax and taxation environment as three of the 7 main issues determining foreign investments. Deng suggests the role of government to be one of the four main sources in his institutional model for strategic assets acquisition. He states that *"Chinese firms are expected to respond to the government's development plan"* – and that *"various institutional constraints are prevalent and government endorsement is essential for cross-border M&A"* (Deng, 2009, p. 75).

C. List of studies in empirical review

In my empirical review, I have had access to and considered the studies in Table 13. I have focused on studies of the determinants of foreign investments, mainly from China to developed countries. The studies that I have been using explicitly have been referenced, while the rest have provided an overall view of what and how previous empirical studies have been conducted. Thus, some of them may have provided me with ideas on how to design my study, even if not referenced directly.

Author and year	Title
Buckley et al. (2007)	The determinants of Chinese outward foreign direct investment
Cheng & Ma (2007)	China's outward FDI: Past and Future
Chueng & Qian (2009)	Empirics of China's outward direct investment
Duanmu & Guney (2009)	A panel data analysis of locational determinants of Chinese and Indian outward foreign direct investment
Cheng & Ma (2010)	China's outward foreign direct investment
Brienen, Burger, & van Oort (2010)	The geography of Chinese and Indian Greenfield investments in Europe
Yuan & Pangarkar (2010)	Inertia versus mimicry in location choices by Chinese multinationals
Hurst (2011)	Comparative analysis of the determinants of China's state-owned outward direct investment in OECD and Non-OECD countries
Zhang & Daly (2011)	The determinants of China's Outward Foreign Direct Investment
Kolstad & Wiig (2012)	What determines Chinese outward FDI?
Cui & Jiang (2012)	State ownership effect on firms' FDI ownership decisions under institutional pressure: a study of Chinese outward-investing firms
Li, Li, & Shapiro (2012)	Knowledge seeking and outward FDI of emerging market firms: The moderating effect of inward FDI
Yang & Hyland (2012)	Similarity in cross-border mergers and acquisitions: Imitation, uncertainty and experience among Chinese firms, 1985-2006
Luo & Wang (2012)	Foreign direct investment strategies by developing country multinationals: a diagnostic model for home country effects
Ramasamy, Yeung, & Laforet (2012)	China's outward foreign direct investment: Location choice and firm ownership
De Buele & Duanmu (2012)	Locational determinants of internationalization: a firm-level analysis of Chinese and Indian acquisitions
De Buele & Van den Bulcke (2012)	Locational determinants of outward foreign direct investment: an analysis of Chinese and Indian greenfield investments
Duanmu (2012)	Firm heterogeneity and locational choice of Chinese multinational enterprises (MNEs)
Amighini, Rabellotti, & Sanfilippo (2012)	Do Chinese SOEs and private companies differ in their foreign location strategies?

Cui & Jiang (2012)	State ownership effects on firms' FDI ownership decisions under institutional pressure: a study of Chinese outward-investing firms
Amighini, Rabellotti, & Sanfilippo (2013)	China's Outward FDI: An Industry-level Analysis of Host Country Determinants
Nicholson & Salaber (2013)	The motives and performance of cross-border acquirers from emerging economies: Comparison between Chinese and Indian firms
Piscitello, Rabellotti, & Scalera (2014)	Chinese and Indian M&As in Europe: The relationship between motive and ownership choice
Cui, Meyer, & Hu (2014)	What drives firm's intent to seek strategic assets by foreign direct investments? A study of emerging economy firms
Duanmu (2014)	A race to lower standards? Labor standards and location choice of outward FDI from the BRIC countries
Dreger, Schüler-Zhou, & Schüller (2015)	Determinants of Chinese direct investments in the European Union
Tingley, Xu, & Milner al. (2015)	The political economy of inward FDI: Opposition to Chinese Mergers and acquisitions
Cozza, Rabellotti, & Sanfilippo (2015)	The Impact of Outward FDI on the performance of Chinese firms
Zhou & Guillén (2015)	From home country to home base: A dynamic approach to the liability of foreignness
Lo & Lin (2015)	Advantage transfer on location choice and subsidiary performance
Lien & Filatotchev (2015)	Ownership characteristic as determinants of FDI location decisions in emerging economies
Amendolagine, Cozza & Rabellotti (2015)	Chinese and Indian multinationals: A firm-level analysis of their investments in Europe
Blomkvist & Drogendijk (2016)	Chinese Outward Foreign direct investment in Europe
Jindra, Hassan, & Cantner (2016)	What does location choice reveal about the knowledge-seeking strategies of emerging market multinationals in the EU?
Yoo & Reimann (2017)	Internationalization of Developing Country Firms into Developed Countries: The Role of Host Country Knowledge-Based Assets and IPR Protection in FDI Location Choice
Elia & Santangelo (2017)	The evolution of strategic asset-seeking acquisitions by emerging market multinationals
Quer, Claver, & Rienda (2017)	Cultural distance, political risk and location decision of emerging-market multinationals: a comparison between Chinese and Indian firms
Perea & Stephenson (2017)	Outward FDI from developing countries
Gaur, Ma, & Ding (2018)	Home country supportiveness/unfavorableness and outward foreign direct investment from China
Fuest et al. (2019)	What drives Chinese Overseas M&A Investment? Evidence from micro data
Ramasamy & Yeung (2020)	China's outward foreign direct investment (OFDI) to developing countries: the case of Central and Eastern Europe (CEE)
Du, Mitkova, & Wang (2020)	The paths of internationalization of Chinese Innovative firms

Table 13 List of empirical studies I have used in my empirical review, sorted by the years of release. Full citations can be found in the References.

D. Definitions of critical infrastructure sectors

Country	Definition	Included sectors / functions	Source
Norway	**Vital societal functions:** "Critical infrastructure is the facilities and systems that are absolutely necessary to maintain the community's critical functions which again covers society's basic needs and the population sense of security"	- Governance and crisis management - Defence - Law and order - Health and care - Emergency services - ICT security - Nature and the environment - Security of supply (food & fuel) - Water and sanitation - Financial services - Power supply - Electronic communication network and services - Transport - Satellite-based services	(Norwegian Directorate for Civil Protection, 2017) (OECD, 2019)
Denmark	Critical societal functions	- Defence intelligence and security services - Energy - Exercise of authority - Finance - Fire and rescue services, police tasks, military assistance to civil authorities, etc. - Food - Health and social services - Information and communications technology - Transport - Water	Table 3.1 in (Retter, et al., 2020)
France	**Critical infrastructures**: "institutions, structures or facilities that provide the essential goods and services forming the backbone of French society and its way of life"	- Food - Water management - Health - Civilian activities - Legal activities - Military activities - Energy - Finance - Transport - Communication, technologies and broadcasting - Industry - Space & research	(Secretariat-General for National Defence and Security, 2017)
Sweden	**Vital societal functions and critical infrastructure:** "measures and activities that are required to ensure the functionality and continuity of (…) society as a whole"	- Energy supply - Financial services - Trade & industry - Health, medical and care services - Information and communication - Municipal technical services - Foodstuffs - Public administration (management & support functions) - Social security - Transport	(Swedish Civil Contingencies Agency, 2014)
Netherlands	**Critical processes:** "processes that could result in severe social disruption in the event of their failure or disruption"	- Energy - ICT/Telecom - Drinking water - Water - Transport - Chemistry - Nuclear - Financial - Public order and safety - Digital Government - Defence	(National Coordinator for Security and Counterterrorism, 2018)

Germany	**Critical infrastructure:** "organizational and physical structures and facilities of such vital importance to a nation's society and economy that their failure or degradation would result in sustained supply shortages, significant disruption of public safety and security, or other dramatic consequences"	- Power supply - Information and communications technology - Transport - Drinking water supply and sewage disposal - Public health / food - Emergency and rescue services, disaster control and management - Parliament, government, public administration, law enforcement - Finance / insurance business - Media and cultural objects	(German Ministry of the Interior, 2009)
United Kingdom	**Critical national infrastructure (CNI):** "certain 'critical' elements of infrastructure, the loss or compromise of which would have a major, detrimental impact on the availability or integrity of essential services, leading to severe economic or social consequences or to loss of life".	- Chemicals - Civil Nuclear [power] - Communications - Defence - Emergency Services - Energy - Finance - Food - Government - Health - Space - Transport - Water	(UK Intelligence and Security Committee, 2013)
United States	**Critical infrastructure sectors:** "assets, systems, and networks, whether physical or virtual, are considered so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, national public health or safety, or any combination thereof"	- Chemicals - Commercial Facilities - Communications - Critical Manufacturing - Dams - Defense Industrial Base - Emergency Services - Energy - Financial Services - Food and Agriculture - Government Facilities - Healthcare and Public Health - Information Technology - Nuclear Reactors, Materials, and Waste - Transportation Systems - Water and Wastewater systems	(US Cybersecurity and Infrastructure Security Agency, 2020)

Table 14 Overview of selected countries' definition of criticality and its critical sectors or functions – and the sources used. The definitions are from OECD's Survey on critical infrastructure (OECD, 2019).

Classification of critical infrastructures / vital societal functions

Based on the categories from the Norwegian Directorate for Civil Protection (2017) and the principles from the EU Commission (2019), I have defined the following NACE-sectors as part of critical infrastructure in Europe.

Critical infrastructure sector (CIS)	NACE-code and description
Governance & crisis management	84 - Public administration and defense
Defence	84 - Public administration and defence (especially 8422 – Defence activities)
Law and order	8423 - Justice and judicial activities 8424 - Public order and safety activities
Health and care	21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations 325 - Manufacture of medical and dental instruments and supplies 86 - Human health activities 87 - Residential care activities 4646 - Wholesale of pharmaceutical goods 4774 - Retail sail of medical and orthopaedic goods in specialised stores
Emergency services	84 - Public administration and defense (especially 8425 - Fire service activities)
ICT security in civil sector	63 - Information service activities (especially 631 - Data processing, hosting and related activities; web portals – and 6391 - News agency activities)
Nature and the environment	7219 - Other research and experimental development on natural sciences and engineering 3900 - Remediation activities and other waste management services
Security of supply (food supply and fuel supply)	01 - Crop and animal production, hunting and related service activities 03 - Fishing and aquaculture 10 - Manufacture of food products 11 - Manufacture of beverages 463 - Wholesale of food, beverages and tobacco 472 - Retail sale of food, beverages and tobacco in specialized stores 06 - Extraction of crude petroleum and natural gas 35 - Electricity, gas, steam and air conditioning supply 473 - Retail sale of automotive fuel in specialized stores
Water and sanitation	36 - Water collection, treatment and supply 37 – Sewerage 38 - Waste collection, treatment and disposal activities; materials recovery 39 - Remediation activities and other waste management services 422 - Construction of utility projects 432 - Electrical, plumbing and other construction installation activities
Financial services	641 - Monetary intermediation 661 - Activities auxiliary to financial services, except insurance and pension funding
Power supply	05 - Mining of coal and lignite 06 - Extraction of crude petroleum and natural gas 35 - Electricity, gas, steam and air conditioning supply 422 - Construction of utility projects 432 - Electrical, plumbing and other construction installation activities
Electronic communication	263 - Manufacture of communication equipment 61 - Telecommunications
Transport	302 - Manufacture of railway locomotives and rolling stock 303 - Manufacture of air and spacecraft and related machinery 304 - Manufacture of military fighting vehicles 3315 - Repair and maintenance of ships and boats 3316 - Repair and maintenance of aircraft and spacecraft 3317 - Repair and maintenance of other transport equipment 421 - Construction of roads and railways 49 - Land transport and transport via pipelines 50 - Water transport 51 - Air transport 52 - Warehousing and support activities for transportation 53 - Postal and courier activities
Satellite services	613 - Satellite telecommunications activities

Table 15 The classification of vital societal functions within each category – and the corresponding NACE-codes.

Sector	Austria	Belgium	Switzerland	Czech Republic	Germany	Spain	Estonia	Finland	France	United Kingdom	Greece	Ireland	Iceland	Italy	Latvia	Luxembourg	Netherlands	Norway	Poland	Portugal	Slovakia	Slovenia	Sweden	Total (out of 23)
Energy	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	23
Nuclear				■		■			■	■							■	■						6
ICT	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		■	■	■	22
Transport	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	22
Water	■	■	■	■	■	■	■	■	■	■					■	■	■	■	■		■			16
Dams & flood defence				■					■			■	■	■	■		■	■				■		9
Food supply and distribution	■		■	■	■	■		■	■	■						■		■	■				■	12
Health	■	■	■	■	■	■	■	■	■	■					■	■		■	■			■	■	16
Finance & banking	■	■	■	■	■	■	■	■	■	■					■	■	■	■	■			■	■	17
Government	■		■	■	■	■			■	■					■	■		■	■				■	12
Public safety	■		■	■	■	■				■					■	■	■	■					■	11
Law enforcement	■				■				■	■					■	■	■	■						8
Chemical industry	■		■			■		■	■	■					■	■	■	■	■			■		12
Space		■				■			■	■														4
Defence								■	■	■					■									4
Critical manufacturing								■	■									■						3
Other	■	■			■	■	■	■	■	■					■	■	■	■	■				■	14
Number of sectors included (out of 17)	12	8	10	11	11	13	6	11	16	15	3	4	4	4	13	12	11	15	10	2	4	7	9	

Table 16 List of sectors defined as critical by different European countries. The blue box indicates that the country includes the sector in their definition of critical sectors. Source: Annex 3.C in (OECD, 2019)

E. Descriptive statistics

E1. Chinese FDI to Europe by destination country

Destination country	Chinese FDIs (#)	Number Chinese FDIs of total (%)	Number Chinese FDIs of non-European (%)	Sum of Chinese FDI-turnover (bn. EUR)	Chinese FDI-turnover of total (%)	Chinese FDI-turnover of non-European (%)
Austria (AT)	51	0.80	7.50	4.3	1.37	6.01
Belgium (BE)	141	1.21	4.92	2.4	0.30	1.23
Bulgaria (BG)	164	1.17	4.04	0.1	0.13	1.03
Switzerland (CH)	10	4.03	10.87	28.4	15.47	26.11
Cyprus (CY)	5	0.95	1.91	0.2	0.74	1.19
Czech Republic (CZ)	425	1.31	3.35	7.8	1.66	15.08
Germany (DE)	616	2.95	11.12	26.8	1.74	5.26
Denmark (DK)	78	1.73	8.18	1.3	0.67	6.02
Estonia (EE)	24	0.39	2.71	0.2	0.86	10.20
Spain (ES)	202	0.98	6.51	4.2	0.48	2.96
Finland (FI)	357	4.43	16.31	2.1	1.43	10.15
France (FR)	796	2.72	8.19	9.6	0.76	3.82
United Kingdom (GB)	986	1.93	4.45	152.4	5.54	10.76
Greece (GR)	7	0.36	2.36	0.3	0.45	4.53
Croatia (HR)	57	0.72	3.31	0.1	0.15	2.07
Hungary (HU)	73	1.16	6.95	2.2	1.08	7.69
Ireland (IE)	122	1.68	4.38	3.2	0.53	0.98
Iceland (IS)	1	0.30	2.13	0.0	0.01	0.02
Italy (IT)	5 289	9.65	24.69	11.0	1.18	8.60
Liechtenstein (LI)	1	4.55	16.67	0.0	0.28	1.19
Lithuania (LT)	8	0.45	2.87	0.5	2.01	15.64
Luxembourg (LU)	109	1.01	4.29	0.5	0.13	0.28
Latvia (LV)	123	0.80	1.79	0.0	0.09	0.43
Malta (MT)	38	1.64	5.76	0.2	0.69	1.87
Netherlands (NL)	57	1.73	4.30	77.6	5.58	11.27
Norway (NO)	35	0.40	3.30	2.4	1.07	6.24
Poland (PL)	156	0.71	7.28	2.3	0.37	3.67
Portugal (PT)	187	1.41	7.87	4.5	2.29	20.38
Romania (RO)	2 470	4.07	15.89	1.3	0.49	4.68
Sweden (SE)	92	0.81	5.92	31.5	7.03	27.92
Slovenia (SI)	14	0.40	2.63	0.0	0.07	1.01
Slovakia (SK)	231	0.85	4.79	0.4	0.25	1.99
Total	**12 925**	**2.78**	**9.78**	**378.1**	**2.63**	**8.41**

Table 17 Overview of the number of direct investments and the total ownership-weighted turnover in Europe held by Chinese investors between 2017 and 2019 – in numbers and as a share of all FDIs and of all non-European owners.

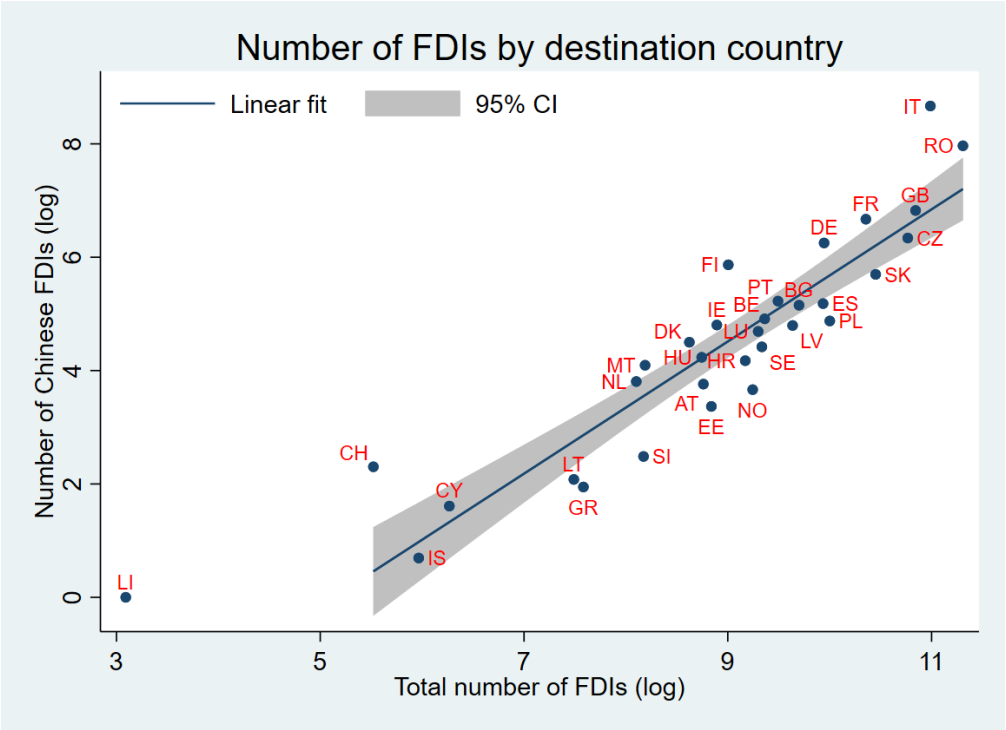

Figure 9 The X-axis shows the total number of FDIs held in each European country, while the Y-axis shows the number of FDIs held by Chinese owners. The line gives the linear fit between the total versus Chinese – and the gray area shows the 95 percent confidence interval of the linear fit. The letters refer to each country's ISO-code, as seen on the previous page.

E2. Chinese FDI to Europe by destination sector

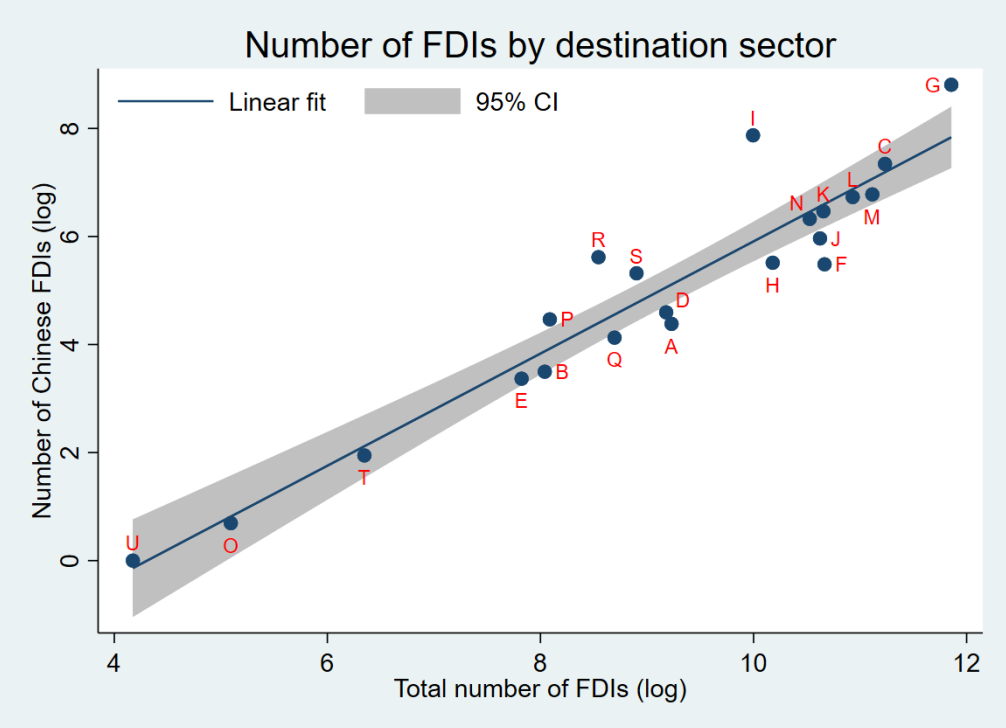

Figure 10 The X-axis shows the total number of FDIs held in each sector, while the Y-axis shows the number of FDIs held by Chinese owners. The line gives the linear fit between the total versus Chinese – and the gray area shows the 95 percent confidence interval of the linear fit. The letters refer to the first level NACE-codes, as seen on next page.

Destination industry classification (NACE level 1)	FDIs in Europe (#)	Non-European FDIs in Europe (#)	Chinese FDIs in Europe (#)	Chinese FDIs of total (%)	Chinese FDIs of non-European (%)
A - Agriculture, forestry and fishing	10 202	1 853	82	0.80	4.43
B - Mining and quarrying	3 104	955	33	1.06	3.46
C - Manufacturing	75 638	19 012	1 653	2.19	8.69
D - Electricity, gas, steam and air conditioning supply	9 700	844	104	1.07	12.32
E - Water supply; sewerage, waste management and remediation activities	2 497	450	30	1.20	6.67
F - Construction	42 887	11 627	244	0.57	2.10
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	140 929	43 981	6 962	4.94	15.83
H - Transportation and storage	26 359	6 290	265	1.01	4.21
I - Accommodation and food service activities	21 921	10 328	2 635	12.02	25.51
J - Information and communication	41 102	13 527	414	1.01	3.06
K - Financial and insurance activities	42 426	14 605	661	1.56	4.53
L - Real estate activities	55 858	15 895	852	1.53	5.36
M - Professional, scientific and technical activities	67 151	18 379	932	1.39	5.07
N - Administrative and support service activities	37 281	11 189	585	1.57	5.23
O - Public administration and defence; compulsory social security	163	59	2	1.23	3.39
P - Education	3 254	1 230	89	2.74	7.24
Q - Human health and social work activities	5 974	2 351	65	1.09	2.76
R - Arts, entertainment and recreation	5 138	1 686	276	5.37	16.37
S - Other service activities	7 342	3 004	215	2.93	7.16
T - Activities of households as employers	571	193	7	1.23	3.63
U - Activities of extraterritorial organisations and bodies	65	30	1	1.54	3.33
Unknown	5 814	2 014	91	1.57	4.52
Total	**605 376**	**179 502**	**16 198**	**2.68**	**9.02**

Table 18 Column 2-4 shows the number of different foreign direct investments in Europe between 2017 and 2019 that are held by all investors, non-European investors, and Chinese investors, respectively. Column 5-6 shows the share of all FDIs and non-European FDIs that are held by Chinese owners.

E3. Target firm characteristics

My dataset can be used for examining the characteristics of those firms that receive FDI (owner must hold at least 10 percent of the firm) from China and the other non-European investors. First, I will compare the distribution of age and firm size of the target firms. As the Y-scale is in percent of the total number of FDIs, the distribution is unweighted. As illustrated on Figure 11, Chinese FDI seems to be more oriented towards younger and smaller firms, than the FDI from other non-European investors.

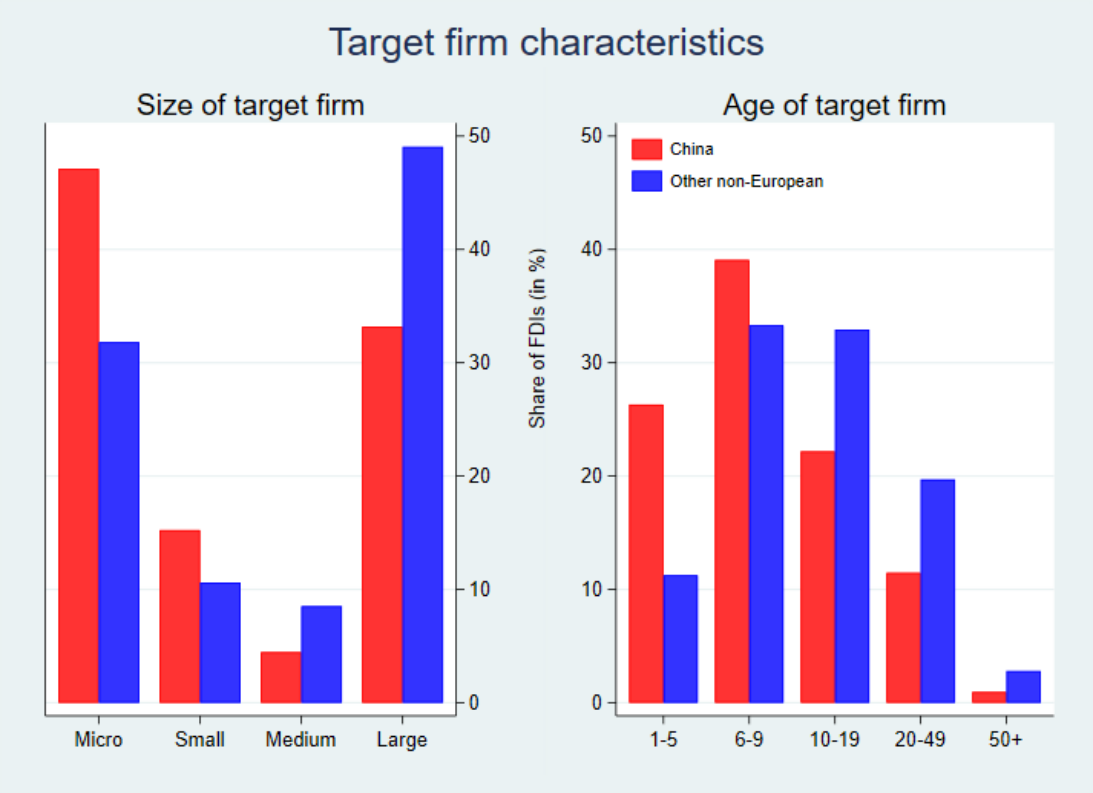

Figure 11 The right panel shows the distribution of target firm size, while the left panel shows the distribution of categories of age in years. Chinese FDIs are in red, while FDIs from other non-European actors are in blue.

The categories of firm size are based on the EU Commission's (2020) thresholds of Small and Medium sized enterprises (SMEs). In their definitions, firm size is determined by combining a staff headcount requirement with a turnover or assets requirement. In addition, there are some rules that allow firms to keep their SME-status even if they go above the limits for one year – to decrease volatility in enterprise categorization. Due to the staff number variable in Orbis being slightly unreliable, I have chosen to adjust the definitions, so that fulfilling either of the three will be enough to count. For my purpose, stable and predictable definitions is not important. Therefore, I have chosen not to include requirements of consecutive accounting periods to yield a category. Instead, I have based the numbers on the firm's average employment numbers, operating turnover, and total assets, between 2017 and 2019. That is, if a firm only has one reported value, it will solely be based on that – while if they have financial numbers

for all years, the number used will be the three-year average. The firm size categorization is explained in Table 19.[33]

Firm size	Large	Medium	Small	Micro
Employees number	>=250, OR	50-249, OR	10-49, OR	<10
Annual operating revenue	> 50 million EUR, OR	10-50 million EUR, OR	2-10 million EUR, OR	< 2 million EUR
Annual total assets	> 43 million EUR	10-43 million EUR	2-10 million EUR	< 2 million EUR

Table 19 Classification of firm size, based on the definition used by Orbis.

Second, one can dig a bit deeper into the size of the target firms, namely, to look at whether they are isolated entities or part of larger corporate groups. Figure 12 displaying the corporate size and number of subsidiaries, suggests that Chinese investors in general are more oriented towards more isolated and independent firms – compared to their non-European peers.[34]

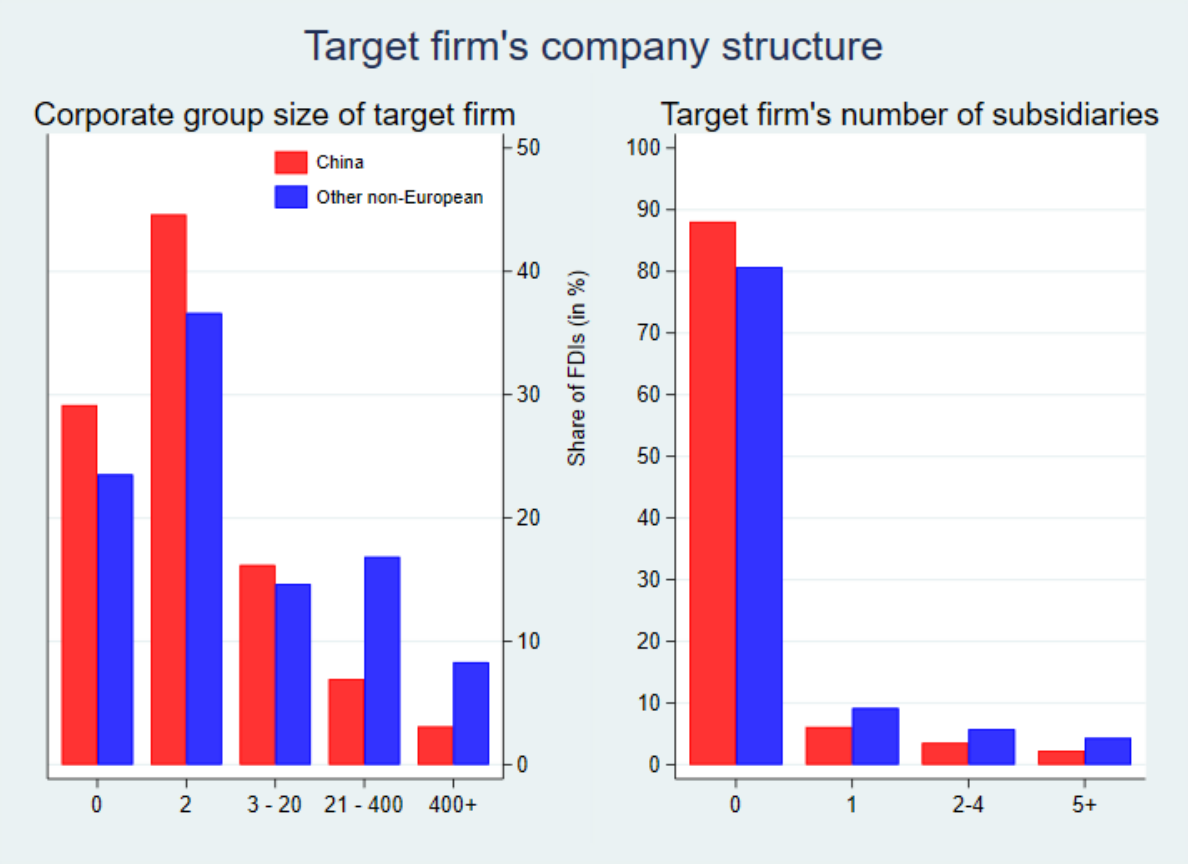

Figure 12 Distribution of share of FDIs by categories of size of corporate group and number of subsidiaries.

Further, one can look at target firm indebtedness. As can be seen on Figure 13, the short-term liquidity score distribution seems to be ambiguous – with Chinese FDI being located slightly

[33] The firms are located in the smallest possible category. Therefore, one starts by seeing if a given firm fulfills any of the three requirements for being a large firm. If not, it goes to the requirements for a medium firm, and so on.
[34] Due to the definition of corporate group in Orbis, it is noy possible to be a corporate group of 1. If a given firm is not part of a corporate group, then the corporate size is 0.

more in the ‘poor’ and ‘fair’ scores – while other non-European investors have a larger bulk in firms with excellent liquidity. For solvency Chinese FDI is more oriented to firms in the worse part of the scale than the investments from other non-European investors. However, both Chinese and other non-European investors have a relative majority of the FDIs in the ‘excellent’ group.

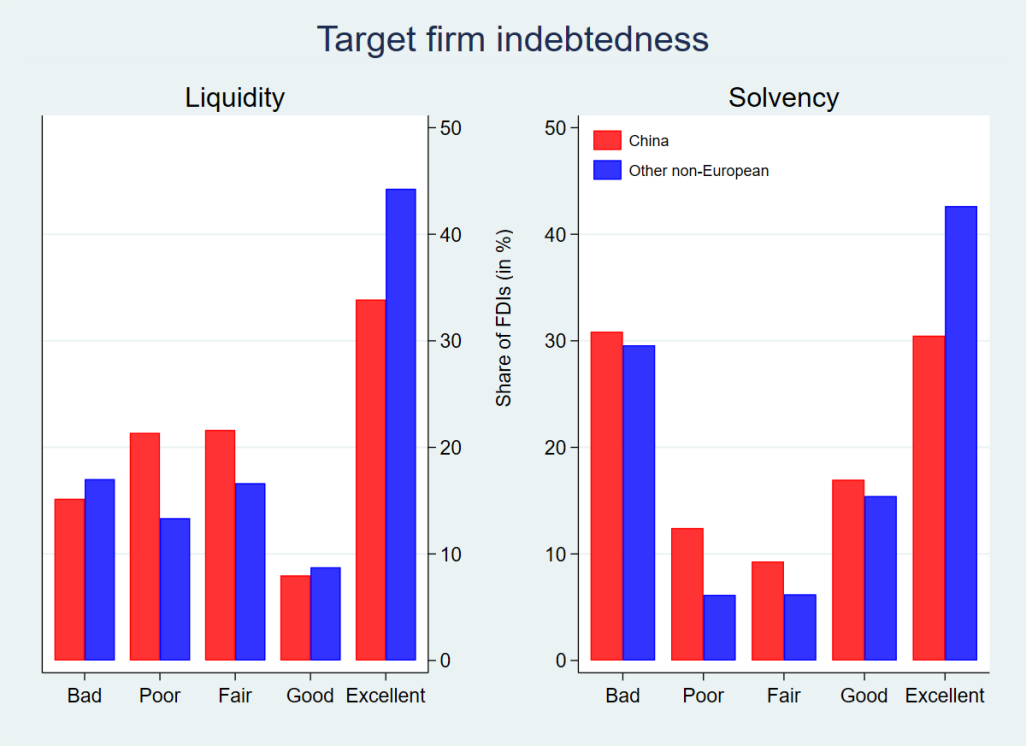

Figure 13 Distribution of number of FDIs by target firm financial performance

Next group I detail is the target firm financial performance, measured by profitability and return on assets (ROA) - as illustrated on Figure 14. For profitability, Chinese FDI once again is more heavily located in the worst groups, than the FDI from other non-European investors. Here, it can be noted that both groups of investors have a relative majority of their investments in firms with ‘bad’ profitability. Notably, the picture for ROA mirrors the profitability distribution closely. Although interesting, one must be careful to draw conclusions on what may cause these differences. First, one does not know whether the Chinese-owned firms were performing worse due to worse management and business decisions from the investors, of if they were also worse before the investment. In addition, my defined scores are universal, and do not take into account the sector, size, age, or geographic location of the firms. Therefore, it may give certain biases due to sectoral differences. For example, gearing, the act of taking up large loans to increase returns, may be more common in certain industries than others. If Chinese investors orient their FDI more towards these sectors, it may be misleading to infer that the companies are inherently more indebted. Similarly, some industries may be more driven by future growth than profit

today – which may make the ROA inappropriate. However, the three measures are still commonly used, and do provide factual information on the target firms.

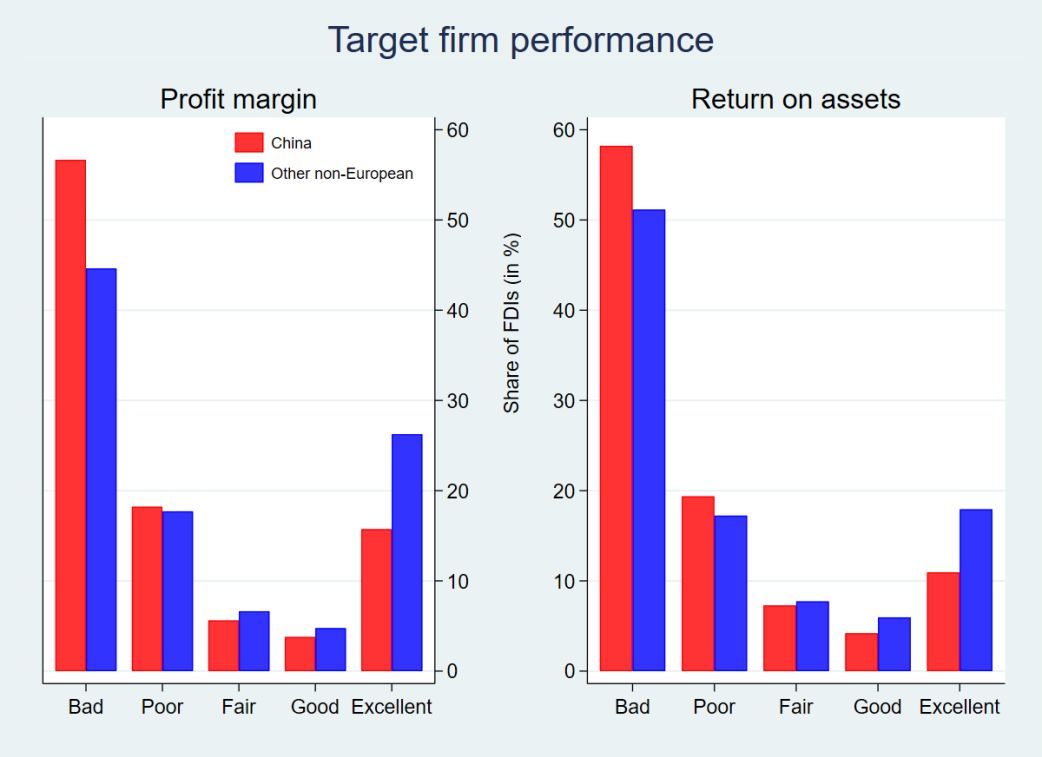

Figure 14 Distribution of number of FDIs by target firm performance

The liquidity scores are based on the current ratio, a measure of current assets to current liabilities. In this way, it is a proxy of a firm's short-term ability to cover their debt – normally liabilities that are due within a year. The solvency scores are based on equity to total assets, as a proxy for long-term financial robustness. The profitability measure is net income as share of operating revenues. The ROA scores are based on the net income to total assets. For my definitions, I have used the business performance thresholds from Proff.no, listed in Table 20 – one of the largest accounting information providers in Norway. As they do not have a scale for profit margin-performance, I have used the same scale as for ROA.

	Bad	Poor	Fair	Good	Excellent
Liquidity	< 50%	50 – 99%	100 – 149%	150 – 200%	> 200%
Solvency	< 3%	3 – 9%	10 – 17%	18 – 40%	> 40%
Profit margin and ROA	< 1%	1 – 5.9%	6 – 9.9%	10 – 15%	> 15%

Table 20 Classification of a firm's financial performance. See the tab "Beregning av nøkkeltall" at www.proff.no.

E4. Investment characteristics

Finally, one can do the same exercise for investment characteristics. More precisely, I want to describe the differences in the type of FDI and investor that is used. As illustrated on Figure 15, a large majority of FDI is from investors that are in a sector that is unrelated to the target firm. Still, Chinese FDI is even more conducted by shareholders that are from another sector than the target firm – while the investments from other non-European investors are relatively more targeted to firms that is either in the very same industry or in a closely-related sector. Here, "Horizontal" is defined as when an investor and the target firm have the same 4-digit NACE code, "Sectoral" is when the investor and target firm is in the same 1-digit NACE code, but different 4-digit code, and "Non-related" is when the investor and the target firm have different 1-digit NACE codes. It is worth nothing the shareholder's industry classification is missing in about half the observations – often as the investor is one or more individuals. The right panel displays the distribution of investments by the type of investor. Interestingly, Chinese FDI is more often from individuals, and less often from corporations, when compared to other non-European FDI.[35]

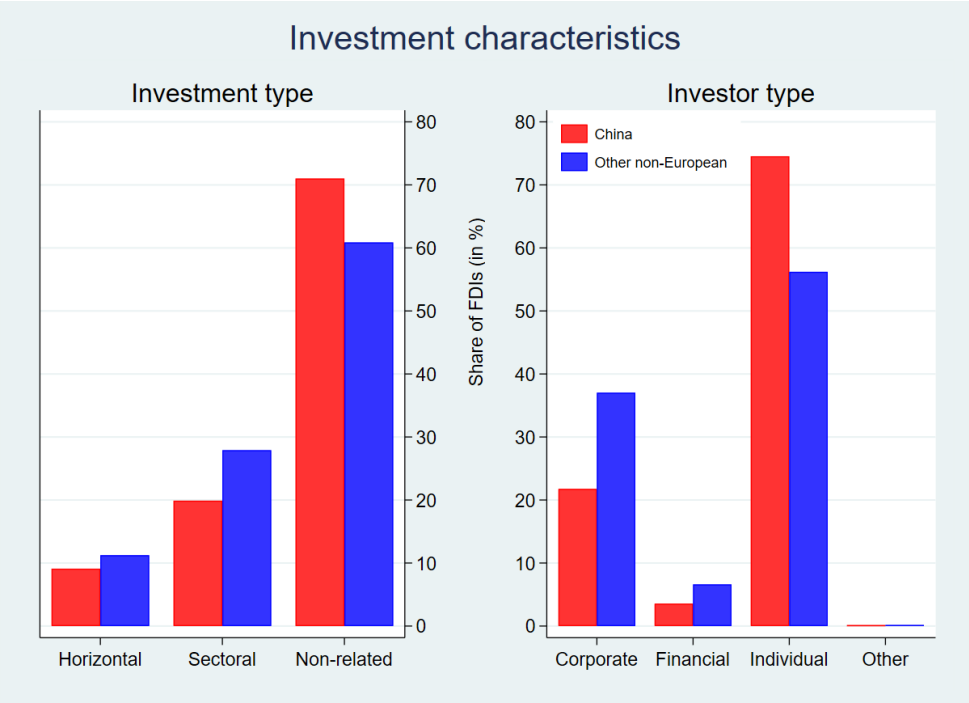

Figure 15 Classification of investment characteristics, within the investment type and investor type.

[35] "Corporate" is when the shareholder entity from Orbis is 'Corporate'. "Financial" is when the shareholder entity is either 'Insurance company', 'Bank', 'Financial company', 'Private equity firm', 'Venture capital', 'Hedge fund', or 'Mutual and pension fund, nominee, trust, trustee'. "Individual" is when the shareholder entity is either 'One or more named individuals or families', 'Unnamed private shareholders', or 'Other unnamed shareholders'. "Other" is the sum of the rest of the entity types.

F. Additional output from findings

F1. Summary statistics and correlation matrix

Summary statistics for regression variables for all non-European ownership

	N	Mean	Median	Std. Dev.	Min	Max
$\ln(FDI_{ifsdo,t})$	307 985	5.48	5.27	3.89	-13.12	18.38
CN_o	415 753	.08	0	.27	0	1
$MO_{i,t}$	415 753	.62	1	.49	0	1
$\ln(TA_{f,t})$	322 447	-3.71	-6.91	5.18	-6.91	18.86
$MO_{i,t} * \ln(TA_{f,t})$	322 447	-2.15	0	4.54	-6.91	17.38
$\ln(MP_{f,t})$	306 362	-5.06	-4.36	4.79	-31.19	5.3
$\ln(MC_{sd,t})$	306 366	-3.64	-3.6	1.6	-8.02	7.87
CIS_s	411 193	.15	0	.36	0	1
$\ln(MSize_{std})$	306 369	7.86	7.92	2.17	-6.91	13.18
$\ln(FSize_{f,t})$	220 533	2.22	1.61	1.85	0	13.42
$\ln(ROA_{ft})$	317 028	-4.34	.14	8.15	-24.26	24.99
$\ln(Solv_{ft})$	355 059	-.97	4.03	8.98	-24.26	23.75
INF_{dt}	415 737	1.42	1.31	.82	-1	3.26
$\ln(DGDP_{dt})$	415 737	6.32	5.95	1.51	2.58	8.28
$\ln(DGDPPC_{dt})$	415 737	3.39	3.57	.6	2.12	4.71
$\ln(OGDP_{ot})$	397 620	6.99	7.44	2.51	-2.33	9.81
$\ln(OGDPPC_{ot})$	397 620	2.72	2.49	1.19	-1.57	5.28
$Dist_{do}$	409 038	5533.24	6878.49	3591.92	225.59	19539.48
$\ln(Rest_{dt})$	402 708	-3.73	-3.51	.75	-5.3	-1.78

Table 21 Summary statistics for all regression variables. All the variables are described in Section 6.2.

Summary statistics for the observations in my main regression

	N	Mean	Median	Std. Dev.	Min	Max
$\ln(FDI_{ifsdo,t})$	165 175	6.11	5.88	3.61	-13.12	18.38
CN_o	165 175	.11	0	.31	0	1
$MO_{i,t}$	165 175	.64	1	.48	0	1
$\ln(TA_{f,t})$	165 175	-2.77	-6.91	5.68	-6.91	18.86
$MO_{i,t} * \ln(TA_{f,t})$	165 175	-1.56	0	4.8	-6.91	16.88
$\ln(MP_{f,t})$	165 175	-3.68	-3.18	4.34	-29.44	5.3
$\ln(MC_{sd,t})$	165 175	-3.55	-3.51	1.53	-8.02	0
CIS_s	165 175	.17	0	.38	0	1
$\ln(MSize_{std})$	165 175	7.77	7.84	2.12	-6.91	13.18
$\ln(FSize_{f,t})$	165 175	2.28	1.79	1.96	0	13.42
$\ln(ROA_{ft})$	165 175	-3.76	1.14	8.13	-24.26	20.6
$\ln(Solv_{ft})$	165 175	-1.16	3.94	9.04	-24.26	18.47
INF_{dt}	165 175	1.37	1.31	.96	-.48	3.26
$\ln(DGDP_{dt})$	165 175	6.25	5.58	1.43	2.86	8.28
$\ln(DGDPPC_{dt})$	165 175	3.2	3.19	.6	2.4	4.71
$\ln(OGDP_{ot})$	165 175	7.27	7.47	2.48	-2.33	9.81
$\ln(OGDPPC_{ot})$	165 175	2.88	2.72	1.12	-1.56	4.55
$Dist_{do}$	165 175	5548.4	6878.49	3614.58	225.59	19539.48
$\ln(Rest_{dt})$	165 175	-3.76	-3.82	.74	-5.3	-1.78

Table 22 Summary statistics for the observations in my main regression. All the variables are described in Section 6.2.

Pairwise correlation for observations in main regression sample

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
(1) $\ln(FDI_{ifsdo,t})$	1.00																		
(2) CN_o	-0.07	1.00																	
(3) $MO_{i,t}$	0.38	-0.08	1.00																
(4) $\ln(TA_{f,t})$	0.48	0.04	0.07	1.00															
(5) $MO_{i,t} * \ln(TA_{f,t})$	0.25	0.02	-0.25	0.78	1.00														
(6) $\ln(MP_{f,t})$	0.64	-0.06	0.25	0.39	0.21	1.00													
(7) $\ln(MC_{sd,t})$	0.33	-0.01	0.16	0.23	0.10	0.44	1.00												
(8) CIS_s	0.07	-0.09	0.03	0.05	0.02	0.10	0.14	1.00											
(9) $\ln(MSize_{std})$	0.40	0.02	0.11	0.28	0.15	-0.07	-0.12	0.00	1.00										
(10) $\ln(FSize_{f,t})$	0.73	-0.09	0.23	0.58	0.37	0.69	0.38	0.08	0.32	1.00									
(11) $\ln(ROA_{ft})$	0.22	-0.04	0.10	0.07	0.02	0.34	0.06	0.03	0.11	0.20	1.00								
(12) $\ln(Solv_{ft})$	0.39	0.01	0.13	0.21	0.10	0.39	0.14	0.04	0.19	0.32	0.51	1.00							
(13) INF_{dt}	-0.03	-0.06	0.02	-0.11	-0.08	-0.03	0.01	0.01	-0.06	-0.03	-0.02	-0.05	1.00						
(14) $\ln(DGDP_{dt})$	0.46	0.07	0.13	0.40	0.24	0.16	0.09	0.00	0.67	0.41	0.14	0.26	-0.14	1.00					
(15) $\ln(DGDPPC_{dt})$	0.55	-0.05	0.21	0.40	0.21	0.40	0.32	0.04	0.51	0.52	0.18	0.34	-0.06	0.69	1.00				
(16) $\ln(OGDP_{ot})$	0.29	0.29	0.20	0.17	0.08	0.25	0.21	-0.05	0.11	0.29	0.07	0.13	-0.01	0.18	0.22	1.00			
(17) $\ln(OGDPPC_{ot})$	0.44	-0.26	0.27	0.18	0.08	0.24	0.19	0.00	0.18	0.36	0.06	0.11	0.03	0.21	0.25	0.49	1.00		
(18) $Dist_{do}$	0.41	0.24	0.24	0.27	0.12	0.28	0.24	-0.02	0.27	0.36	0.09	0.21	-0.06	0.41	0.41	0.48	0.43	1.00	
(19) $\ln(Rest_{dt})$	0.43	0.01	0.19	0.37	0.18	0.37	0.26	0.04	0.41	0.41	0.16	0.31	-0.15	0.59	0.77	0.16	0.15	0.35	1.00

Table 23 Matrix of the pairwise correlations between all the variables in my regression specifications. All the variables are described in Section 6.2.

F2. Diagnostic plots and tables

F2.1 Skewness values for dependent and independent variables

Skewness value before and after transformation – for main regression sample

	Without transformation	With procedure a)	With procedure b)	Chosen procedure
$FDI_{ifsdo,t}$ (asset-based)	54.09	-.23	-.1	a)
$FDI_{ifsdo,t}$ (turnover-based)	54.44	-1.44	-.86	Not used
$MO_{i,t}$	-.56	-.56	-.56	No transformation
$TA_{f,t}$	119.25	.99	1.28	a)
$MC_{sd,t}$	3.33	-.07	-.07	a)
$MP_{f,t}$	7.58	-1.48	-.57	b)
CIS_s	1.71	1.71	1.71	No transformation
$MSize_{sd,t}$	5.53	-.21	-.2	a)
$FSize_{f,t}$	66.94	1.06	.83	a)
$ROA_{f,t}$	359.96	359.96	-.55	b)
$Solv_{f,t}$	237.82	237.82	-1.11	b)
$INF_{d,t}$	.31	.31	-2.32	No transformation
$DGDP_{d,t}$	.69	-.25	-.25	a)
$DGDPPC_{d,t}$	.97	0	0	a)
$OGDP_{o,t}$	.59	-.83	-.83	a)
$OGDPPC_{o,t}$	.36	-.46	-.46	a)
$Dist_{do}$	.32	-.83	-.83	No transformation
$Rest_{d,t}$	.71	-.07	.23	a)

Table 24 Skewness scores for all included variables before and after the procedure – as well as the chosen transformation procedure – for non-European investments

F2.2 QQ-plots for normal distribution

An unformal, yet common, way of testing normal distribution in the residuals of a model is using quantile-quantile (QQ) plots. The plot is a graphical method of comparing the predicted values against the actual fitted outcomes. For the normality assumption to hold, the plotted line should be roughly along the 45-degree line (Wooldridge, 2020). Below, in Figure 16, I have included the plots for my main model, using pooled OLS. As can be seen, the models using linear-dependent variables are heavily skewed in both ends, forming a flipped S-shape. This is a strong suggestion that the residuals are not normally distributed around zero – which is likely due to some large firms creating outliers. These results are confirmed by the more formal Shapiro-Wilk W-test for normality – showing strongly significant rejection of the normality assumption. As a consequence, I have log-transformed the investment ties. With this procedure, the distributions are far closer to the desired 45-degree line. However, it is worth noting that there still seems to be slight problems, especially in the lower left corner. The residuals are plotted against the inverse of the normal cumulative distribution function.

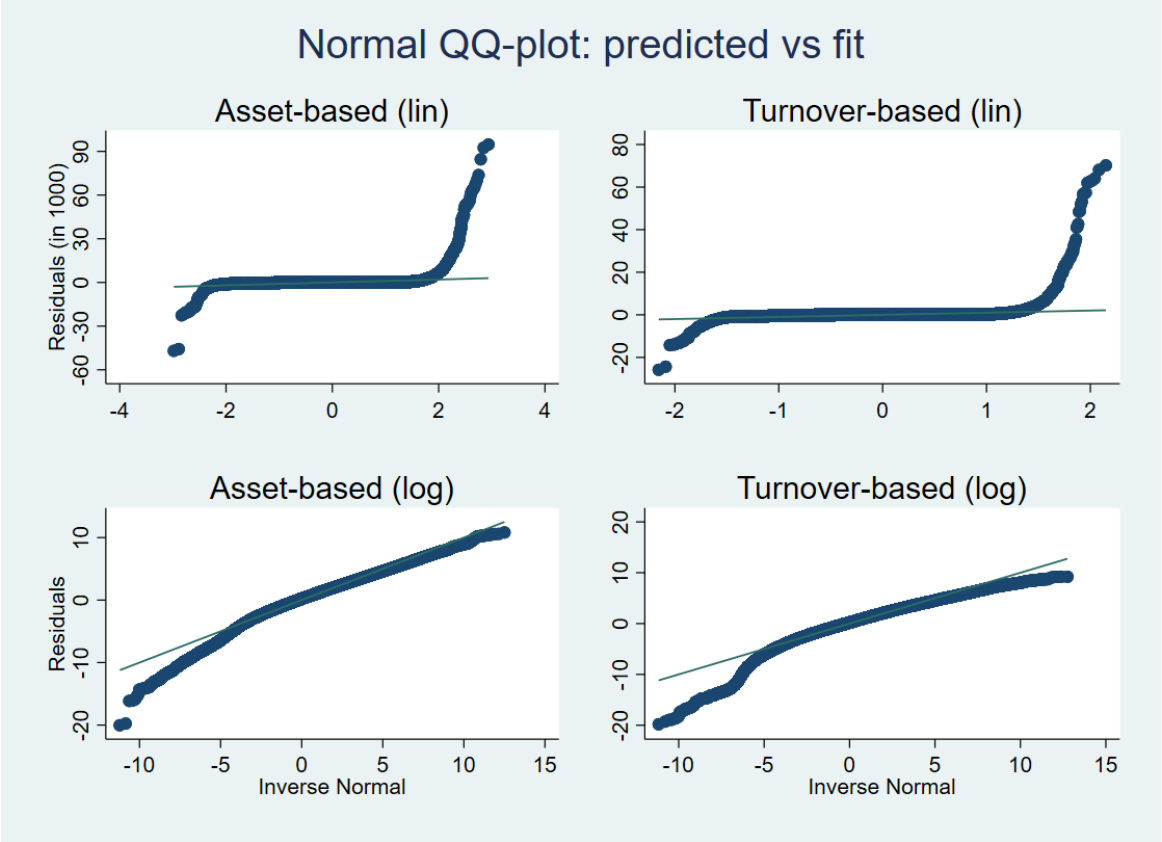

Figure 16 QQ-plot for residuals of asset-based and turnover-based investment-ties, before and after log-transformation.

F3. Full regression table for main model

$\ln(FDI_{ifsdo,t})$	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]
H2: $\ln(TA_{f,t}) * CN_o$	-0.044*	0.025	-1.73	0.084	-0.094	0.006
H3: $MO_{i,t} * \ln(TA_{f,t}) * CN_o$	0.001	0.024	0.05	0.964	-0.046	0.048
H4: $\ln(MP_{f,t}) * CN_o$	0.049*	0.028	1.77	0.077	-0.005	0.104
H5: $\ln(MC_{sd,t}) * CN_o$	-0.023	0.038	-0.59	0.553	-0.098	0.052
H6: $CIS_s * CN_o$	0.655**	0.283	2.32	0.021	0.101	1.209
$\ln(TA_{fs,t})$	0.076***	0.011	7.09	0	0.055	0.097
$MO_{i,t} * \ln(TA_{fs,t})$	-0.056***	0.011	-5.25	0	-0.077	-0.035
$\ln(MP_{f,t})$	0.223***	0.019	11.94	0	0.187	0.26
$\ln(MC_{sd,t})$	0.08**	0.035	2.25	0.024	0.01	0.149
CIS_s	0.093	0.101	0.92	0.355	-0.104	0.29
$\ln(MSize_{std})$	0.375***	0.036	10.49	0	0.305	0.444
$\ln(FSize_{f,t})$	0.495***	0.025	19.97	0	0.446	0.543
$\ln(ROA_{ft})$	-0.006***	0.001	-4.28	0	-0.008	-0.003
$\ln(Solv_{ft})$	0.021***	0.005	4.45	0	0.012	0.031
INF_{dt}	0.011	0.021	0.54	0.591	-0.03	0.052
$\ln(DGDP_{dt})$	-0.075	0.055	-1.38	0.168	-0.182	0.032
$\ln(DGDPPC_{dt})$	0.885***	0.178	4.96	0	0.535	1.234
$\ln(SGDP_{ot})$	-0.072***	0.016	-4.54	0	-0.104	-0.041
$\ln(SGDPPC_{ot})$	0.555***	0.058	9.54	0	0.441	0.669
$Dist_{do}$	0	0	1.37	0.17	0	0
$\ln(Rest_{dt})$	-0.246**	0.123	-2.01	0.045	-0.487	-0.006
2018	-0.007	0.015	-0.47	0.639	-0.037	0.023
2019	-0.018	0.031	-0.58	0.563	-0.08	0.043
Asia	0.852***	0.163	5.22	0	0.532	1.172
North America	0.831***	0.141	5.87	0	0.553	1.108
Africa	0.45***	0.145	3.11	0.002	0.166	0.733
Oceania	0.388	0.266	1.46	0.145	-0.134	0.909
South America	0.399*	0.225	1.78	0.076	-0.041	0.839
Constant	-1.968**	0.893	-2.20	0.028	-3.718	-0.218

Mean dependent var	6.105	SD dependent var	3.611
Overall R^2	0.693	Number of obs	165 175
Chi-square	17 679.308	Prob > chi2	0.000
R^2 within	0.114	R^2 between	0.696

**** p<.01, ** p<.05, * p<.1*

F4. Regression robustness analysis

In this section I discuss and provide the results of the alternative specifications of the main regression model – which I use for robustness testing. I start by altering the clustering group. With a "country of origin" cluster, both random effect (column 3) and pooled OLS (column 5) finds hypothesis 2 to be significantly negative and hypothesis 4 to be significantly positive. Both models, in addition to the POLS model with "destination country – sector" cluster (column 4), find that hypothesis 6 is strongly significant and positive. Hypothesis 1 is not included in any of the models. These results can be found in table F4.1.

Next, in table F4.2 I include the main model under different sets of control variables. In column (5) I have dropped the target firm controls, in column (7) the sector controls, in column (8) the destination country controls, in column (9) the origin country controls, and in column (10) I have dropped all the four groups of control variables. All five specifications estimates that hypothesis 2 is negative, while the effect is significant for column (6), (9), and (10). Column (10) finds hypothesis 3 to be positive and significant. Column (6), (7), and (10) find hypothesis 4 to be positive and significant. Column (10) estimates hypothesis 5 to be positive and significant. All but column (6) find hypothesis 6 to be positive and significant.

Finally, in table F4.3 I have included several model specifications of model 2 (the version of the main model with the majority ownership variables included). Here, I alter the clustering technique, method and control variables that are used. Out of the six specifications, four models (column 11, 12, 14, and 15) find the coefficient addressing majority ownership (hypothesis 1) to be positive and significant at a five percent significance level, while one additional model (column 13) finds it to be at a ten percent level. The estimated effect for hypothesis 1 for the last model (column 16), where origin country controls are excluded, is insignificant with a p-value of 0.89. I have also run other robustness checks that are not included in the appendix – such as adding dummies for NACE level-1 (21 sectors), level-2 (88 sectors), level-3 (272 sectors), and level-4 (615 sectors) classifications. While also these results vary slightly, none of the models estimate any of effect to be significant with another sign than I have found to be significant in another model.

F4.1 Main model under alternative methods and clusters

	(3) RE: $\ln(FDI_{ifsdo,t})$	(4) POLS: $\ln(FDI_{ifsdo,t})$	(5) POLS: $\ln(FDI_{ifsdo,t})$
H2: $\ln(TA_{f,t}) * CN_o$	-0.044***	-0.047	-0.047***
	(0.013)	(0.031)	(.017)
H3: $MO_{i,t} * \ln(TA_{f,t}) * CN_o$	0.001	-0.01	-0.01
	(0.014)	(0.024)	(0.02)
H4: $\ln(MP_{f,t}) * CN_o$	0.049***	0.048	0.048**
	(0.018)	(0.063)	(0.023)
H5: $\ln(MC_{sd,t}) * CN_o$	-0.023	-0.033	-0.033
	(0.052)	(0.036)	(0.05)
H6: $CIS_s * CN_o$	0.655***	0.72***	0.72***
	(0.105)	(0.247)	(0.118)
$\ln(TA_{fs,t})$	0.076***	0.072***	0.072***
	(0.016)	(0.014)	(0.021)
$MO_{i,t} * \ln(TA_{fs,t})$	-0.056***	-0.051***	-0.051**
	(0.015)	(0.015)	(0.021)
$\ln(MP_{f,t})$	0.223***	0.324***	0.324***
	(0.022)	(0.027)	(0.034)
$\ln(MC_{sd,t})$	0.08***	0.073*	0.073***
	(0.011)	(0.043)	(0.017)
CIS_s	0.093**	-0.012	-0.012
	(0.046)	(0.103)	(0.059)
Observations	165 175	165 175	165 175
Overall R^2	0.693	0.701	0.701
Cluster	Origin country	Sector in dest. country	Origin country
Year FE	YES	YES	YES
Continent FE	YES	YES	YES
Target firm controls	YES	YES	YES
Sector controls	YES	YES	YES
Destination controls	YES	YES	YES
Origin controls	YES	YES	YES

*Standard errors are in parentheses. *** p<.01, ** p<.05, * p<.1*

F4.2 Main model under alternative controls

	(6) RE: $\ln(FDI_{ifsdo,t})$	(7) RE: $\ln(FDI_{ifsdo,t})$	(8) RE: $\ln(FDI_{ifsdo,t})$	(9) RE: $\ln(FDI_{ifsdo,t})$	(10) RE: $\ln(FDI_{ifsdo,t})$
H2: $\ln(TA_{f,t}) * CN_o$	-0.072***	-0.041*	-0.039	-0.062**	-0.114***
	(0.017)	(0.023)	(0.028)	(0.029)	(0.027)
H3: $MO_{i,t} * \ln(TA_{f,t}) * CN_o$	0.032*	0.003	0.001	0.017	0.096***
	(0.018)	(0.023)	(0.024)	(0.026)	(0.022)
H4: $\ln(MP_{f,t}) * CN_o$	0.075***	0.052**	0.053*	0.058*	0.065***
	(0.019)	(0.021)	(0.029)	(0.03)	(0.02)
H5: $\ln(MC_{sd,t}) * CN_o$	-0.057	-0.027	0.001	0.135***	0.065
	(0.04)	(0.038)	(0.035)	(0.046)	(0.048)
H6: $CIS_s * CN_o$	0.572**	0.635**	0.737***	0.419	0.636***
	(0.24)	(0.28)	(0.273)	(0.268)	(0.211)
$\ln(TA_{fs,t})$	0.142***	0.08***	0.078***	0.085***	0.23***
	(0.012)	(0.01)	(0.01)	(0.012)	(0.019)
$MO_{i,t} * \ln(TA_{fs,t})$	-0.098***	-0.061***	-0.058***	-0.067***	-0.168***
	(0.011)	(0.01)	(0.01)	(0.012)	(0.02)
$\ln(MP_{f,t})$	0.249***	0.182***	0.221***	0.222***	0.219***
	(0.019)	(0.018)	(0.018)	(0.02)	(0.031)
$\ln(MC_{sd,t})$	0.114**	0.001	0.12***	0.099**	0.197***
	(0.048)	(0.032)	(0.036)	(0.047)	(0.064)
CIS_s	0.139	0.124	0.067	0.077	-0.107
	(0.104)	(0.101)	(0.103)	(0.135)	(0.255)
Observations	255 705	165 175	171 334	171 097	278 994
Overall R^2	0.598	0.667	0.683	0.667	0.373
Cluster	Sector in dest. country	Sector in dest. country	Sector in dest. country	Sector in dest. country	Sector in dest. country
Year FE	YES	YES	YES	YES	YES
Continent FE	YES	YES	YES	NO	NO
Target firm controls	NO	YES	YES	YES	NO
Sector controls	YES	NO	YES	YES	NO
Destination controls	YES	YES	NO	YES	NO
Origin controls	YES	YES	YES	NO	NO

*Standard errors are in parentheses. *** p<.01, ** p<.05, * p<.1*

F4.3 Model with majority ownership variables included (H1), under alternative clusters, methods and controls

	(11) RE: $\ln(FDI_{ifsdo,t})$	(12) POLS: $\ln(FDI_{ifsdo,t})$	(13) RE: $\ln(FDI_{ifsdo,t})$	(14) RE: $\ln(FDI_{ifsdo,t})$	(15) RE: $\ln(FDI_{ifsdo,t})$	(16) RE: $\ln(FDI_{ifsdo,t})$
H1: $MO_{i,t} * CN_o$	0.285***	0.337***	0.281*	0.282**	0.272**	-0.016
	(0.093)	(0.104)	(0.148)	(0.126)	(0.127)	(0.109)
H2: $\ln(TA_{f,t}) * CN_o$	-0.029***	-0.032	-0.047***	-0.027*	-0.024	-0.036**
	(0.009)	(0.021)	(0.014)	(0.014)	(0.016)	(0.017)
H3: $MO_{i,t} * \ln(TA_{f,t}) * CN_o$	0.008	0.006	0.026**	0.01	0.007	0.007
	(0.008)	(0.024)	(0.013)	(0.014)	(0.013)	(0.012)
H4: $\ln(MP_{f,t}) * CN_o$	0.041**	0.031	0.07***	0.045**	0.046*	0.05*
	(0.018)	(0.052)	(0.019)	(0.017)	(0.025)	(0.026)
H5: $\ln(MC_{sd,t}) * CN_o$	-0.028	-0.025	-0.065	-0.033	-0.007	0.077
	(0.037)	(0.028)	(0.044)	(0.044)	(0.039)	(0.048)
H6: $CIS_s * CN_o$	0.539***	0.607***	0.451**	0.52**	0.622***	0.399*
	(0.082)	(0.194)	(0.189)	(0.219)	(0.206)	(0.21)
$MO_{i,t}$	1.135***	1.145***	1.22***	1.151***	1.138***	1.316***
	(0.075)	(0.068)	(0.06)	(0.07)	(0.069)	(0.092)
$\ln(TA_{fs,t})$	0.035***	0.021**	0.089***	0.039***	0.036***	0.038***
	(0.008)	(0.009)	(0.008)	(0.006)	(0.006)	(0.007)
$MO_{i,t} * \ln(TA_{fs,t})$	0.004	0.028***	-0.019***	-0.002	0.004	0.002
	(0.007)	(0.01)	(0.007)	(0.006)	(0.006)	(0.008)
$\ln(MP_{f,t})$	0.219***	0.309***	0.246***	0.178***	0.217***	0.217***
	(0.021)	(0.025)	(0.019)	(0.018)	(0.019)	(0.019)
$\ln(MC_{sd,t})$	0.077***	0.072*	0.111**	-0.002	0.117***	0.093**
	(0.009)	(0.04)	(0.046)	(0.031)	(0.033)	(0.042)
CIS_s	0.09*	-0.005	0.13	0.122	0.059	0.078
	(0.049)	(0.103)	(0.099)	(0.097)	(0.099)	(0.127)
Observations	165 175	165 175	255 705	165 175	171 334	171 097
Overall R^2	0.712	0.719	0.617	0.687	0.702	0.69
Cluster	Origin country	Sector in dest. country	Sector in dest. country	Sector in dest. country	Sector in dest. country	Sector in dest. country
Year and continent FE	YES	YES	YES	YES	YES	YEAR ONLY
Target firm controls	YES	YES	NO	YES	YES	YES
Sector controls	YES	YES	YES	NO	YES	YES
Destination controls	YES	YES	YES	YES	NO	YES
Origin controls	YES	YES	YES	YES	YES	NO

*Standard errors are in parentheses. *** p<.01, ** p<.05, * p<.1*

F5. Investment strategies for all countries above threshold

Origin country	Number of investments	Total inv., AB (bn. EUR)	FPI, AB (%)	Minority FDI, AB (%)	Majority FDI, AB (%)	Strategy, AB	Strategy, TB
Algeria	2 480	4.7	59	32	9	FD - 59	FD - 60
Andorra	292	2.8	64	3	33	FD - 64	FD - 87
Angola	186	9.4	11	65	24	M - 65	M - 57
Argentina	416	1.3	11	17	72	CD - 72	CD - 53
Australia	5 335	254.4	29	5	66	CD - 66	CD - 57
Azerbaijan	664	6.0	0	1	99	C - 99	C - 100
Bahamas	519	121.9	18	18	64	CD - 64	CD - 71
Bahrain	89	6.6	1	1	98	C - 98	C - 99
Barbados	103	45.6	1	3	96	C - 96	C - 96
Belize	355	1.1	2	22	75	CD - 75	CD - 86
Bermuda	5 481	1 344.1	26	4	70	CD - 70	CD - 53
Brazil	1 648	210.2	3	1	95	C - 95	CD - 88
British Virgin Islands	3 214	183.2	9	18	73	CD - 73	CD - 70
Canada	11 323	768.6	44	9	47	MC - 47	FD - 58
Cayman Islands	4 026	733.9	11	9	80	CD - 80	CD - 64
Chile	289	16.3	19	52	29	M - 52	M - 58
China	17 534	560.8	14	14	72	CD - 72	CD - 82
Colombia	274	3.9	13	41	46	MC - 46	MF - 46
Curacao	485	77.4	0	5	94	C - 94	C - 96
Egypt	1 811	9.2	6	45	49	MC - 49	M - 49
Gibraltar	1 036	33.2	2	19	79	CD - 79	M - 80
India	4 607	144.7	1	4	96	C - 96	C - 97
Indonesia	112	6.2	1	2	97	C - 97	C - 94
Iran	1 143	1.2	2	41	57	CD - 57	CD - 75
Israel	8 151	68.1	6	11	84	CD - 84	CD - 81
Japan	7 725	832.9	20	9	70	CD - 70	CD - 82
Kazakhstan	909	3.1	35	54	11	M - 54	M - 81
Kuwait	381	33.1	70	3	26	FD - 70	FD - 51
Lebanon	1 660	15.9	6	5	90	CD - 90	C - 90
Liberia	206	4.2	2	9	90	CD - 90	C - 97
Libya	241	5.5	39	26	36	MF - 39	FD - 68
Malaysia	730	46.3	6	3	91	C - 91	CD - 89
Marshall Islands	397	16.2	0	4	96	C - 96	C - 96
Mauritius	443	25.3	8	17	75	CD - 75	CD - 80
Mexico	538	98.8	4	26	70	CD - 70	CD - 64
Monaco	822	7.6	7	63	30	M - 63	CD - 71
Morocco	2 766	3.0	14	24	62	CD - 62	CD - 54
New Zealand	1 089	12.6	13	11	76	CD - 76	CD - 78
Oman	53	4.3	35	29	36	MC - 36	FD - 79
Pakistan	1 591	4.3	18	76	6	M - 76	M - 62
Panama	1 184	21.2	1	12	87	CD - 87	C - 95
Peru	335	1.3	45	1	54	CD - 54	FD - 59
Philippines	333	4.0	8	3	89	CD - 89	C - 91
Qatar	384	321.0	15	78	6	M - 78	M - 71
Russia	21 702	172.4	10	22	68	CD - 68	CD - 58
Saudi Arabia	416	30.8	18	11	71	CD - 71	CD - 86
Serbia	1 777	1.9	10	40	51	CD - 51	CD - 56
Seychelles	922	3.1	0	6	93	C - 93	C - 92
Singapore	2 181	243.6	40	9	51	CD - 51	CD - 58

South Africa	2 700	381.4	23	14	63	CD - 63	CD - 71
South Korea	1 656	87.9	13	1	85	CD - 85	C - 96
Taiwan	657	11.8	3	5	91	C - 91	C - 92
Thailand	503	11.0	2	14	84	CD - 84	CD - 89
Tunisia	834	1.5	2	24	74	CD - 74	CD - 76
Turkey	8 798	54.2	2	12	86	CD - 86	CD - 72
Ukraine	12 298	16.7	1	9	90	CD - 90	CD - 66
United Arab Emirates	1 799	98.3	12	38	50	CD - 50	M - 49
United States	92 545	10 645.6	46	6	48	MC - 48	MF - 49
Uruguay	155	14.0	28	47	25	M - 47	FD - 62
Venezuela	372	3.1	70	3	27	FD - 70	FD - 78
Zimbabwe	430	14.9	0	0	100	C - 100	C - 100
Total non-European (unweighted)	265 213	17 883.1	13	23	64	CD - 64	CD - 64
Total non-European (weighted)	265 213	17 883.1	35	9	56	CD - 56	CD - 53

Table 25 List of the number of investments, total assets held, distribution of their assets – and their investment strategy, for all non-European countries with more than 10 investments and 1 million EUR in assets. The variables with AB are asset-based, while the last column is turnover-based.

G. Construction of the dataset

G1. Construction strategy

For the sake of transparency and to allow replication of my dataset, this part will explain the steps I have taken to construct my dataset. This is particularly important as obtaining a dataset from Orbis is not an easy and self-explanatory process. Therefore, the process of getting my dataset has been a time-consuming, with a lot of choices to make. The method alone of downloading the data is not straight-forward. In the beginning the system may seem to be designed to best suit those that already know how it works, rather than being easy for beginners. Still, the most time-demanding has been to choose which filters and which variables to use.

The whole process of constructing my dataset, followed the following steps:

Step 1: Extract firm-level data from Orbis into 209 for company data and 558 for shareholder data

Step 2: Transform raw data from xlsx to DTA and append queries into separate datasets for shareholder and company

Step 3: Create, replace, and improve variables

Step 4: Merge shareholder and company datasets together

In A1, I will go through the process of collecting the data, elaborating my choices for sample filter and for which variables to include. In part A2, I have listed the main steps that I have taken to clean and format the dataset. In part A3, I go into the additional variables in my dataset

that I have created using the downloaded variables. In part A4, I provide a more detailed explanation on some of the variables in my dataset, for those that are particularly interested.

G2. Data collection

G2.1 Sample selection

The first stage in obtaining a dataset has been to choose the filter for which firms I wanted to include in my sample. My desire has been to look at all firms in Europe, no matter the industry or size. Thus, it may sound like an obvious choice to do exactly that: include all firms in Europe. However, as often is the case, the choice may be more complex than that. In practice, it is a question on how to find a sample that is as representative as possible, while also being practically useable within my timeframe. When downloading data from Orbis, there is a given limit to how many firms one can download per query. The limit depends on the number of and what kind of variables that are being used, from 500.000 when only downloading the company name, to 10.750 for the shareholder variables I have chosen. As there are about 47 million active firms in Europe, and each query taking about 15 to 30 minutes, I have had to rationalize what companies that I want to keep. My sample filters are discussed in the rest of this sub-section.

First, what status of firms should be included? In principle, even if I wanted to include both active and discontinued companies, I have chosen to only keep those that are still active. That is done both as the active companies are what I really want to study, and since firms may be removed from the database if they become unactive. As a measure to remove potential biases for which unactive companies that are still in the dataset, I have decided to remove all of them. In addition, I have also removed companies with an "unknown" status. These observations do often lack recent updates and will therefore not be of much practical interest. When removing bankrupt and discontinued firms there may occur a survival bias.

Second, which countries do I want to include? The definition of Europe is, at least to some degree, subjective. Without lingering too much, I decided to go for countries in the European Union and those part of the EFTA agreement. As Orbis cover data from 2011 to 2020, I have included United Kingdom as part of the EU. The exact list of countries that are included in my sample can be found the tables in the descriptive statistics in Appendix E.

Third, how to deal with potential double-counting? Even though Orbis is often described as a firm-level dataset, as I have done myself, it is actually more of an account-level dataset. By that I mean that Orbis register entities at different levels in the 'corporation hierarchy'. As a result,

one encounters potential problems of double-counting, if both a parent and a subsidiary register the business activity as part of their accounting. Luckily, Orbis also report whether entities are registered as consolidated or unconsolidated, using the following categories:[36]

- C1: Consolidated accounts with no unconsolidated companion
- C2: Consolidated accounts with an unconsolidated companion
- U1: Unconsolidated accounts with no consolidated companion
- U2: Unconsolidated accounts with a consolidated companion

The choice here is then which categories to include, to be sure to keep as many firms as possible, while also not allowing duplicates in reporting. More precisely, the question is whether to remove C2 or U2 – as these are the observations that may allow double-counting. Here, I have chosen to follow the advice of Bajgar et. al (2020) and Kalemli-Ozcan et. al (2019), and rely primarily on the unconsolidated accounts. That means that I have kept C1, U1, and U2 – while dropping C2. The benefit of this approach is that unconsolidated account allows for a more detailed picture than its consolidated companion would. For example, while a consolidated parent company may be registered as a holding company without providing information on the industry the firm is operating in, the unconsolidated subsidiary may provide more specific information. On the other hand, consolidated entities may be preferred for studying multinational firms, as they may be better at reporting, thus capturing more of the economy.

Fourth, how recent updates are required to be included? Orbis provide information on firms over a long period of time. In my access, the database provides reports back to 2011. In a dataset with almost 50 million firms, it is unavoidable that some firms do not have recent updates. To make sure that the companies in my dataset are active companies, I have chosen to drop entities without updates after 2016. With this filter, in combination with the fifth and sixth criteria, I also make sure that all observations in my dataset at least have some recent information.

Fifth, what is the minimum-required shareholder information needed to be included? As my study builds on the citizenship of the shareholders for each firm, and the downloading limitations mentioned above, I would like to drop companies without any shareholder information. This could be done in several ways, for example removing all shareholders without a country affiliation. However, as there is some information about the shareholder in the combination of the firm's country code and the shareholder entity, this seems too restrictive. A

[36] In addition, some companies are provided with the codes "LF" (Companies with limited financial data) and "NLF" (Companies without financial data). Both categories are kept out of my sample, because they provide limited information and because one cannot know if they are part of an account with information that is reported.

more appropriate measure seems to be to remove companies without any shareholders with known values registered to them. That is, neither named nor unnamed shareholders. In practice, this is done by not including firms that have "none" as their specific number of shareholders. Shareholders without known country of origin are still included and will be dealt with in A2.

Sixth, what is the minimum-required financial information needed to be included? For the same reason as in the paragraph above, I want to drop companies without any usable financial information. I have done this in two ways; first, to exclude companies with no or limited financial information – and second, to exclude companies with no known value of operating revenue in any years between 2011 and 2020. The latter is to make sure that the companies in my sample are entities with actual business activities, and not pure holding companies.

In summary, I end up with a dataset of almost six million firms, using the following filter:
Expressed as a Boolean statement: 1 and 2 and 3 and 4 and 5 and 6

1. **Status**: Active companies, and
2. **World region/Country/region in Country**: European Union [27], EFTA, United Kingdom, and
3. **Consolidation code (Account type)**: C1 (consolidated accounts with no unconsolidated companion), U1 (unconsolidated accounts with no consolidated companion), U2 (unconsolidated accounts with a consolidated companion), and
4. **Latest year of accounts**: 2017, 2018, 2019, 2020, and
5. **Subsidiaries with a specific number of shareholders**: 1, 2, 3, 4,5, 6 to 10, 11 to 100, more than 100 [excluding shareholders with an unknown percentage from the count], and
6. **At least one known value of Operating revenue (OPRE)**: 2011, (…), 2020

G2.2 Selection of variables

The second, and most time-consuming, phase in order to collect my dataset was to choose which variables to download. As mentioned, my version of Orbis operates with a limit of number of companies per download, which decrease the more variables I add. In addition, some variables, such as shareholder information decrease the number of firms per query more than a financial variable, as there may be many shareholders per firm. Thus, deciding how many variables and what variables to include, may be considered as a typical economics maximation problem - maximize the output from the realm of possible, given limited time. Alternatively, how to minimize the time I had to spend on downloading data, while making sure that I had enough

variables to be able to answer my research question. The exact task was two-folded: 1.Figuring out what types of accounting items I needed for my research question, and 2. Find the best covered and most representative variable within each group of accounting items.

Choosing groups of accounting items

The decision on what information that I needed, was based on my research question. For my study, I need data on both financial information such as turnover, profit, and short- and long-term measures for equity, assets, and liabilities – and other company information such as age, size, industry, and so on. In addition, I needed basic information on the shareholders, including their country, entity type and ownership share.

Choosing the best variable within the group of accounting items

With those desires in mind, I started to go through the dataset, to get an overview of the existing variables, which was a surprisingly lengthy process. There are three versions of Orbis, each with its own way of storing information. Even though Kalemli-Ozcan (2019) was advantageous as a guideline, it is not a complete encyclopedia to using Orbis. As my way of accessing the data through the browser solution is the least covered, I had to do much of the discovering myself.

Orbis's user guide (2019) was helpful in several topics, but it is still not as extensive as one could wish. In particular, there is no good overview of how well each variable is reported in the dataset. One example being that for measuring turnover, some companies report on 'operating revenue' while others report 'sales'. For profit some use 'gross profit', others use 'operating P/L', while a third group may use P/L before or after tax. For assets some may use the aggregated item 'total assets', others divide into current and fixed assets – while a third group may report on all the different items that summarize into current ('stocks', 'debtors', 'other current assets') and fixed assets ('intangible assets', 'tangible assets', 'other fixed assets'). When choosing which variables to include, I had to consider both which variables were used by most companies – and which were the most representative. By that I mean that even if a measure was not the one within the item group with the most reported observations, I could choose the variable if it is more representative. By representative I mean how well it covers all firms from each of the country in the sample.

Explanation for each included variable:

Identification variables: As all downloads in Orbis must include the name of the company, I have had to keep that. However, as firms may change their name or several companies, in

theory, could have the same name – I have chosen to also use Orbis's firm identification code (BVB_ID_NUMBER) too – to make sure that I can reliably identify the companies in my different datasets (for merging, appending etc.). For the shareholder, the equivalent variable is SH_BVD_ID_NUMBER.

Turnover-measure: Here, the two best candidates were operating revenue (OPRE) and sales (TURN). Although both were well-covered, operating revenue was the preferred choice in all countries except Belgium and Estonia.[37]

Profit-measure: Here, the main the main candidates were 'price and loss statement' (P/L) before and after tax. Even if 'P/L before tax' (PLBT) has more observations than 'net income', I have chosen the latter as it is almost as well covered, and it is more evenly used in all countries – while 'P/L before tax' have some countries where it performs notably worse. In addition, net income is more used for return on assets and return on equity, and is therefore regarded as the superior measure.

Equity-measure: Here, the only real option was 'Shareholders funds' (SHFD). Alternatively, it would be possible to use the two components of shareholders' funds, 'capital' (CAPI) and 'other shareholders funds' (OSFD). However, I have decided on the first, as it has more observations, it seems unlikely that I will be able to use the extra information - and in addition, I can download three fewer variables.

Assets-measure: For my research question, I needed information both on all aggregated assets, and on short- and long-term. After some digging, I found the variables total assets (TOAS), current assets (CUAS) (short-term) and fixed assets (FIAS) (long-term) to match well. However, as Orbis define total assets as the sum of current and fixed assets, I realized that two out of the three would be enough. As total assets and current assets had better coverage, I chose those – and find fixed assets as the residual (FIAS=TOAS-CUAS).

Liabilities-measure: In a similar way as for assets, I wanted total, short- and long-term debt. As Orbis do not report total debt, the variables 'current liabilities (CULI) and 'non-current liabilities' (NCLI) can do the job, with total debt as the sum. One could use the fact that 'Total shareholder funds and liabilities' (TSHF) is defined as the sum of non-current liabilities, current liabilities, and total equity. As a matter of accounting principles, total shareholder funds and

[37] Belgium had about 50% more observations with sales, while Estonia had a difference below 1%.

liabilities must be the same as total assets (TOAS). Thus, one should be able to find non-current liabilities as: NCLI = TSHF – SHFD – CULI, where TSHF = TOAS.[38] However, this relationship does not hold in about half the observations. Therefore, I have chosen to also download NCLI directly. If a company is lacking an observation for NCLI, while having the three others, I will use the residual approach. The same procedure is used for the rest of the variables in the equation.

Industry-information: Orbis operates with several types of industry classification, such as the commonly used Statistical Classification of Economic Activities in the European Community (NACE), Standard Industrial Classification (SIC), and North American Industrial Classification System (NAICS). In addition, another option could be Orbis's own 'BvD Sector classification'. Here I chose NACE, as it is the most used classification for studies using Orbis, it is specialized to suit European industries – and from eye-balling tests it seemed to be the best covered. Orbis delivers several types of NACE-variables, corresponding to different levels of the NACE-code. I chose the lowest level of NACE-codes, as it gives the most precise information on the sector of the firm. In addition, the lowest level can be used to extract the higher levels too, while one cannot go the other way. I obtain these NACE core codes for both the firm and the shareholder. A detailed explanation on the NACE industry classification system can be found in A4.

Size-measures: There are several measures that could be used to determine the size of the firm. One of which is Orbis's own 'Size classification' (COMPANY_CATEGORY), which rank firms as either 'Very large', 'Large', 'Medium', or 'Small'. Even though this is regularly used, I found several problems with it. Most prominent that 98 percent of all firms in my sample would end up as small – thus having limited value. Therefore, I decided to rather define size categories myself, inspired by Orbis's classification. For that, I need the number of employees (EMPL), as well as operating revenue and total assets. In addition, I have chosen to gather variables for the number of entities in the corporate group (CORPORATE_GROUP_SIZE_LABEL), and the firm's number of subsidiaries (SUB_COUNT). These will be used to find whether the firm operates alone or as part of a major corporation.

[38] For most countries, the total assets (TOAS) measure has better coverage than total shareholder funds and liabilities (TSHF), but for Belgium, Ireland, Luxembourg, Sweden, and United Kingdom it is the other way round. Therefore, for those five countries I will download TSHF instead, and define it as TOAS. To be sure this step will not lead to any bias for what types of companies that are reported, I have looked into the companies, and I found very few companies in these countries that report TOAS and not TSHF. Thus, the step improves coverage, without leading to bias.

Country information: Orbis have several variables providing information on a firm and a shareholder's country or origin – such as the address line, city name, country name, and ISO-code. However, as the two first letters of the firm and shareholder's identification code are the country's ISO-code – I do not need more variables to gain country information. I will also use the variable 'shareholder's entity type' (SH_ENTITY_TYPE) as a mean to find country information when the ISO-code of the shareholder is missing.

Ownership information: One of the key aspects of my database is the information on the ownership of the firm. Orbis have several ways they communicate this type of information, such as direct and total ownership in percent, the beneficial owner (BO), the domestic ultimate owner (DUO), the global ultimate owner (GUO), the controlling shareholder (CSH), the immediate shareholder (ISH), and other ultimate beneficiaries (OUB). For my research interest, the global ultimate owner seemed like a promising variable, and it is much used in previous studies. However, for my type of access, the GUO-variables could just be given in historic data. Thus, I would not be able to use it for my time-series. Another point is that GUO limits the ownership information to just the one, ultimate owner. That means that I will have no ownership information on firms without an ultimate owner, and I will not know if an ultimate owner has the plurality of voting power or if she is the sole owner. Orbis's process of defining the ultimate owner is complicated, and in theory it may even point out a shareholder that is not the largest total owner, as the ultimate owner. Consequently, I opted for the total and direct ownership stakes. The major disadvantage is that having 6 of these types of variables limits the number of firms per query a lot. A detailed description of direct, indirect, and total ownership can be found here: https://help.bvdinfo.com/mergedProjects/68_EN/Ownership/DIRTOTOW.htm.

As part of my research interest is to look into the autonomy of the firm, I will also download the Orbis's measure for a firm's independence (INDEPENDENCE_INDICATOR). This is useful as it can give a category for the ownership structure, even if the firm does not have enough information in the total and direct ownership stakes. Here too, the variable 'shareholder's entity type' can be used to improve the coverage of the ownership information.

Other company characteristics: In addition to the abovementioned variables, I have also included the firm's date of incorporation (INCORPORATION_DATE). This will mainly be used for descriptive purposes, as a way of finding the age of companies.

Company variables	- Company name (NAME) - Company's identification code in Orbis (BVD_ID_NUMBER) - Company's date of incorporation (INCORPORATION_DATE) - Company's industry classification code (NACE2_CORE_CODE) - Measure of independence (INDEPENDENCE_INDICATOR) - Number of entities in corporate group (CORPORATE_GROUP_SIZE_LABEL) - Number of subsidiaries the firm owns (SUB_COUNT) - Operating revenue (OPRE), for 2019, 2018, 2017 - Net income (PL), for 2019, 2018, 2017 - Total assets (TOAS), for 2019, 2018, 2017 - Current assets (CUAS), for 2019, 2018, 2017 - Current liabilities (CULI), for 2019, 2018, 2017 - Total equity (SHFD), for 2019, 2018, 2017 - Non-current liabilities (NCLI), for 2019, 2018, 2017 - Number of employees (EMPL), for 2019, 2018, 2017 - Number of publications (CountersTypeCountriesPatentsYears_Total) - Intangible fixed assets (IFAS), for 2019, 2018, 2017
Shareholder variables	- Company name (NAME) - Company's identification code in Orbis (BVD_ID_NUMBER) - Shareholder's identification code in Orbis (SH_BVD_ID_NUMBER) - Shareholder's entity type (SH_ENTITY_TYPE) - Shareholder's industry classification (SH_NACE_CORE_CODE) - Shareholder's direct ownership stake (SH_DIRECT_PCT), for December 2019, December 2018, December 2017 - Shareholder's total ownership stake (SH_TOTAL_PCT), for December 2019, December 2018, December 2017

Table 26 Overview of the downloaded variables from Orbis.

Designing the download schedule

As mentioned, Orbis has limits to its number of downloads per query, as it depends on the types of variables that is included. To be able to download my data in as few queries as possible, I chose to divide all my desired variables into two datasets, which I will merge together later on:

a) Company data, including the financial data and information on the company itself
b) Shareholder data, including the information on the shareholders of the firm

Since there may be several shareholders per firm per year, this will limit the number of observations per query more than for financial data where it is only one recorded observation per firm per year. As a result, given my query for the company data can take 34250 firms per download, while the shareholder query can only handle 10750 – even if the company dataset has three times as many variables.

G3. Industrial classificaiton (the NACE system)

To put it as stated by Eurostat themselves, NACE (Nomenclature statistique des activités économiques dans la Communauté européenne) is the *"statistical classification of economic activities in the European Community"* (Eurostat, 2008, p. 5). It is used as a way to get standardized, reliable and comparable statistics across countries. The system has been in place

for quite some time, but way revised in 2008 to add to and update the old NACE Rev. 1 and NACE Rev. 1.1 versions. The NACE codes are based on the ISIC (International Standard Industrial Classification of All Economic Activities of the United Nations) – which is used all over the world (United Nations, 2008). The two systems share similar structure and classicifacions, but the NACE-system is developed and adjusted to fit economic activities in Europe spesifically.

The NACE-system's four-level hieractcical structure (Eurostat, 2008, p. 15)**:**
1. Sections: Headed by an alphabetical code, and has 21 units ranging from A to U.
2. Divisions: Headed by two-digit numerical code, and has 88 units ranging from 01 to 99.
3. Groups: Headed by a three-digit numberical code, and has 272 units ranging from 011 to 990. This is not part of my dataset as it is not reported directly in Orbis. However, it is possible to transform NACE clases into these groups.
4. Classes: Headed by a four-digit numberical code, and has 615 units ranging from 0100 to 9900. This is the most used industry key, and can be refered to as the NACE Rev. 2 code.

The Orbis Dataset provides several systems of industry classification, such as NACE, NAICS, US Sic and Ibid. I have chosen the NACE-system as is tailor-made for Europe and as it is the same in all European countries. As a reason, most European companies report their financial activities in the NACE-system. Thus, when the companies themselves or the Orbis system try to find the best-fitting equivivalent code in the other systems – the misreporting is more likely than in the NACE-system. Further, I have chosen to only report the firm observations by their primary code. This is in line with the methodology of several other researchers, such as Kalemli-Ozcan et. al (2019).

G4. Data cleaning and formating

G4.1 Data cleaning strategy

My overall data cleaning approach has been to be conservative. That is, let the data stay as original, unless there is a common practice or clear reason for adjusting it. In this section I describe the steps I have taken, and some of the reasoning for executing each of the steps.

G4.2 Overview of formatting steps

ISO-codes:

Some entities are not tied to a country – ending up with ISO-codes "WW", "YY", "ZZ", or "II" meaning "Named individual or individuals", "Financial firm", and "Public, self-owned, or other unnamed or aggregated owner", and 'supranational owner' respectively. There are important differences in the approach to this problem in studies using ORBIS. Kalemli-Ozcan used an "active" approach that included using the shareholders name to 'suggest' what country the shareholder belongs to. In addition, they assumed that shareholders without any country code, or with values of "-" or "n.a", were located in the same country as target company (2019, p. 48). The EU commission staff used similar steps in their M&A database, but to a lesser extent. On the other end of the scale, Babic et al. used a 'safer' approach and removed all such observations. I have chosen a "middle way", using the following strategy in the bullet points below. The observations are dropped after calculating total market size in all the industries. Thus, I do take into account their financial data, but the ownership data are not used for further analysis.

  - Shareholder observations with ISO-code "WW" are dropped, as these are no precise way of knowing the nationality of the named individuals.
  - Shareholder observations with ISO-code "YY" and an entity of "Self ownership" or "Employees, managers, directors", are replaced with the local ISO-code. The rest of the observations are dropped.
  - Shareholder observations with ISO-code "ZZ" and an entity of "Public", "Self ownership" or "Employees, managers, directors", are replaced with the local ISO-code. The rest of the observations are dropped.
  - Shareholder observations with "II" are dropped – as they are made by supranational institutions, and thus, do not belong to a country.
- Replaced ISO-codes for Hong Kong (HK) and Macau (MO) with China (CN). This is in line with several studies, such as Babic. This is done since areas are often used as a company's or individual's place of register – and there seems to be little independency from mainland

China. I have however kept Taiwan (TW) isolated from the rest of China, which seems to be the most common practice.

NACE-codes:

In situations where the industry code is missing, but the shareholder is registered with an entity type, I have used the most generalized code that seems appropriate. More precisely, I have used the following:

- 6510 (Insurance) if entity type is “Insurance company”.
- 6400 (Financial service activities, except insurance and pension funding) if entity type is “Bank”, “Financial company”, “Private equity firm”, “Venture capital” or “Hedge fund”.
- 6430 (Trusts, funds and similar financial entities) if entity type is “Mutual and pension fund, nominee, trust, trustee”.
- 7220 if entity type is “Foundation, research institute”.
- 8400 if entity type is “Public authority, state, government” or “Public”.
- 0311 (Marine fishing) if entity type is “Marine Vessels”.

Further, if the shareholder’s industry code is missing and the entity type is “Self ownership” or “Employees, managers, directors”, I have replaced it with the company’s own NACE code.

Ownership:

Orbis report ownership information on direct ownership and total ownership. The main rule is that the amount is given in percentages, but there are examples of that not being the case. There are two general ways the main rule is not followed:

- When the ownership share is combined with “>”, “<” or “±”. For example, that a shareholder owns “>60”. As there are no way to know how much of a greater or less the actual ownership share is from the number, I have used the conservative approach of simply removing the sign – and keep the number as is. The only exception is when the share is “>50” or “>10”, when I have replaced them with “50.01” and “10.01”. That reason is that in both cases, whether or not the observation is over or precisely 50 and 10, will matter when it comes to which category it ends up in. To put it directly, 50.01 percent is enough to have the majority of the votes in the firm, while 50 percent is not.

- The other example is when the amount of ownership is given in acronyms, when I have used the following rules for replacement.
  - "WO", which stands for "Wholly owned" is replaced with 100%
  - "T", which stands for "Sole trader" is replaced with 100%
  - "MO", which stands for "Majority owned" is replaced with 50.01%
  - "CQP1", which stands for "50% +1 share" is replaced with 50.01%
    (as 0.01% is the smallest number reported in Orbis)
  - "JO", which stands for "Jointly owned" is replaced with 50%
    (this may be the case when two shareholders own half the firm each)
  - "NG", which stands for "Negligible" is replaced with 0.01%
    In addition, the four following categories are replaced with empty cells, as they do not contain information on the ownership share:
  - "GP", which stands for "General partner"
  - "BR, which stands for "Branch"
  - "FC", which stands for "Foreign company"
  - "VE", which stands for "Vessel"
    Source: See "Type of percentage: direct and total ownership" (Orbis Database Documentation, 2019)
- Made a common ownership variable, which is the highest of total and direct ownership, as done by Babic et al. (2019, p. 29)
- Make averages for the different financial and ownership scores, for the three years, as done by Fuest et al. (2019).

Company data:

- Replaced staff count of 0 employees with missing value

F4.3 Filtering of observations

- Drop companies where no information on any of the financial variables, in neither of the three years
- Drop companies with no known shareholder percentages
- Drop companies with a negative number of employees, in any year
- Drop companies with negative total assets, in any year

G5. Construction of variables

G5.1 Investment ties

One of the major problems with constructing a database of firm-level foreign direct investments is that, in a globalized world, investments are often crisscross of sophisticated patterns. As a result, a direct investment is seldom completely direct – often with several entities between the ultimate owner and the target company. These complicated transactions can often go back-and-forth between countries – so it can even be difficult knowing when and how much of an investment that is foreign. A common example is to use offshore financial centers as a pitstop. These centers are even used when people invest in their own country, called 'foreign direct investment round tripping' – which make the distinction even more troublesome (Aykut, Sanghi, & Kosmidou, 2017). Therefore, when foreign direct investments are often neither direct nor clearly foreign, one must implement some procedures to make the data as good as possible.

An ownership in a company is not exactly the same as the shareholder's investment in the company, although it is connected. As Orbis does not have a variable that measures the specific amount of investments a shareholder has in a company, the investment flows cannot directly be measured. Thus, without additional steps, the only thing measurable is the sole count of ties between the countries. This would however make a 1-percent ownership as important as a 99-percent ownership, as both would count as one tie. This problem could be slightly solved if using the share of ownership to weight the part of the count, so that the total "ownership count" is a weighted share of how much of a company they own. More precisely, a share of 25 percent of a company do only account for ownership of 0.25 companies, and so on. However, this would not solve the fact that an ownership of 25 percent of a major company such as Shell or Volkswagen would be counted as the same as 25 percent in the local barbershop with two employees.

Therefore, I want to create a way of measuring the sum of investments that each shareholder has in each company they own. Nevertheless, it is important to take note of the caveat described above: the measurement of total investment is strictly speaking a measure of the value of the activity the shareholder can 'claim', according to their ownership stake – and not a good measure for what is needed to purchase the companies they own. This challenge exists for all studies of investments, which *"implies that reconstructing FDI flows from firm level data is nearly impossible"* (EU Commission Staff, 2019, p. 72). However, the approach of using other measures as proxies for the amount invested is much used and seems acceptable for my desire to look further into ownership of European companies.

A measure that can be used to map the size of investments from different countries can be made in several ways. The most obvious measure of a shareholder's investment in a firm is the weighted part of the total market capitalization, corresponding to the investor's share of the firm. The downside is that market capitalization is only available for publicly listed companies. Considering that Orbis only have this type of data for about 10,000 firms in Europe, it would not be very useful for my approach. Therefore, I must use on alternative approach using a firm's booked values. Below, I present some of the ways that have been used in previous studies.

First, one can use turnover proxy for the size of the target firm. Thus, the total "investment tie" in the company is the ownership stake multiplied with the operating revenue. This investment tie should then be interpreted as 'the volume of revenue each investor owns', or it may be viewed as the volume of the turnover that is controlled by each investor. Turnover as a proxy for firm size is used by Babic et. al, that state that "revenue captures better the idea of transnational (..) capital being sent out" (2019, p. 12). Kalemli-Ozcan et al. (2019) took a similar approach, using the firm's gross output. The major advantage using the turnover is that it is quite a common variable for most companies, and has better data quality than assets and employees (Garcia-Bernardo & Takes, 2018). Another benefit is that revenue is more objective as a measure for the size of the economy. On the other hand, there are also some problems with using the operating revenue as the measure for the actual amount of capital the investor has put into the firm. For instance, some companies may be relatively expensive (and thus being a large investment), even if the turnover is small. That is often the case for technology firms in the start-up phase.

Second, one could use asset as a measure of the 'size' of a firm. The use of total assets is done by the EU Commission staff, in their mapping of inward FDI to Europe. One reason may be that the interpretation seems easier, where their figures are used as a measure of the size of the EU-economy that is owned by foreign entities or citizens (EU Commission Staff, 2019). Further, one could use equity as an alternative approach to total assets. The reason for using this type of assets may be that it is a better measure of the amount of fixed capital the investors have put into the firm. On the flip side, it may be quite volatile, and is therefore more prone to short-term changes. Besides, negative equity is not uncommon, which raises the question on it should be dealt with in practice. It seems problematic to include these investments as "negative investments", but just removing them from the total is also sub-optimal. In their examination of foreign-owned businesses in UK, the British Office for National Statistics created two measures of 'contribution of parent companies'. First, the sum of sum of shareholders' funds

and the ownership percentage, and second, the sum total assets and the ownership stake (UK Office for National Statistics, 2020).

Third, it is possible to imagine an approach using the number of employees in a firm. A similar technique was used in an IMF Working paper, as a measure of ‘financial resources used to operate the firm’ (Ando & Wang, 2020). They proposed using either employees per dollar in total assets, or employees per dollar in equity. This solution seems preferable only if one is interested in the specific ratio of employees per asset.

With all these arguments taken into consideration, I have chosen to use both total assets and operating revenue as my main dependent variables. The major advantage by using both of them is to control for any potential bias that each of them may give. By that I mean that the asset-based investment tie will boost the importance of high-asset sectors, such as financial firms – while the turnover-based investment tile will increase the influence of high-revenue sectors, such as trading firms. In a practical manner, total assets and operating revenue is favorable as they very seldom become negative, as can happen with equity if a firm covers deficits with parent company guaranteed bank loans.