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Analysis of the determinants of inward Greenfield investments in the German Administrative Regions

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Shall I dedicate this work to a virus?

My tears are dropping,

my sacrifices *seem* to vanish,

but, once again, my mother's voice

keeps on whispering

"come on, the show must go on"

Posso dedicare questo lavoro ad un virus?

I miei occhi sono lacrimanti,

i miei sacrifici *sembrano* svanire,

ma, ancora una volta, la voce di mia madre

continua a sussurarmi

"forza, dobbiamo andare avanti"

Torino, 26 Marzo 2020

Abstract

The Oct. 3 1990 New York Times reported, *"Forty-five years after it was carved up in defeat and disgrace, Germany was reunited today in a midnight celebration of pealing bells, national hymns and the jubilant blare of good old German oom-pah-pah"* (by The Learning Network from The New York Times, "Oct. 3, 1990 | East and West Germany United After 45 Years"). Today known as *tag der deutschen einheit*, the German Unity Day, remembers when the Federal Republic of Germany and the Democratic Republic of Germany reunited to create one Federal State on October 3, 1990.

Leaving all the historical details aside, the aim of the paper is to investigate whether the effects of this union have been interiorized from the global economic perspective. That is to say to understand whether foreign investors perceive the German Regions as equal alternatives for each potential investment. By contrast, the other possible scenario would entail a two-step decision process, in which investors firstly decide whether to go East or West, and then the German Region they want to invest in. This study addresses the determinants of locational choice of foreign investors at the level of German Administrative Regions. The conditional logit model is employed to estimate the relative probability of choosing a certain location, by evaluating all the regressors in play. The FDI data from Financial Times gather the information about the crossborder Greenfield investments available from 2003 to 2018.

Moreover, time plays a crucial role in the underlying analysis, since we do not expect substantial changes during the years immediately following 1990, but, instead, we do in recent years. To assess the gradual evolution of the changes, the economic regression has been repeated twice: once for the sub-period from 2003 to 2010, once for the sub-period 2011-2018.

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Chapter 1

Introduction

Do foreign investors still consider West and East German as to different countries after thirty years? Foreign direct investments (FDI) are considered an important mean through which a country can benefit from technological spillovers, introduction of know-how and product innovation. Since 1990, after the fall of the Berlin Wall and the German reunification, the East Germany has been involved in a "process of economic catching-up", with the aim of recovering the existing gap with its performance and the ones of West Germany and the other European countries.

Nonetheless, the differences in factor prices, the low degree of trade openness and product innovation have kept the share of East German FDI stock very low all over the years. Last but not least, it has been proved that foreign investors have reached higher performances with respect to the East Germany, in terms of sales and labour productivity (see Günther, Jutta, and Oliver Gebhardt, 2005). All these considerations are a clear proof that multinational activity has not yet contributed to lowering the gap between the East and the West part of the country. This paper addresses the issue by analysing the determinants of location choices at the level of the *Regierungsbezirke*, the German Administrative Regions, which are classified

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under the NUTS-2 level by the Nomenclature of Territorial Units for Statistics. Over thirty eight regions, only eight of them belong to the East part of Germany, Berlin, Thuringen, Mecklenburg-Vorpommern, Sachsen-Anhalt, Brandenburg, Chemnitz, Dresden and Leipzig, while the rest is part of the Western Germany.

The real objective of the study is to understand the behaviour of foreign investors that are attracted to the country: do they decide at first whether to invest in the West or the East part of the country, and then they look at the city where to locate their investment in a second step? Or they consider all the German cities as equal alternatives? The analysis will first employ the conditional logit model, in order to assess all the determinants that drive the foreign investors' locational choice, and then analyse the marginal effects that the explanatory variables have on the dependent variable.

The paper proceeds as follows: Chapter 2 introduces the reader into the context by analysing the advantage and disadvantages of being a multinational enterprise, Chapter 3 lays out the empirical methodology and the variables used for the analysis. Chapter 4 discusses the results of the empirical examination, while Chapter 5 concludes.

Chapter 2

Across the borders

2.1   "From local to global and beyond" [1]

During the last two decades, the integration of the international economies have
pushed companies to consider the expansion of their businesses across the borders
as a profitable strategy to survive the competition in the market. This phenomenon
has boosted the diffusion of foreign direct investments from the most developed
countries to the less developing, which became to be interested in placing their
headquarters in foreign regions, thus providing a positive impulse to the effects of
the globalization. (Borin e Cristadoro, 2014)[2]. The relationship between FDI and
globalization is somehow bilateral: this latter has a tremendous impact on the spread
of foreign direct investment, whose growth, in turn, gives a strong contribution to
the increase of the internationalization process.

The reduction of the investment barriers and the affirmation of a new techno-
logical paradigm has enabled the shift from a traditional economy to a new idea of
business, where the international trade is encouraged by lower shipment costs and a
reorganization of the production processes. As a result, with the development of the
global value chain, which by definition must be coordinated across geographies, the
presence of Multinational Enterprises (MNEs) – defined as firms that hold assets
or employees in more than one country – and the international division of the jobs
have been at the centre of the topic. No matter the level of their economic wealth,
countries are focused on the creation of economic policies that attract FDI inflows.
Since FDI can bring new capital, new technology and economic growth, companies

want to realize benefit from them. Today enterprises are more competitive than even before in entering the global market, and one of the strategies is to invest in foreign direct investments. The decision of making the investment is the step behind the start of the production, and between there is the evaluation of all the elements in play for achieving a great return. This paper aims at investigating all the determinants that drive German investors' FDI location choice, by first retracing the history of Multinational Enterprises and the literature about the topic.

2.2 MNEs: a brief history

Modern Multinational Enterprises are in a way part of a post-industrial revolution phenomenon from the late nineteenth century, but several scholars have started to associate to them a long history (Wilkins, Mira, 2001)[3]. In his "history of American business abroad" Wilking (1970) addresses to the Sumerian people, who needed "men stationed abroad to receive, to store and to sell their goods". Moore and Lewis (1999) as well, they suggest to look at the world of mercantile activities over borders, before focusing on the new era. At a conference in the early 1970, people were arguing that one of the MNE's oldest form dates back in 1600, when the British East India Trading Company was founded. What we can surely affirm is that with the boost in Information Technologies (ICT) of the 19th century, the telecommunication infrastructure began to lower distances among companies, thus enabling the creation of a regulated international trade. In addition to the digital era, transportation revolutions have contributed to establish coordination within firms, by letting managers exercise their control in a meaningful manner (Wilkins, Mira, 2001). MNEs grew especially after the Second World War, when commercial trade registered a high increase and the liberalisation of the markets encouraged a rapid progress in the global economies. From being 7000 in 1970 to 38000 MNEs in 2000, it has been verified a high jump in the last years. Companies have tried to optimize their processes and their profits by outsourcing their value chain or by either replicating their plants across their borders. This is confirmed by the fact that production of foreign affiliates accounted for 12% of global output in 2014, and it grew from 7 to 20 trillion USD between 2000 and 2014, although this increase became smoother during the period of the financial crisis (OECD,2018)[4], like shown in figure 2.1.
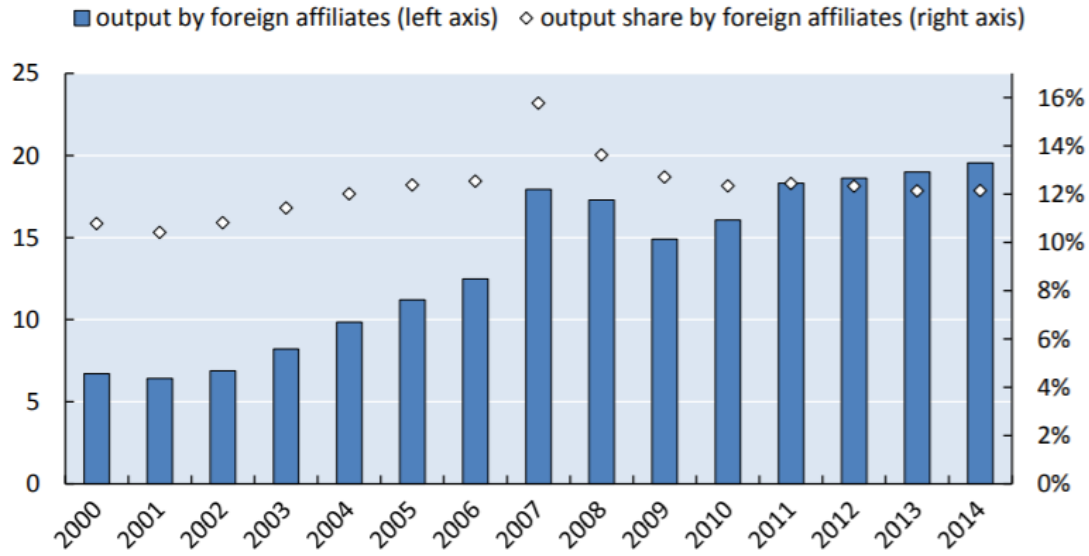
Figure 2.1: Foreign affiliates' gross output and their share in global output, 2000-2014

Although the history of MNEs seems to be centuries-old, we can greatly affirm that the concepts of the transforming power of technologies and the influence of multinational enterprises going global goes back to the years 1980-1990, where innovation and technology began to emerge in the everyday sentences. Telecommunications began to lower distances among companies, both commercial and geographical, thus flattening the world day by day. It is interesting how this debate is much discussed still today, where some people are strongly convinced that the world will converge to the global harmonisation of businesses, while others are much more conservative and diffident about this phenomenon. Some authors have even talked about "semi-globalization", a term that highlights the lack of the total internationalisation. Although numbers have proved an increasing flow of goods and operations across borders, MNEs are still struggling between the home market and the foreign customers. The consequence is that managers should be careful from the strategical point of view, since they have to integrate both the external and the internal operations, without losing the focus that is, poorly speaking, the maximization of profits. The AAA framework is the one that better captures this point (see Ruth

V. Aguilera, 2014). It gathers three different (and somehow contrasting) focuses under the same strategy: Aggregation is the term that refers to the opportunities, Arbitrage points on exploiting differences and Adaptation on the tolerance of local tastes. The first term addresses the easiest plan one may think about, that is to invest in countries where tastes, language and economic conditions are mostly similar to the home company. The second, instead, says the opposite. Arbitrage is intended for exploiting the differences between countries and making the best out of them: this is what happen, for example, when companies are investing in countries characterised by cheaper factors costs. Lastly, Adaptation, that is likely to make the own operations converging to the one of the host country, otherwise it would be difficult to find a fertile ground to operate in. This framework wants to give the reader an overview of what this paper is going to discuss. The following sections, indeed, will addresses the advantages and disadvantages of going global, by deeply analysing all the trade-offs that multinational enterprises, despite their ongoing cross-borders operations, should take into account since differences still matter.

2.3 Reaching the foreign market: internalization vs. externalisation

Knowing that multinationals exist is necessary but not sufficient for the aim of this paper, thus suggesting that we should go deeper analysing what there is behind this phenomenon. Although there are many reasons why firms should invest abroad engaging in foreign investments, it happens that for some reasons they prefer to externalize the production of their inputs, by relying on external suppliers or by selling their know-how through the use of licenses. Different trade-offs should be taken into consideration: internalising entails higher costs, but it eliminates the probability of being stuck in the middle in situations where it is difficult to enforce the relationship with other players in the market. On the other hand, relying on an external supplier that has full awareness of the local market will enable the firm to operate at lower costs. Indeed, he can have a better access to all the information of the underlying market: better workforce knowledge, local trade conditions, entity of the demand, or accounting procedures. When those type of commercial relationships are established, some problems may be encountered if the level of specialization of

the product is very high, thus providing the firm a high bargaining power. This is one of the typical risk of establishing commercial relationship, broadly called as "hold-up" problems (Cantamessa, Montagna, 2016) [5]. They occur when the agreement between the two parties is difficult to enforce, since it is impossible to foresee all the possible future events. When the input is highly specialized, the supplier could be worried about not recovering the investments made, especially because it cannot make another use of it. It is therefore not surprising that in such cases firms prefer foreign direct investments in place of external suppliers as an alternative to reach the market across the borders. Another crucial issue is the dissipation of business specific assets, which would reduce the competitive advantage of the firm itself. Indeed, being horizontally integrated means to lose the secrecy of its own knowledge, since it should be declared to the external supplier in order to make the activities required. Notwithstanding the externalisation of the knowledge could be sometimes too expensive, or too easy to do, thus pushing firms to opt for the internalisation of its own activities. This happen in high-qualified sectors where knowledge is incorporated in people, such as bank or consultancy. When the knowledge could be easily moved around, everybody will have access to it, especially the employees that could attempt to replicate it on their own, thus becoming competitors of the firm they were working for (Navaretti and Venables, 2006)[6]. Nonetheless, there are cases in which the activities could be outsourced without incurring in high risks, like McDonald's does by running its business on franchising. Its production is highly standardized and easy to be taken under control, hence there is low probability that the licensee will destroy its brand. By contrast, relying on third parties could be too risky for all the companies that operate in the field of luxury and fashion have the own property of all the shops, because their layout is part of their marketing strategy and it could have a direct impact on their sales. Last but not least, agency costs should not be underestimated. Especially because of the geographical distances, it is very difficult to monitor the suppliers' activities. This latter could easily manipulate the market information and retain an extra surplus for them without being caught. On the other hand, the costs incurred with the internalisation of the activities is related to the impossibility of reducing the production costs for both of the types of investments, since no external qualified experts are employed. Controlling a subsidiary company entails high fixed costs that are specific to the local plant, which could be halved with third party suppliers' engagement. Figure 2.2 summarizes

all the aspect related to the externalisation of activities, taking into account the distinction between horizontal FDI and vertical FDI (Markusen, 1984). The former occur when a company settle its plant abroad in order to gain access to the foreign market, while the latter is more oriented to a cost reduction strategy, choosing a country that has lower production costs to outsource each stage of production. Further, the role of uncertainty plays differently with the two type of investments. In case of productivity shocks, multinationals would shift their production from the less productive plants to the most efficient ones. This could be easily achievable with horizontal investments due to their high level of substitutability, while vertical FDI would face higher risks, since the unproductive plant represents part of the multinational's value chain (Aizenman, Joshua, and Nancy Marion, 2004).

	Horizontal FDI		Vertical FDI
Definition	• Production of the same product abroad		• Outsourcing part of the value chain
Objective	• Access to foreign market, • Avoid commercial barriers		• Reduction of production costs • Economies of integration
Preferred location	• High-income countries		• Countries with low factor costs
Preferred industry	• Final goods with high transport costs • Services that require direct contact		• Final goods with low transport costs • Industries where disintegration costs are low

Figure 2.2: "Horizontal and vertical investments". Adapted from Navaretti[6].

2.4 Difference between National and affiliates performances

Following Helpman et al (2004) foreign firms have more disadvantage with respect to local companies, because they face an informational limit since they cannot benefit from the same experience in the host country. Multinationals have to operate in

foreign countries, dealing with different languages, legal structures, communication and transportation issues. When compared with a domestic firm that only operates in one country they have to face extra costs and difficulties. On the other side, empirical studies have proved that MNEs productivity is superior compared to the one of local companies. This is not true only because they are affiliates, but the possibility of exploiting economies of scale and lower factor costs, through horizontal and vertical investments, enables them to increase their efficiency above the national average. The analysis of the available data have proved that the average productivity of the subsidiary companies is between 30% and 70% higher than the national one, and 30% above the company's productivity of the origin country (Benfratello e Sembenelli, 2002)[7]. Additionally, they are normally big-sized companies, they invest a lot in R&D, they are characterised by high-qualified personnel and they introduce products in the host market that are usually different from the ones already existing. Many evidences show that those affiliates are more oriented to the international market, they buy more intermediates in respect with domestic companies and they are more capital intensive. Therefore, they have a lower value-added/output ratio, but a higher foreign value added in their production (OECD, 2018)[4].

Furthermore, in case they were born through M&A they are companies that have been chosen by multinationals as the most performing affiliates to invest in, while in case they were born ex novo they are sons of the origin company that was sufficiently efficient and big enough to invest abroad. As a result, in both cases policy makers should be in favour of foreign entrepreneurs interested in investing inside their country, because those new companies would be with high chances more efficient than the national firms (Navaretti and Venables, 2006)[6]. In line with this, many studies attempted to explain the correlation between the firm's productivity and its ability to increase profit through exports. The aim was to prove that disaggregation and efficiency could coexist, by showing that although MNEs put a big slice of their capacity into international trade, they can still obtain high profitable results in their domestic market. The economist Melitz has proposed his model, where he explains the mechanism through which local companies decide at a certain point to engage in export commercial activities. He states that the companies whose level of production is higher enough to cover the sunk costs incurred for their investments are able to serve their home market, while the ones that manage to obtain higher returns are willing to serve the international customers (Melitz, 2003)[8]. With

Helpman and Yeaple (2004) the model have been extended since they attempted to explain the behaviour of firms involved in the international trade. Both exports and affiliates are ways to serve a foreign market, but only the more efficient companies are able to engage in FDI. This is at the base of the proximity-concentration trade off, that weights the transport costs and the plant's fixed costs on the same scale 2.3.
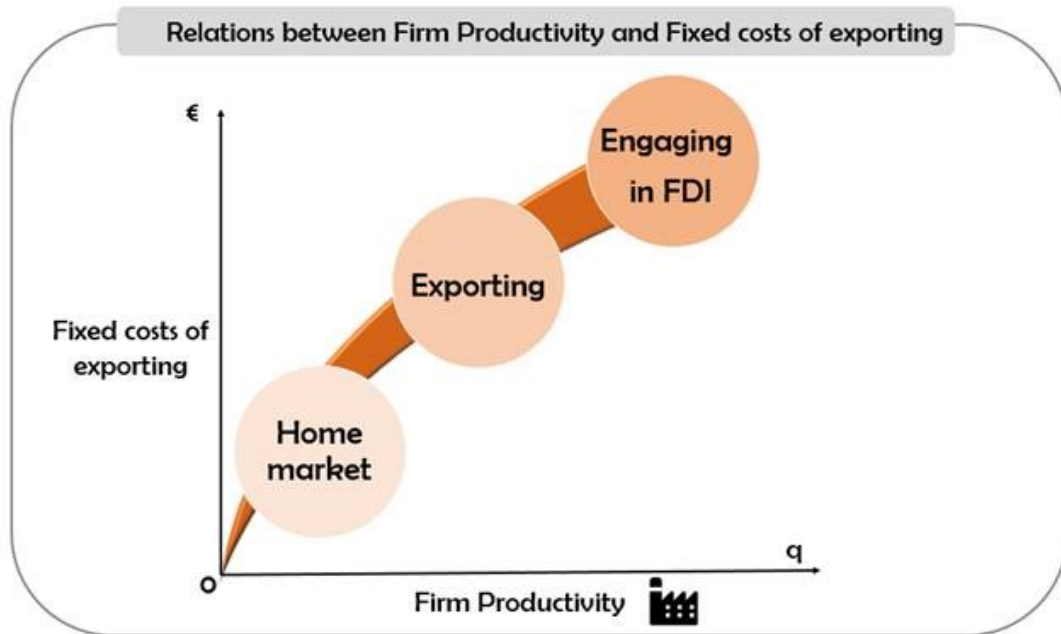
Figure 2.3: Relation between Firm Productivity and Fixed costs of exporting

2.5 The OLI paradigm

Section 2.4 addresses the differences between national and foreign firms, assuming the existence of advantages to multinational production that somehow overweights the extra costs undertaken when investing abroad. An attempt to model the motivation of MNEs have been made by Dunning (1997), who have proposed the eclectic paradigm. In his model, he states the three conditions to be met when investing abroad: the company has to obtain ownership and location specific advantages in order to outweigh the transactional costs, and it has to benefit from them without licensing its business to third parties (Jost, Thomas, 1997). Dunning does not want to answer the question why multinationals exist, but it wants to schematize all the

factors in play in order to have a reference when examining each of them one by one. The OLI Paradigm is built on the following three pillars:

- O that stands for Ownership;

- L that stands for Location;

- I that stands for Internalization.

These can be considered as three crucial issue of a firm's decision about investing in a foreign country. As figure 2.4 highlights, firms should evaluate the extent to which sunk costs should be undertaken in order to start their production abroad, assessing all the trade-offs that come in play. Generally, low-productivity firms produce only for the home market, medium-productivity firms engage in export trade, while high-productivity firms are willing to pay the extra costs due to FDI investments (Navaretti and Venables, 2006)[6].

Source: Dunning (1981)		Categories of advantages		
		Ownership advantages	Internalization advantages	Locational advantages
Form of market entry	Licensing	**Yes**	No	No
	Export	**Yes**	**Yes**	No
	FDI	**Yes**	**Yes**	**Yes**

Figure 2.4: Eclectic approach - Dunning 1981 from https://harmkuiper.wordpress.com/2011/03/08/eclectic-approach-john-dunning/

The first key issue addressed by Dunning is Ownership, which answers the question why certain firms decide to abroad and why others do not, by explaining that firms who turn into MNEs are the ones that have competitive advantage over their competitors due to their specific tangible and intangible assets, such as brand or reputation (Borin e Cristadoro, 2014)[2]. Other examples are patents, licenses, managerial and marketing skills that could potentially shape the firm's know how, its safest card to play abroad. Location advantages instead refer to the choice of a specific destination country, where multinationals can exploit the greatest benefit from their performances. They could be linked to the existence of specific factors inputs, rather than the availability of low cost resources to be utilized to full advantage (Neary, Peter J., 2008). As we have already seen, firms could engage in horizontal investments by replicating their production in a foreign country, or vertical investments by outsourcing their value chain in a low cost country. In either cases it is likely that multinationals move what Helpman (1984) called "headquarter services" in the destination region, thus replicating all the factors that sustain their competitive advantage abroad. The third point of the paradigm is Internalization, which pushes a firm to opt for foreign direct investments instead of joint ventures, exports or third party suppliers. The key issue here is the trade-off between the transaction costs of using the market and the organizational costs of running a firm. As stated in the paper by Ronald Coase, transaction costs usually refers to those expenses held when procuring something with a market, they include search and information costs, policing taxes or trade secrets cost management. By contrast, vertically integrated firms should undertake all the expenses related to the internal allocation of resources, coordination and organizational costs.

2.6 The International product lifecycle model

Among the others, timing is another key issue that companies should evaluate when investing in a foreign country. At this time it is worth mentioning Vernon (1966)'s contribution to this topic, with its International product lifecycle model. In his model, Vernon explains that the location of a new product is driven by the three stages of its lifecycle: diffusion period, maturity and standardisation. The first stage is what Abernathy-Utterback called "Fluid phase", where the dominant design has still not emerged, and uncertainty is very high (Cantamessa, Montagna, 2016)[5].

At this phase the innovative product has no industry around; firms have not idea of how the competition will be and how their customers will react when evaluating the product's purchase. For this reasons companies are more willing to choose their domestic market as a location, and to play it safe. In addition, it is more likely to sell such an immature product in a developed country, where high-income people are more willing to buy a new product and take the risk, thus making the price elasticity of demand very low. Being at a very early beginning, cost inputs are not among the most relevant factors. Indeed, the innovation phase is still uncertain, firms have to experiment until they manage to find the optimal product architecture that will satisfy the customers' demand. This means that crossing borders at this stage may be too risky, since firms need high capital investments in order to afford their market's requirements. This will not be true anymore at the end of this stage, when the firm will have finally found its stable place in the market, being pushed by the desire of raising its revenues abroad engaging in exports activities. The product is now at its maturity stage, where the degree of uncertainty begins to lower and costs' optimization starts to matter. Since the product design is certain and broadly accepted, firms start being involved in foreign direct investments, offshoring their production facilities. This stage allows companies to halve the unit costs, since they do not have to afford high transportation costs anymore. Since the home market is saturated, competition starts to grow in foreign countries, where firms still need a high-skilled and qualified workforce. At this phase exports start to direct their targets forward developing countries. The innovation process is now at its end, thus companies begin to focus their activities on the cost optimization goal, and the product starts its standardisation process.

> *"if product X did not follow standard Y, would it be of lesser economic value? If so, would it be because of non-conformity or because of lesser performance?"[5]*

As a matter of fact, standards provide value through externalities, complementarity with other goods, modularity and economies of scale. They enable companies to focus on processes' cost reduction, increasing the mobility of their operations. In this line, labour costs become the relevant location drivers, which channels firms' decisions towards undeveloped countries, where they can find cheaper factor costs.

2.7 Cost of doing business abroad

As we have already introduced, going across borders entails high investment costs, which depend on distances, geographic and economic barriers, communication and integration issues. These are what Horst (1971) called Relative production costs (Z), which represent all the net additional costs involved in the decision of serving foreign market through exports, rather than establishing production facilities in the host country . If Z is positive, the firm is more likely to stay in its home market, while it will set up its new foreign production unit in the opposite case (Eden, L., & Miller, S., 20019) [9].

Other issues comprehend all the transaction costs related to the efforts spent by the MNEs to investigate the market and search for the right information. They also have to take into account the integration costs and all the time-consuming activities involved when building new relationships abroad, both with customers and suppliers. These are classified as Relational hazards (Eden, L., & Miller, S., 20019)[9] that occur only with Mergers & Acquisition, and not when the affiliates are wholly owned by the MNE they refer to. All these classified costs represent part of a static framework of the firm, according to which its growth beyond national borders depends on the transaction costs that should be undertaken. In order to explain the dynamic process in which multinationals are involved, some references to the resource-based view are necessary. Following this theory, *"internalisation becomes a matter of degree rather than a binary choice and involves the governance of both the assets owned by the MNE, as well as those that are accessed by it"* (Dunning, John H., and Sarianna M. Lundan, 2008)[10].

As stated by *The resource-based theory of competitive advantage* (Grant, Robert M., (1991)), firms are made of resources, which can be distinguished into tangible and intangible, and capabilities, which are the set of competences that by exploiting the resources enable it to gain competitive advantage over its competitors. Tangible resources are made of assets, plants, equipment or machinery, while brand, reputation, know-how or patents are classified as intangible resources. Although the latters are not physical, they are often considered as the most valuable. Since others cannot easily replicate them, they become the real source of the competitive advantage. On the other hand, those resources can also have a positive impact on the firm's expansion: if it is able to exploit them in a new country, the efforts required will

be certainly lower compared to a firm that is growing ex novo. This means that by lowering the production costs the firm will be able to raise its production rate, thus exploiting economies of scale. There are cases in which firms decide to move abroad only a part of its function, thus engaging as we have seen in vertical investments, referring to the fragmentation of the value chain. This type of geographical dispersion does not lead to a renounce in economies of scale because it may not require a duplication of activities, but since distance lowers the stability control by the home company over the business, other costs when managing activities abroad could become crucial. On the other hand, all the expenses related to the transfer of the goods between countries, the packaging, costs related to the time consuming activities involved with exports trade are completely overcame. These expenses could be avoided in the case in which firms decide to permanently open up a plant in the foreign country, thus eliminating any distance between the physical place where production is run and the final customer that buys the product. This is not the only advantage of foreign investments: moving the production closer to the final customer allows the company to better control the market, following its preferences and anticipating its competitors' moves. Additionally, this type of engagements are also enabled by the entry of the company itself in the host country. Since all the commercial costs decrease, the marginal costs of the market supply do it as well, thus reducing volume sales and sometimes prices. In this way, the new entry firm will certainly encounter less problems in finding its place in the new market, in respect with what it would have to face if the incumbents had not been threatened (Navaretti and Venables, 2006).

Another point worth of attention is the profitability of the investment, which is negatively related to the costs of the inputs used. For this reason firms tend to outsource their activities in countries where the cost of resources is lower, where there is high intensity of R&D researches, or where high qualified personnel is employed at cheaper costs. This is not true in every situations, since every case should be brought in its specific context before attempting hasty jump to conclusions. Empirical studies prove that firms are not intentionally going where salary costs are lower, but instead they focus on the presence of big medium quality workforce. Moreover, the potential gain stems from the international variation of factor costs, depending on the extent to which they vary over the firms' processes: if in all the activities phases the factors' intensity stays the same, there would be no advantage in outsourcing the business

in another country.

2.8 The effects on the host country

The presence of foreign investments could work as a positive boost for the host country or a negative influence, depending on the situations. The former comes when the higher competition caused by the presence of multinationals decreases the inefficiency of the local firms that fight to keep their competitive advantage, or when the new entry generates positive spillovers, in terms of new technology or knowledge that enables the circulation of flows of information between firms. By contrast, if the establishment of foreign investors has the only effect of stealing local shares, companies may suffer for their negative presence (Navaretti and Venables, 2006)[6]. In order to reach an objective evaluation of the impact that multinationals have on the host country, the reader should wonder what would have happened whether those foreign companies had not entered the market. Are they effectively raising the employment rate? What about the quality level of qualified personnel? Is it increasing?

2.8.1 Positive effects

Foreign direct investments could benefit the existing market because they increase the competition between firms, thus lowering the power of monopolistic firms. In this way, local firms are forced to become more proficient in order to survive the competition, by increasing their performance and productivity. The entry of multinationals affects also the efficiency of local suppliers, who must compete with high delivery speed and reliable quality of products so as to meet the requirements of the new competitive market (Essays, UK, November 2018). Further, the increase in competition would have an impact on the direct customers, who could benefit from a higher variety and quality of products in the market, coming from the reduction in prices.

Other positive externalities occurs when MNEs start selling products that are complementary of the ones sold by the already existing firms, thus boosting the diffusion of the same business. The reader should not forget that the capacity of the company to generate positive spillovers goes in parallel with the ability of the

subsidiary firm to absorb them. That is to say that if the latter is not able to exploit the benefit of the spillovers, the presence of them is not enough to guarantee profitable results. Evidences have proved that their positive externalities turn out to be productive only from small to medium enterprises. Especially in developing countries MNEs are not directly competing with the local companies, neither the latter have the necessary competencies to grab their technological resources, that is why FDI inflows have a low impact on the transformation of their national sectors (Navaretti and Venables, 2006)[6].

Moreover, FDIs allow the circulation of information within countries, enabling the transfer of technology, ideas and competencies. They can happen in different ways, by moving the personnel to the destination country or by transferring knowledge to the supplier without charging any price. Here comes the labour side: are FDIs increasing the availability of qualified jobs in both origin and destination countries? What happen to the wages? Analysing the effects is complex because they depend on the relative intensity of the qualified jobs required by the MNE's activities and on the relative availability of skilled workforce in the destination country. If a country transfers its highly qualified activities in a country where the intensity of unqualified jobs is high, both of them will benefit from an increase in skilled personnel: the former because it is outsourcing unqualified activities, the other because the level of the activities of the origin country is still much higher with respect to its own. In this way, multinationals tend to raise the standards of the labour market in the host country, which will not hesitate in paying higher wages to a workforce that guarantees a higher productivity (Lipsey & Sjoholm, 2010).

2.8.2 Negative effects

On the other hand, foreign direct investments could raise high uncertainty in the market, thus lowering the level of wealth on both supply and demand side (Navaretti and Venables, 2006)[6]. By definition, indeed, the foreign investors held at least 10% of the voting rights (Daniels et al., 2004). This means that differently from the other join ventures in case of FDI the foreign investors takes the control of the firm, thus driving directly its operations. In addition to that, the role of the government over those affiliates becomes lighter, since they are wholly owned subsidary of a foreign company that may not be involved with the national policies. Foreign investors

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have also a negative impact on the development structure of the country. They are from the history attracted by the most developed cities, where the level of the infrastructure is favourable and the economy is flourish. This contributes to the deterioration of the undeveloped regions, which, instead of being the key issue of the investment policies, become in turn the latest point of the attention of the global investors.

Moreover, although we previously mentioned spillovers as a worth praising effect, one may addressed the issue that multinationals could prevent the local competitors to benefit from its technologies. As we will discuss in the later sections, one of the determinants of FDI is the availability of patents, which are powerful protection of the investors' intangible assets. This is to say that if the multinationals transfer its own competencies in the local country, it is not likely that they will ensure free access to them. They are indeed mostly concerned with preventing the others from copying their capabilities and assets, since they represent the core foundation of their competitive advantage. As a consequence, if local firms are not able to grasp knowledge from foreign companies, they will lose their market share in the short run (Gorg & Greenaway, 2004).

2.9   The effect on the home country

In the previous section, we evaluated the impacts of multinationals on the host country, but FDI inflows affect also the origin country. Again, the effects could be various depending on the cases. We previously talked about the dispersion of activities, which may have a negative impact on the short term. Someone may also argue that the big dimension of the activities run in the foreign company could lower the performance of the origin company, thus bringing the necessity to fire the employees or to shut the plants down. Another among the most frequently questions discussed about this topic is whether the investment abroad substitutes the involvement with exports or not. By contrast, engaging in foreign direct investments may be seen as an externalisation of activities, rather than a dispersion of them. This enable what is sometimes referred as a synergy merge, in the sense that the value and the performance of the origin companies will be greater when combined with the subsidiary firm. If the transfer of its own activities abroad helps in lowering the operating costs by gaining access to new type of knowledge and technology, the firm can raise its

occupational levels. Hence, if the outcome of the investments is profitable, the firm can also extend its business by engaging in Mergers & Acquisition activities, thus reinvesting the profits coming from the foreign investment. Surprisingly, one of the positive effects of FDI on the home country concern the export activities. Although one may think that they are substitutes, FDIs outflows tend to promote the export of all the products that are complementary of the business run abroad. Since vertical investments disaggregate the company's value chain, they are the ones that contribute to the increase of exports the most, but neither horizontal investment are likely to run all the operations independently. Further, firms tended to export the production activities, while management, R&D and "white-collars" employees stayed at the home base. However, as a result of the internationalization process, this is not more true: multinationals will place the most advanced business units at home only if this is consistent with the comparative advantage of the home and the host country. That is to say that placing R&D units in the host country would not be a mirage anymore (Lipsey, R. E., 2004)[11]. As the reader can imagine, different trade-offs should be considered in order to make a strict evaluation on the topic.

2.10 The relationship between MNE's and public governments

Some companies may wish to go abroad in order to escape to the rigid fiscal policies imposed in their country, looking for places with lower taxation levels. Some other may want to benefit from a different treatment in respect with national firms, due to the diverse jurisdictions. Public policies can also influence MNEs by (dis)encouraging their activities through the labour market regulamentations or imposition of taxes over public commercial trade. Over the years, this issue became subject of international discussions, with the aim of establishing a coordination within all the different countries. Since there is a disequilibrium in the behaviour of countries in the matter, it is necessary to avoid a competition over the conditions imposed on MNE firms. Nonetheless, many difficulties have been encountered in providing a homogeneous market regulamentation, because of the asymmetry between developing and high-income countries. To overcome this problem, someone has claimed that an official international institution should be created to manage

the MNEs, since in many cases the regional control over those firms is not enough to ensure an equilibrium away of public interests.

2.10.1 The Ireland Case

One of the most notable cases of public policies that have encouraged the FDI inflows is the Ireland case, which took the colloquial name of "Celtic Tiger" referring to the country's economic boom of the mid-1990s (see Navaretti and Venables, 2006). Many economists have attempted to answer the question why it was right Ireland to attract investors, thus becoming the most wanted commercial location by foreign entrepreneurs. The historical series of events have turned Ireland into a fertile ground where to invest in, starting from its exit out of the ghost of the protectionism in the 60s. The first step forward the liberalisation of the market was the Anglo-Irish Treaty of 1921, which established a low fiscal system over the society (Navaretti and Venables, 2006)[6].

Additionally, in more recent years the entry in the European Community (EC in short) in 1973 and the creation of the European Single Market in 1992 has enabled a rapid growth of the Irish economy, which has modelled its development on foreign capitals. Consequently, the favourable taxation system and the profitable access to the market have boosted the employment level by an increase of 40% during the 90s. Although there is high evidence that the time series of those events have brought Ireland to become a flourish commercial country, the situation in the 50s was still improving positively per se. Indeed, the total lack of fiscal imposition was the reason why the USA and Europe began to use Ireland as a commercial hub to gain the access to the European market. From the 80s, the economic situation of the Irish industry was mainly split into the old English companies that were mainly belonging to the manufacturing sector, and the new firms of foreign ownership, which were more likely to invest their capital on exports. These companies were concentrated in the chemical and in the electronics industry, supported by the High-tech boom of those years.

As we introduced the relevant factors that pushed this phenomenon are many, from the more historic ones to the others that are more specific to the Irish country. The first is certainly the process of the market liberalisation, which made Ireland more attractive for those who wanted to transfer their profits by taking advantage

of transfer pricing. Another crucial role was covered by the Industrial Development Authority (IDA), which was constituted to manage the flows of foreign direct investment (FDI) into Ireland. At the beginning, the only objective was to raise the employment level, without caring of the specific sectors. Time passing by, they began to be interested only on those sectors that were considered profitable for the Irish industry, such as the high-tech, of high work intensity. This process grow until the 80s, were the economic flourishment of the Information Technology industry had counted its highest peak. Since at that time Ireland was missing the availability of qualified personnel, they began to invest on the education of their citizens, in order to channel the direction of the university into the objective of their industries. Moreover, there are also remarkable motivations that are more specific to the country itself. The geographical position is an evidence that should not be underestimated, and it is one of the reasons why USA chose Ireland as one of their FDI location. Additionally, they have similitudes in cultural mindset, they have been under same historic events and they especially both speak the same English language. There should be also added the efficiency of their Public Administration and their infrastructure, the low labour costs and the huge amount of investment spent on the education, which has translated into high skilled workforce.

These are all the bricks that brought Ireland to establish a flourish economy today, even without affecting the domestic part of its commercial trade. Indeed, although it based its growth by taking advantage of the FDI inflows, it still counted on its profitable local production. As a matter of fact, the international and the national industry were of different sectors, mostly high-tech and manufacturing respectively, and this allow them to both coexist in the same country. In addition, the companies of foreign property had different interest in respect with local firms, especially in the geographical direction of their investments: the former were more Europe oriented, while the other were channelling their exports toward the United Kingdom.

2.11 Taxonomy of FDI motivations

After the analysis of the benefits and the costs of foreign direct investments, it is worth spending some time on the motivations that push firms to go abroad. Among the others, it is worth mentioning Dunning (1980)'s contribution to the classification

of Horizontal and Vertical investments. In his taxonomy of FDI motivations, he has found four different classification (see figure 2.5):

1. Resource seeking

2. Market seeking

3. Efficiency seeking

4. Strategic asset seeking

Resource seeking is what Markusen (1984) has defined as vertical investments, which is a mean to which companies look for resources that are not available or too expensive in their home country. Resource seeking investments could have both positive and negative relationships with the import activities. From the point of view of the host country, FDI and imports are generally negatively related. As a matter of fact, if the host country was used to import some kind of products from the investing country, as soon as the latter establishes its business abroad the host country will benefit from its production directly in its territory. From the point of view of the home country, if the FDI is resource seeking it has generally a positive correlation with the intensity of imports. Indeed, if the home country is interested in some specific inputs that are available in the host country, the relationship between imports and FDI inflows will be positive, thus boosting the production in the underlying destination country (Wadhwa, Kavita, and Sudhakara S. Reddy., 2011).

Market seeking FDI are on the other hand what have been defined as horizontal investments, which are a mean to reach profitable market that are geographically distant, to follow local tastes and to establish relationships with suppliers or customers that are involved in foreign businesses, by moving the production of the same product in a foreign country. It is not surprising that in this cases faster growing and big sized companies attract market oriented FDI, since the investing company is interested in growing its market share. In this logic, the third category seems to go in the same direction of the previous we already discussed, indeed, they occur in cases in which firms want to exploit economies of scale and scope gaining from the differences in factors and processes. Efficiency seeking motivates entrepreneurs in achieving business diversification, taking both its risks and its benefits. Capital and informational intensive activities are generally placed in developed countries, while

more labour intensive ones are often concentrated in developing countries. Companies may also try to lower their tax burden by investing in countries that require less taxes due to government policies. These are all typical behaviour of efficiency seeking companies, which are often big sized, experienced and diversified.

Lastly, some other may argue that strategic asset classification is redundant since all FDI projects could be easily associated to the other three categories (Meyer, Klaus., 2015). Nonetheless, it addresses the issue of resource exploration that follows the same philosophy of the International product lifecycle model by Vernon (1966), discussed in section 2.6. One of the points addressed here is that multinationals' primary aim is to reproduce all their capabilities abroad through their internationalization strategy. That is achieved through the acquisition of new patents and technological skills that enables the creation of a new knowledge base, rather than pointing on improving the competences that are already inside the firm (Franco, Rentocchini and Marzetti, 2008)[12].

From another point of view, FDIs motivations could also be classified according to the strategy undertaken by the multinational, depending whether its objectives are profits or costs related, as summarized below.

2.11.1 Profits-related motivations

1. Enter profitable markets If the company notices that its competitors are raising revenues in other countries, it will probably be interested in extending its business in those regions. Many companies have been attracted to Ireland, for example, as we previously discussed in section 2.10.1.

2. Exploit monopolistic advantage If the company has superior technological advantage in its country, it may apply the competences in foreign countries, perhaps the less developed, in order to ensure successful results.

3. React to commercial barriers Sometimes FDI could be used to elude restrictions, as it happens with japanese car manufacturers. They began to open up their plants in USA, because they knew that they wouldn't have been allowed to export their products toward that country.

Types of FDI classified by motives of TNCs	Principal economic determinants in host country
Resource seeking	• Market size and per capita income • Market growth • Access to regional and global markets • Country-specific consumer preferences • Structure of markets
Market seeking	• Land and building costs/rents and rates • Cost of raw materials, components, parts • Low-cost unskilled labor • Availability and quality of skilled labor
Efficiency seeking	• Cost of resources and assets listed under B adjusted for productivity for labor inputs • Other input costs (e.g., transport and communication costs to/from and within host economy and costs of other intermediate products) • Membership in a regional integration agreement conducive to promoting a more cost-effective and intercountry division of labor
Strategic asset seeking	• Technological, managerial, relational, and other created assets, be they those embodied in individuals, firms, or clusters of firms • Physical infrastructure (ports, roads, power, telecommunications) • Macro-innovatory, entrepreneurial, educational capacity/environment

Figure 2.5: Taxonomy of FDI motivations. Adapted from "Annual World Bank Conference on Development Economics, Europe 2003: Toward Pro-Poor Policies– Aid, Institutions, and Globalization"[13]

4. Diversification With the foreign production (and sales) the MNEs could make their cash flows less volatile, thus lowering the cost of their capital.

2.11.2   Costs-related motivations

1. Exploit economies of scale Although the fixed costs of building plants are high, they can reduce the average cost per customer if they are able to raise their sales through the external production.

2. Factor costs FDIs have a positive impact on costs, since factor costs, such as raw materials and market labour, are usually different across the regions. This means that companies can gain by taking advantage of their differences.

3. React to exchange-rate fluctuations Companies can invest in countries where the exchange rate is apparently weak, since it is expect to be stronger over time.

2.12   FDI: Definition and Global Trends over time

The term foreign direct investment was coined by the International Monetary Fund (IMF) and the Organisation for Economic Co-operation and Development(OECD) (Jost, Thomas., 1997). FDIs in short were defined as a contribution to foreign companies in which lenders hold at least 10% of the ordinary shares. Multinationals invest in foreign direct investments as a way to express their long lasting interest in a foreign enterprise that link directly the investor with the underlying company. Along this paper, we address to foreign direct investments since they are a mean to analyse the MNE's activities that want to extend their business across the borders and to settle down a permanent stay in the host market. Differently from the portfolio investments, they are a mean with which multinational companies expand their business by acquiring foreign market shares. As it has been discussed in the previous chapters, in the last decade they became a source of the global economic activities, reaching an increase of almost 18% during the 90s, above the level of GDP and Exports growth (Navaretti and Venables, 2016), like figure below shows 2.6.

Following a decline during 2001, when the growth of FDI has taken the opposite sign, going back to the level of the previous years. Although they have registered a rapid growth, they are still below the level of exports activities, which have been counted a total of 7.666 billion USD dollars, in place of 823 billion USD dollars of FDI inflows. On the other hand, the analysis of MNEs' activities gives back the opposite outcomes: international sales and the profits coming from the affiliates are in fact highly above the commercial flows. This raise the crucial issue about the differences between FDI and MNE data, which do not measure the same, as stated in the report by the Organization for Economic Co-operation and Development(OECD,2018). FDIs track the financial flows between direct investors and direct enterprises, while MNEs activities refer to the operations between them, such as R&D, sales, profits, which could also be financed by other entrepreneurs who are not direct investors. It goes without saying that FDIs could provide information about the financial flows that may eventually not affect the economy of the country,
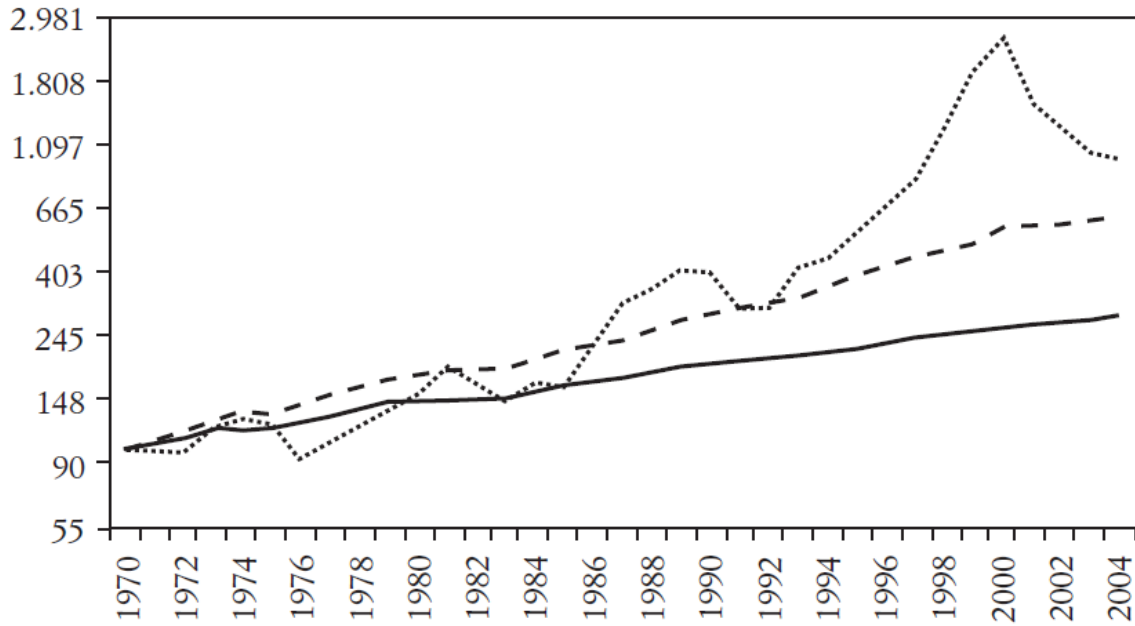
Figure 2.6: GDP, Exports and Inward FDI. Taken from Navaretti and Venables[6]

thus producing biased statistics. Notwithstanding since FDIs are collected in the Balance of Payments and are largely available across the industries, they are still used as an indicator of MNEs' activities although they present slight differences. As reported in the World Investment Report 2018, FDIs continued their decline from 2015 until present, when they fell nearly by 50%, because of some reasons that can mainly be attributable to the introduction of tax reforms by USA at the end of 2017. Figure 2.7 shows the volumes of FDI inflows according to three different economic group: developed countries, which comprehend mainly North-West Europe, Australia, Bermuda, Israel, Japan, New Zealand and North America, developing economies, such as Asia, Africa and Latin America and the Caribbean, and transition economies, South-East Europe and CIS states.

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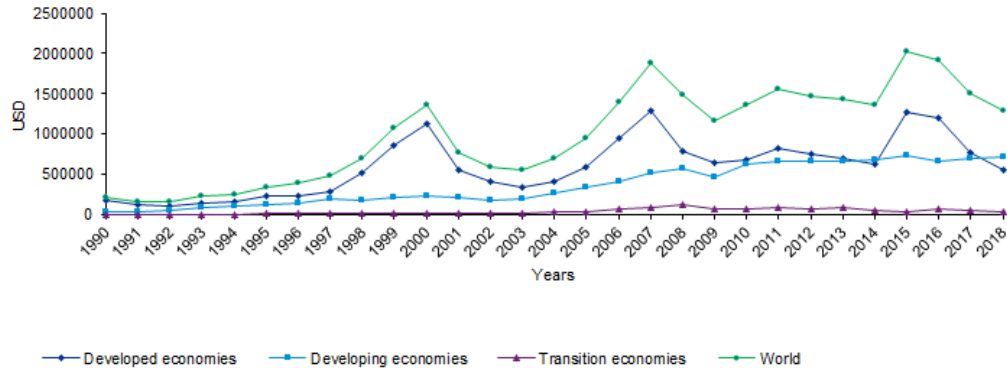
Figure 2.7: FDI inflows, global by economic group 1990-2018 [4]

The first aspect that stands out is the opposite trend between developed and developing economies, while the former have registered a decline since 2015, the others are growing year by year. During the year 2018, some of them fell under negative values, like Ireland and Switzerland, which have counted -\$66 billion and -\$87 billion respectively (see World Investmente report 2018 [4]).

In 2019 the global decrease had even a stronger impact with the respect to the previous year, falling by 20%. This was especially driven by the Netherlands, the United States and the United Kingdom.

The value of Greenfield projects rose up to 41 per cent in 2018, especially in developing economies, where the manufacturing industry has seen an increase in the number of Greenfield projects involved. Although these are all good indicators, the growth of MNEs' activities seems to be more stable with respect to their performance during the second half of the 90s, because of the more volatile financial flows, the tax reforms and other less favourable public policies that do not encourage the companies to invest abroad. *"The underlying FDI trend has shown anemic growth since 2008"* says the World Investment Report 2019, suggesting that 1 per cent growth in 2019 is not relevant in respect with past trends of twenty years ago. This trend could also be attributable to the national policy developments that since 2011 has started to gain a crucial role in the international trade framework. The main issue addresses the necessity of controlling the access to local infrastructure, technologies and assets, which are property of the national territory. In this way, under the eyes of the government, foreign investors are prevented from exploiting improperly those goods that are part of the local core businesses (WIR, 2019). A part

from those restrictions that are necessary for the preservation of the national trade, international investment policies are still directed toward the promotion of foreign direct investments. Many countries are also generating new principles that will shape future policymaking: they are involved in the modernization of old treaties and the generation of new actual agreement with some key investors at the same time. This is strongly confirmed by numbers: in 2018 countries signed 40 international agreements that will generate an impact on the actual scenario of the international trade.

2.12.1   FDI in Germany

After the Second World War Germany was successfully introduced again into the world economy, thus stimulating the increase of FDI by foreign investors. These latter have been attracted by the size of the German market, which was able to produce 1/5 of the total EU GDP, it could count on a highly skilled workforce and high quality infrastructure (Jost, Thomas., 2010). With the German unification in 1990, FDI inflows began to grow more slowly mostly because of the adjustment process of East German that had to be competitive despite its low labour productivity. Overall, Sachsen-Anhalt was able to attract the highest amount of FDI until 2001 among the five East German Länder, excluding Berlin (Günther, Jutta, and Oliver Gebhardt, 2005).

	FDI stock in Mio. Euro 2001	FDI per head in Euro 2001
Brandenburg	1 932	745
Mecklenburg-Vorpommern	1 086	617
Sachsen	1 612	368
Sachsen-Anhalt	3 387	1 312
Thüringen	1 412	586
East Germany (excl. Berlin)	9 429	687

Source: Federal Bank of Germany (*Deutsche Bundesbank*).

Figure 2.8: FDI stock in the East German Länder, 2001

However, the increasing importance of FDI flows is a West German phenomenon. Indeed, the low East German openness to the international trade market, the high level of unemployment and its weak growth performance have made it to reach only 2.7% of the stock of inward FDI in 2003. (Buch, Claudia M., and Farid Toubal.,

2009). Drawing upon Spies (2008)'s study of determinants inward FDI into German Federal States, it is possible to get an overview of the distribution of foreign companies within Germany. Figure shows the evolution of the establishment of the affiliates into East and West Germany (Spies, 2008).
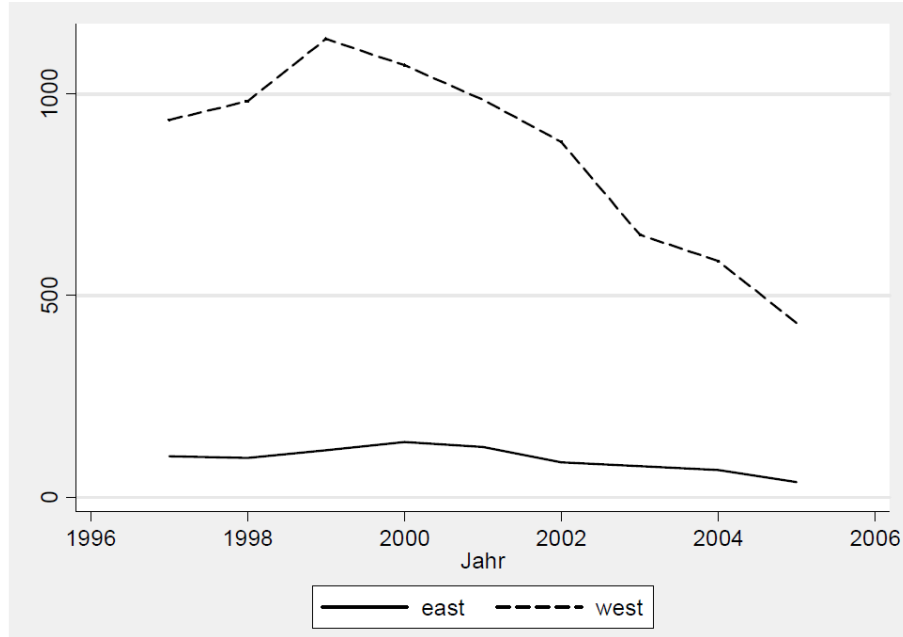
Figure 2.9: The evolution of the establishment of the affiliates into East and West Germany.

The difference between the two parts is greatly remarkable: in all points the Western part is able to attract more FDI inflows with respect to the East part of Germany. The fragmented economy of East Germany and the lack of global headquarters are a key factor behind disparities. This raise a key point of our analysis, since the main aim is to understand whether those distances are still influent today, by evaluating the economic situation from the foreign investors' point of view. By reading the Annual Report of the Federal Government on the Status of German Unity 2018, the reader may find out all the efforts committed by the Federal Government with the aim of bolstering the growth of the East Germany in future. One among all, the Basket II of Solidarity Pact II, with which it gives support to education and training policies as to boost the area of research and development, which still suffers from budget shortages in the east. However, despite the fact that these

economic support measures are halving the gap within the country, the more rural character of the eastern Federal States makes it harder to achieve the full economic harmonisation.

Despite this "internal gap", foreign direct investments have generally been certainly a good transfer of technology and know-how that affected positively the economic growth of the German country. The top major investors in 2006 were United States, UK and Switzerland, followed by Netherlands and France, which took advantage of the geographical position of the country. Opening with "2,062 foreign companies opened up businesses in Germany in 2018 – a new record" the FDI report by Germany Trade & Invest (GTAI) explained that most of the increase in the British investments in Germany has been caused by the Brexit referendum. Over the years, Germany has demonstrated to be a favourable location thanks to its strategical position within the EU and its market size (see GTAI, 2019). Nonetheless, most recent trends of 2019 report a small decline that could be attributed greatly to the recent USA's tax reform that caused a global decline in the international trade. Figure 2.10 shows FDI values for Germany in 2019, which faced a decline of 30% in FDI inflows.
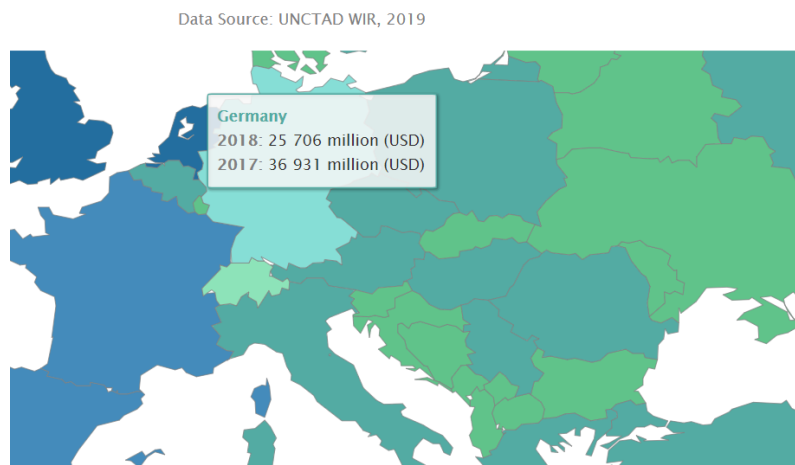
Figure 2.10: Germany FDI inflows in 2019.

2.13 Determinants of FDI

Summing up, one of the reasons that pushes firms forward a foreign investment is to circumvent exports limitations imposed by authorities, which are generally done in the form of high taxes that restraint the openness of the international trade. It may be also interested in investing in countries where the cost of labour and resources is much cheaper, or where the market size is higher, as a sign of big opportunities. On the opposite side, the firm should also take into account the high level of uncertainty that is associated to the presence of a big market and to the dispersion of its activities. The other side of the coin is that higher distances implies higher communication and integration costs. Many scholars have attempted to model the determinants of FDI locations that drive multinationals to choose one region with respect to another, but it still impossible to find a unique solution that best describe their choice since the evidence is mixed so far. Some models are complementary, but there is not exact equality between them, thus suggesting that we should make a choice of the variables that we want to introduce in our empirical model. At this time of the reasoning, it is worth considering all the determinants of FDIs that come in play when crossing the borders. The location factors can be classified into three main groups:

1. Market-oriented factors in this category variables such as economic and population growth, and GDP of host country should be taken into consideration (Wadhwa, Kavita, and Sudhakara S. Reddy, 2011);

2. Cost-oriented factors tax burden, wage costs, qualities of the infrastructure and human capital

3. Other factors such as culture, working language and political risk.

2.13.1 Market-oriented factors

The first classification addresses the issue that companies need to be present in the foreign country they are serving. This is a mean to adapt to local tastes, drive the production locally being closer to the final customers. Additionally, the increasing efficiency in manufacturing technologies, such as just-in-time production, require certain products to be produced in the target country, in order to be as

much reactive and responsive to the local demand as possible. This translates into new marketing strategies that consider the local direct presence as the main issue, pushing companies forward foreign direct investments. (Jost, Thomas, 1997). Also Markusen e Maskus (2002) have proved with their studies that market dimension is a variable that influence FDI inflows. The main flows of foreign investment are directed to big markets, such as USA and UE. Both import and exports are influenced by the market size and its changes, as many studies have proved they seem to react equally to market dimension variations. This variable has high importance since it has a direct connection to sales: it goes without saying that a big market size would predict high sales volumes. Since firms are incurring in high expenses, mainly sunk costs, they have to ensure at least a minimum coverall of the investments, going only where sales forecasts are sufficiently high enough.

- **Gross Domestic Product**

  Various authors have chosen GDP of the host country to proxy market oriented investments: Agarwal (1980) has observed a positive correlation between GDP and FDI, and Grcic and Babic (2003) have used it to measure market size. In this context of FDI location choice, market size and economies of scale are tied to each other. FDI inflows are attracted by fast growing economies since they increase the likelihood of achieving an efficient rate of production through the exploit of economies of scale. For this reason, the size of the market is particularly important for horizontal investment, where the achievement of the economies of scale is one of the main target, while it is unlikely to be relevant for vertical investments (Iamsiraroj, Sasi, and Hristos Doucouliagos, 2015).

  Some authors like Torrisi (1985) have argued that focusing on the present trend could be useful but too restrictive, thus suggesting to rely on future forecasts when looking at the market's performances. He addressed the issue that although FDI inflows are focused on recent and past market size measure, it would rather be convenient to have a glance at the future trend. This means that market growth and the expected profitability of the investment in a particular location should be evaluated in parallel to ensure the same present returns in the long run. These indicators are classified under the category of "market potential" variables, since they measure the differentials over time,

giving an idea of how the future scenario would appear, in terms of profitability and investment returns. There is only one case in which our reasoning does not hold, that is export-oriented FDI in developing countries. Here the scenario is completely different, investors are attracted by input factors' differentials, such as delta in labour costs, transportation costs and resources costs. This is the case of vertical investments, where market size and future growth are not the key motivation for FDI (Akinlo, 2004). As a consequence, in such cases, market size and FDI would be correlated.

- **Population**

Authors like Schneider and Frey (1985), Wheeler and Mody (1992), Tsai (1994) have used population as an indicator of country size, whose correlation with FDI was even stronger with respect to the one between GDP and FDI, as Nunnenkamp (2002) has proved with his studies. The host country's population is one of the important potential determinants of FDI, albeit subject of debate among scholars for a long time (Aziz, Abdul, and Bilal Makkawi, 2012). Thomas Robert Malthus (1766-1834) have suggested that a large population number could be dangerous for developing countries. He strongly believed that the natural resources would be too scarce to face a large and increasing demand. In particular food production would be irrelevant with respect to the population numbers, due to the scarcity of land, and this would only be the tip of the iceberg, that is the constant tension between people and natural resources.

Nagarajan (2007) have argued that the classical Malthusian theory was underestimating the strong power of technology. He put a step beyond the belief of the 19th century, where people were strongly convinced that population and economic growth could not coexist. He suggested that the technological progress could moderate the impact of the increasing demand, by exploiting the total potentiality of the available resources. Bloom and Freeman (1988) have analysed the 20 year period from 1965 to 1985 where the technology gave its contribution to satisfy the increasing demand of the big sized population, by shifting the labour force from the low-productivity agricultural systems to the high-productivity industrial sectors. However, the major part of the

authors agrees that high population numbers could be more dangerous in developing countries, rather than in developed States, where large population is still considered as a big potential resource. Many people mean a numerous labour force and market potential, thus leaving space to foreign FDI inflows.

- **Exports**

Many scholars have demonstrated that exports have a positive influence on FDI. Put briefly, when a company wants to cross the borders, it first starts exploring abroad by undertaking commercial relationships through exports. This is the first stage of a gradual process of internationalisation, followed by the sale of licenses to local suppliers and the establishment of plant and production chain, as an expression of a long lasting interest in the target country (Jost, Thomas., 1997). Gunawardana and Sharma (2009) have proved the positive correlation between exports and FDI in their study of Australian manufacturing sectors, by showing that a 1% increase of FDI inflows causes 0.397% increase in exports (Selimi, Nasir, Kushtrim Reçi, and Luljeta Sadiku, 2016). Reddaway et al. 1967 and Hufbauer and Adler 1968 have come up with the same findings from two different studies, suggesting that if future cash flows are not discounted FDI outflows grow in parallel with export activities in the long run. Bergsten, Horst, and Moran (1978), who found that the growth of US companies abroad was correlated with the growth of exports of the US parent firms, held the same theory.

Assessing whether the relationship between export and FDI is complementary or substitute is not an easy task, and this is demonstrated by the controversial findings of many authors. If the home company sets up its production plant in a foreign country to produce locally what was previously exported, FDI and the home company are without any doubts substitutes. By contrast, in case of vertical investments, the operations of the home country are vertically linked to the activities of the affiliates, thus leaving ground for a collaboration between the two. This is the case where the origin company produces intermediate goods and the affiliate is focused on the final goods, so that an increasing demand in the latter generates an increase in the production of the home company. It is known that the passage of time play a crucial role in

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this context. For instance, changes in relative cost of production could alter the complementarity of the commercial relationship, thus pushing the local company to substitute the export of the intermediate goods from the home country with the direct production on site (LG Liu, EM Graham, 1998).

2.13.2   Costs-oriented factors

Generally, when costs in the home country are high, multinationals shift their production where it is possible to gain from the differences in input factors. Garibaldi (2001) studied a panel regression of 26 economies between 1990 and 1999, by using variables such as fiscal deficit, inflation and exchange rates that turned to be all significant.

Also Dunning (1980) in his eclectic taxonomy of FDI motivation has considered resource-seeking factors as one of the main determinants of foreign direct investments. This points out what previously mentioned about the inclination of FDIV investors to go where costs are cheaper than they are in the origin country. Although this is theoretically accepted, it is not easy to analyse the change of FDI inflows in relation with variation of the factor costs. One critical issue is that especially north-to-south flows in Central European countries have occurred only in the 90s, meaning that we do not have antecedent studies to use as a benchmark. Additionally, talking only about the differences in factor costs is meaningless if their productivity is not taken into account. Indeed factors could be cheaper, but also less productive and inefficient. Nonetheless, although all these differentials are difficult to be measured, many studies have confirmed the existence of a correlation between FDI inflows and differences in factor costs. FDI investments are inevitably influenced also by commercial costs, such as taxes imposed on import/exports, shipment costs, expenses occurred because of public policies restrictions, or other barriers imposed by the international trade.

Multinationals can serve the international market by the sales of its subsidiary company or through exports. The former become more important when commercial costs start increasing, although this is not true for all the type of foreign investments. Horizontal investments for example benefit from an increase in commercial costs, since firms are encouraged to find a workaround in order to escape those expenses. By contrast, vertical FDI are negatively correlated to the commercial costs,

since multinationals would incur in higher expenses when transferring their products from one production unit to another (Navaretti and Venables, 2006)[6]. Many studies have proved that political and fiscal policies also drive the FDI location decisions. The government can promote the incoming of FDI investments with public funds, thus diminishing the operational costs and the overhead to build a foreign subsidiary company. The case of Ireland is the one that best confirm this reasoning: it succeeded to become a free taxes paradise, providing the lowest taxation tariffs in Europe, thus attracting many investors from all over the world. It was also able to offer a qualified workforce of English mother tongue, and a valuable system of infrastructure. Indeed, it is most probably that subsidies are not sufficient enough to attract FDI inflows, because their decision is based on many other factors, such as the access to the market, or the qualification of the workforce and its availability.

- **Imports**

  Dunning have further discussed the double influence that imports may have on FDI. If companies settle their plants in the host country, the latter will certainly lower its imports from the investing country, since the products will be available directly on site. Further, imports may be not encouraged if the host production rely on local raw material or inputs that are not available in the home market, thus generating a negative effect on trade balance (Jayakumar, A., L. Kannan, and G. Anbalagan, 2014). In such cases the relationship between FDI and imports will be negative, *"due to the fact that investment projects tend to draw in imports, particularly in their initial stages"* (UNCTAD, 1998).

  However, the relationship between import and FDI may be also positive, depending on the details of the situation, including the government policies (low production costs and liberal trade regimes are likely to be complementary with imports, while commercial barriers or tariffs are not). At the initial investment phase, the intensity of imports' activities is very high, since the home country has to transfer its facilities, equipment and machineries to the foreign region. In addition, if the investing company needs specific products that are not available in the host country, the increasing production will translate into an increase in the values of imports. Consequently, in such cases, the relationship

would be positive (Wadhwa, Kavita, and Sudhakara S. Reddy, 2011).

- **Tax rate**

At the centre of the debate is the difficult question about how foreign direct investments are sensitive to taxation. Many authors have examined the impact of this variable on FDI, and there are still controversial opinion about this matter. Nerudova (2011) talks about the neutrality of taxation, meaning that tax rates should not affect investors' decisions. Others like Medved, Nemec, Orviska, Zimkova (2005) have confirmed this reasoning by suggesting a tax harmonization all over EU countries, in order to let investors be focused on the real drivers for FDI locations, rather than on tax differentials (Hunady, Jan, and Marta Orviska, 2014).

Some studies have proved that FDI decreases by 3.7% following a 1% increase in tax rate, while other estimates evaluate a decrease in the range between 0-5% (OECD, 2008). The differences between the findings stems from the fact that taxes depend on many factors, such as industries and countries being examined, or the periods taken under consideration. The optimal variable would be an indicator that measures the tax differentials between the host country and the rest of the world, taking into account their variations all over time (Jost, Thomas, 1997). Unfortunately, this indicator is not available and for this reasons it will not be considered in our analysis. (Jost, Thomas, 1997).

In addition to the difficulties encountered in the tax burden estimation, it is not clear whether taxes affect negatively or positively the FDI flows. Where the high tax burden comes across other significant attributes, such as a well-developed infrastructure, big sized market, or huge availability of resources, it seems that the taxation is not an issue for the development of FDI, since the other elements overweight its effects. As a consequence, low taxation would not compensate for an unattractive FDI environment, with poor infrastructure and economic instability.

- **Infrastructure**

Generally, a country with a good level of infrastructure, such as railroads,

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ports, highways is likely to attract FDI inflows. Coughlin et al. (1991) have found in their studies that the extension of the transportation system was positively correlated with the intensity of foreign investments. Wheeler and Mody (1992) have proved that the infrastructure variable is highly significant for developing countries, while less relevant for developed regions, since they are already supposed to have a well-established transportation system. The main reason why infrastructure drives the FDI orientation is that it could lower the costs of running a business, thus raising the returns of the investments.

Further, a part from railroads, the number of internet users could be a measure of the level of the infrastructure, expressed as a percentage share of the total population. Botric and Skuflic (2005) have used it in their studies, expecting to find a positive relationship between the number of internet users and FDI. Pazienza and Vecchione (2009) did as well, while Palit and Nawani (2007) have used it to calculate other parameters such as infostate. If we go back to twelve years, another proxy could be telephone lines. The use of internet was indeed not common, but mobile subscribers were at least a relevant number. Also in this case we expect a positive relationship with FDI, like Kok & Ersoy (2009) show in their study by using data per 1000 people (Tocar, Sebastian, 2018).

- **Labour costs**

Throughout the years many scholars have been interested in the link between FDI and labour costs, but still there are controversial findings about it. Leitao and Faustino (2010) have found positive relationship between labour costs and FDI by examining Portugal as an example of small economy. Chakrabarti (2001) have defined labour cost as one of the most important determinants of FDI, as well as Uramovà and Marcinekovà (2008) have shown with their findings. Other authors have underlined that labour costs have both positive and negative influence on FDI, depending whether they are horizontal or vertical investments (Navaretti and Venables, 2006).

Since multinationals sell the same product abroad in the case of horizontal investments, differentials costs would have an irrelevant impact on the value of FDI. By contrast, since with vertical investments multinationals are looking for cheaper factor costs, the relationship would be positive in this case. Ekholm

(1977) have proved that the foreign production increases with the increasing availability of qualified workforce in the host country. As the latter grows with labour costs, the evidence shows that they are all positively related. On the other hand, low wages enable firms to lower their production costs, thus suggesting a negative relationship with FDI. It is worth mentioning Bayraktar-Sağlam, Bahar, and Selin Sayek Böke (2017)'s findings with their study on 23 OECD countries during the period 1995–2009. They have tried to capture the dynamic interaction between labour costs and FDI, by concluding that a raise in the unit labour costs cause a decrease of the FDI flows, confirming that multinationals are cost seeking oriented. On the contrary, a raise in the compensation of labour encourage FDI investments, thus reflecting the positive impact of the increase in the productivity on foreign investments.

- **Human capital**

Human Capital in terms of education is a factor that influences FDI. The methodology of Human Capital quantification is different. Several scholars have used the percentage of the workforce that possesses tertiary or higher education, as Mateev (2009) did by capturing the factor Literacy. Others have applied the number of students enrolled in higher education institutions. This is the case of Arbatli (2011) and Du et al. (2012), although they did not find a strong relationship between the variables.

Under this category, Jimenez et al. (2011) have introduced the level of unemployment, finding a positive relationship with FDI. This is not surprising as the more people are looking for a job, the easier would be for multinationals to find employees. On the contrary, Pearson et al. (2012) have proved a negative influence of the employment on FDI, since it raises socio-economic problems that are also connected with crimes. Vincens (2005) have made an interesting research about the over-education issue, that occur when the level of education is higher than the one required to hold the position. This translates into inefficient allocation of resources, wasting of time and costs. Miningou, Elise Wendlassida, and Mr Sampawende J. Tapsoba (2017) have put at the centre of the debate the external efficiency of the education system, which measures the convergence between the labour market and the education system itself. FDI

seems to be related to this issue, since it is well known that foreign investors are attracted by the availability of a highly qualified labour force. What is worth mentioning about their findings is that they proved that FDI are related to the external efficiency of the education system, rather than the pure years of schooling. This highlights the focus on the labour productivity, since *"the capacity for the labor force to translate properly its education into income in the labor market seems to be more important than the level of education itself, in attracting FDI"* (Miningou, Elise Wendlassida, and Mr Sampawende J. Tapsoba, 2017).

2.13.3   Other factors

There is still a high number of variables that we did not mentioned yet, such as political risks, R&D research, corruption, etc. Some of the determinants of FDI are country specific, thus considering variable such as income, geographical distances or other factors such as the working language (Navaretti and Venables, 2006). Ghemawat (2001) has included the locational factors' issue in his CAGE distance framework, as depicted in figure 2.11.

He addressed four different *nouances* of distance, which are cultural, administrative, geographic and economic. In the upper part all the attributes of the four dimensions are addressed, while in the lower part all the industries that are affected by their effects. With this framework he tried to draw a rational approach to evaluate how distance affects manager's decisions. Of course, not all the industries are affected in the same way: for instance, food producers would take care of the cultural distance between countries, while gas mining companies would invest only in countries where no government regulations prevent the access to the natural resources, thus being more affected by the administrative distance.

- **Space factors**

  Among the four types, economic and administrative distances seem to be the ones most affecting the likelihood of FDI location. Drawing upon Anderson (2016), along the paper distance has been addressed as one of the main drivers for the FDI location choice. Several scholars have demonstrated that the

	Cultural Distance	Administrative Distance	Geographic Distance	Economic Distance
attributes creating distance	different languages different ethnicities; lack of connective ethnic or social networks different religions different social norms	absence of colonial ties absence of shared monetary or political association political hostility government policies institutional weakness	physical remoteness lack of a common border lack of sea or river access size of country weak transportation or communication links differences in climates	differences in consumer incomes differences in costs and quality of: • natural resources • financial resources • human resources • infrastructure • intermediate inputs • information or knowledge
industries or products affected by distance	products have high linguistic content (TV) products affect cultural or national identity of consumers (foods) product features vary in terms of: • size (cars) • standards (electrical appliances) • packaging products carry country-specific quality associations (wines)	government involvement is high in industries that are: • producers of staple goods (electricity) • producers of other "entitlements" (drugs) • large employers (farming) • large suppliers to government (mass transportation) • national champions (aerospace) • vital to national security (telecommunications) • exploiters of natural resources (oil, mining) • subject to high sunk costs (infrastructure)	products have a low value-to-weight or bulk ratio (cement) products are fragile or perishable (glass, fruit) communications and connectivity are important (financial services) local supervision and operational requirements are high (many services)	nature of demand varies with income level (cars) economies of standardization or scale are important (mobile phones) labor and other factor cost differences are salient (garments) distribution or business systems are different (insurance) companies need to be responsive and agile (home appliances)

Figure 2.11: CAGE framework from Ghemawat, Pankaj. "Distance still matters." Harvard business review 79.8 (2001)[14].

more distant is the host country, the more problems will arise. These regard transactional costs involved in the transport of goods, commercial costs and trade barriers that obstacle the multinationals' desire to cross the borders. In the context of FDI location choices, distances may be interpreted as proxies for transport costs and travel time. This issue was rationally addressed by Anderson (2016)'s studies on the economic interaction over space. He basically applied Newton's law to international trade, predicting that the economic flow Xij from origin i to destination j is

$$X_{ij} = G\frac{Y_i E_j}{D_{ij}^2} \tag{2.1}$$

G represents a constant, Y is the economic activity in the home country, while E is the economic activity in the host country and D is the distance between them (Anderson, James E., 2016). With this traditional model, Anderson

attempted to predict bilateral trade flows considering the economic size and the distance between the two countries, by concluding that the volumes exchanged between the countries are positively correlated to the commercial partners' income and negatively correlated to the distance between the two. In short, one may interpret the model thinking about the demand and supply side in general: Y is the total supply offered by the origin country I, E is the total demand of the destination country j and D represents a sort of "commercial tax" imposed by the international trade.

- **Cultural factors**

  Distance could be intended for space, but also for differences in culture and working language, following Ghemawat (2001)'s CAGE framework. Many authors have introduced this aspect by considering for example the language of the host country. Sharma & Bandara (2010) have used a dummy variable equal to one when the target country was speaking English, and zero viceversa. Their findings suggest that there is a positive relationship with FDI, meaning that communication is enabled by the use of English, since it is an official language recognised worldwide. Tang (2011) and Siegel et al. (2013) introduced Common Language as a significant factor, represented by a dummy variable to indicate whether the two countries speak the same language. Again, the relationship turns to be positive, although Siegel et al. (2013) did not find any strong relations. This variable does not considered similarities between the two languages, thus suggesting that could be too restrictive for the model (Tocar, Sebastian., 2018). Other cultural issues affect, for example, food producers, whose industry is sensitive to religious attributes. Although underestimating this differences would be a big mistake for the company business, cultural distance is difficult to be measured in numbers, differently from geographic factors. For this reason, it will not be part of our empirical analysis.

- **Institutional and political factors**

  It is not surprising that Government policies can affect significantly the intensity of FDI activities. We already seen in section 2.10 that political incentives

may drive the direction of the investments. One of the main objective of the investors is to escape to the tax burden imposed by the authorities, by investing in countries that encourage their activities. This suggest that some related variables should be introduce in the empirical model in order to capture their influence. Some authors like Gauselmann et Al. (2011) introduced a variable Availability of State support, while Holmes et al. (2013) have proposed a factor named Regulatory institutions, as a proxy of the control exercised by the State on trade activities. Their results have shown a negative relation between the State's control and FDI. Another significant variable could be Property Rights whose role is extremely important when transferring intangible assets abroad. Multinationals should fell protected when moving their capabilities outside their home location plants, and for this reasons this protection is expected to grow positively with FDI (Du et al., 2012).

- **Institutional and political factors**

Mateev (2009) has discovered a positive relationship between FDI and the Corruption Perception Index, since this latter measures the absence of corruption in the country. If the host country has high level of corruption, this could have negative effects on the economic stability of the country itself, from both economic and political point of view, since the company has to pay money in the form of bribes in order to get licenses to operate in the host country, thus raising the costs of its investment. That is to say that a corrupt country would encounter difficulties in attracting foreign investors. Indeed, the high level of uncertainty raised could result in low expected profitability and economic growth. Despite this scenario has been subject of many studies, there are still adverse opinions about the impact that corruption has on FDI inflows. Some authors argue that they are negative correlated, while others has not find any significant correlation between the two, like Wheeler and Mody (1992: 70) have stated in their findings in a study of foreign investments by U.S. firms.

Further, reading Ali Al-Sadig other points come to attention that cannot be underestimated. He stated that corruption should not be considered as an independent variable, instead, as an implication of other macroeconomic factors,

such as the quality of institutions or cultural values, which are specific to the country we refer to. Following this logic, in his empirical studies he proved that corruption has a positive but not significant correlation with FDI inflows. In order to better understand the reasoning, it should be cleared that he does not want to say that corruption attracts foreign investments, but that other factors, such as the quality of institution, may be more important than the value of corruption within a country. Indeed, if a country has a rigid control structure, the probability of being caught is high, and public officials would not be encouraged in engaging in corrupt activities. The higher the quality level of institutions, the higher the FDI inflows regardless of the level of corruption. To prove that he employed a panel data analysis for 117 countries, in order to better control all the unobserved factors that may be correlated with the corruption variable. He started first with a model without the controlled variables and then he added quality of institutions and democracy variables in the following model. What came out was that in his first model the estimated coefficient of corruption was negative, while in the second it turned to be positive. Not surprisingly, when adding the factors more specific to the country that have a strong connection with corruption, the results are reversed, thus confirming that the negative correlation between corruption and FDI inflows may be enhanced by a low quality level of public institutions (Al-Sadig, 2009).

- **R&D expenditure**

The availability of R&D guarantees to multinationals the possibility to acquire a new technological knowledge base, due do the intensive presence of researchers and intellectuals. Several scholars have introduced that all the expenses made in resource allocation to generate new technology contribute to create an economic stability, which boosts in turn the FDI activities. Erdil (2015) suggest that R&D contributions, comprehending innovation, investments in human capital or capital accumulation (Bor et al. 2010), are strongly connected with the economic growth of a country, thus enforcing our reasoning. In figure 2.12 below a summary of some studies from the empirical literature.

Authors	Sample	Methods	Findings
Barrell, R. and Pain, N. (1997)	Germany and England	Long-term cointegration analysis	The increase of international trade routes resulted in the increase of the activities of foreign investors. In addition to these increases, it was proposed that the future of technological products and therefore technological advances would increase.
Xiaohui, L. and Chenggang, W. (2003)	China	EKK Method, Chow Test	According to the findings of this study, Foreign Direct Investment is regarded as a way of promotion of technological products to the host countries. Thereby, FDI positively affects the technological advances in host country.
Simon, F. and Yifan, H. (2007)	China	ROBUSTLS	Analysis results suggested that if a company is supported by FDI, initially their R&D spending is decreased. As FDIs at sector level have more foreign presence, more positive results than the efforts of companies on R&D spending were obtained.
Zhang, K.H. (2014)	China	Panel Data Analysis	It was concluded that as China's industrial competitiveness increased, FDIs became driving force behind their industrial performance. Additionally, it was found out that FDI and technology transfer have positive expansion on economy
Erdal, L. and Göçer, İ. (2015)	10 Developing Countries in Asia3	Panel Causality and Cointegration	Analysis results suggested that an increase in R&D and innovation activities was observed with the entrance of FDI to the country. Moreover, FDI also increased national wealth with high-tech exports

Figure 2.12: From Can, Muhlis. (2017). The Relationship between Research & Development Investment Expenditure, Foreign Direct Investment and Economic Growth: Panel Causality and Cointegration Analysis for G-7 Countries. Journal of Applied Economic Sciences.

Chapter 3

Empirical analysis

3.1 The model

This study assumes that all firms are profit-maximizers, since they decide to opt for a certain location if the achievable profit outweights the ones in the other available locations. The total unobserved profit of a single firm i located in the Administrative Regions f at year t can be described as:

$$\pi_{fti} = \beta_1 GDPPC_{ft} + \beta_2 PEOPLE_{ft} + \beta_3 KM\_DIST_{ft} + \beta_4 NEAR_{ft} + \beta_5 AREA_{ft} + \beta_6 UNEMPL_{ft}$$
$$+ \beta_7 PAT_{ft} + \beta_8 CUM\_BILATERAL_{ft} + \beta_9 CUM\_INV_{ft} + \beta_{10} CUM\_PARENT_{ft}$$
$$+ \beta_{11} EAST_{ft} + \beta_{12} BERLIN_{ft},$$

with GDPPC representing the Gross Domestic Product per capita and PEOPLE the number of the population. KM_DIST is the distance from the Region and the Investing Company, while NEAR is the dummy variable for neighbouring regions. To address the influence of the labour market, there is UNEMPL that measures the unemployment rate. AREA is a measure of the total land area, while PAT which gives information about the numbers of applications to the European Patent Office. CUM_BILATERAL, CUM_INV, CUM_PARENT are heterogeneous variables that address the effects of the benefits of the economies of information. EAST and BERLIN are instead two dummy variables that indicates whether the Region belongs to East or is Berlin respectively. These two variables are decisive for the purpose of this paper, that is to investigate whether there are still some differences

between East and West German despite the reunification. All the data have been collected for the Region *i (where i=[1,. . .,38])* at year *t.*

	patents	rd	rd_pers
patents	1.0000		
rd	0.6576	1.0000	
rd_pers	0.9106	0.8096	1.0000

Figure 3.1: Correlation Matrix for Patents, R&D and R&D personnel - source: Stata, own calculations.

The reader may note that there are some variables missing in respect with what has been discussed in section 2.13. This lies in the fact that some of them have been omitted from the regression analysis due to the presence of high correlation. The coexistence of two correlated variables in the same specification, indeed, would result in biased coefficients, since they explain the same identical effect. This is for example the case of the variables PATENTS, RD and RD_PERS. As Figure 3.1 shows they are strongly correlated with coefficients going up to 0.91, thus suggesting that considering both RD_PERS and PATENTS in the same specification would be redundant.

3.2 Empirical methodology

3.2.1 Conditional logit

The firm's location decision is primarily affected by the local characteristics of the underlying regions and the characteristic of the alternative locations (Train, 2003). The conditional logit model estimates the relative probability of choosing a certain location i, by taking account its own characteristics x_i and the ones of the other regions x_l,

$$P_i = \frac{\exp \gamma x_i}{\sum_l \exp \gamma x_l} \tag{3.1}$$

This is the basic understanding of the conditional logit model, which was employed in this research to understand and analyse the real drivers of the FDI location choices. This model explains the companies' decision in terms of a utility function of the explanatory variables plus and additional error term *"which follows an extreme value distribution which ensures the somewhat restrictive IIA property"* (Spies, 2010).

$$U_{ij} = u_{ij} + \varepsilon_{ij} \tag{3.2}$$

Where *j=1,2,...,M* is the index that represents the alternative chosen by the decision maker *i*. In other terms, formula 3.2 is saying that the individual *i* consider all the locations' decisions as equal alternatives, with the same degree of substitutability. Second, the choice probabilities for all alternatives sum to one $\sum_{i=1}^{j} P_{ni} = 1$, hence the decision maker should make a choice between the alternatives (Train, 2009). It is also worth mentioning the relation of the logit probability to the utility, that is S-shaped, as the figure 3.2 shows.
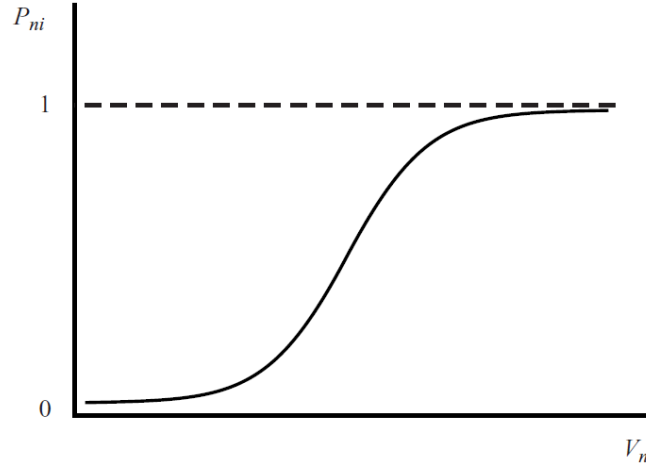
Figure 3.2: From Train, 2009.

What is interesting to mention is the implication that this shape has on the changes in the explanatory variables. If the utility of an alternative is sufficiently low, a small increase in the same utility would be insignificant, since the others are

sufficiently better enough to make it irrelevant. At the same time, if an alternative is sufficiently superior with respect to the others, an increase in the utility would not have any effects on the choice probability (Train, 2003). What lays at the base of the random utility framework stated some lines above is that the model does not assume any natural ordering between the alternatives, neither monotonic relationship between one observation and the relative outcome. The location chosen by the individual is assumed to be the one the gives the highest utility, that is $U_{ij} = max(U_{i1}, ..., U_{im})$. Since this utilities are not observed, it seems reasonable to make some assumptions about the distribution of the unknown parameters ε_{ij}. These are assumed to follow a type I extreme value distribution, suggesting that "all ε_{ij} are mutually independent with a so-called Weibull distribution" (Verbeek, 2008). Under these assumptions, it follows that:

$$P\{y_i = 1\} = \frac{\exp u_{ij}}{\exp u_{i1} + \exp u_{i2} + ... + \exp u_{iM}} \tag{3.3}$$

For the aim of our research, u_{ij} has been assumed to be a linear function of observable variables, which depends upon the characteristics of the alternative j. In this logic, re-writing $u_{ij} = \gamma x_j$, the formula 3.3 is traced back to the formula 3.1, which constitutes the so-called conditional logit model. The assumption on the error terms is particularly useful to find the maximum level of the utility, which is a random term, and it could be alternatively expressed by observing that the odds ratio – the probability ratio of two alternatives – does not depend on the other alternatives, as shown by the formula (Verbeek, 2008):

$$\frac{P\{y_i = 1\}}{P\{y_i = 2\}} = \exp\{x'_{i2}\beta\} \tag{3.4}$$

By contrast, this premise is somehow restrictive since it assume that all the alternatives are independent, condition that does not hold in cases where the alternatives look similar to each other. This property that McFadden (1974) called independence of irrelevant alternatives (IIA) could be overcome by applying the so-called nested logit, which will be left for future research.

3.3   Post estimation

In order to reach a better understanding of the economic regression, it is recommended to deepen the analysis by observing the marginal effects. It is well known that parameter estimates must be transformed to approximations of the effect of the regressors on the dependent variable to reach a complete economic interpretation of the outcomes. Formula 3.6 can be rewritten in more general terms as:

$$\frac{p}{1-p} = \exp\{x'\beta\} \tag{3.5}$$

where $\frac{p}{1-p}$ measures the probability of Y=1 relative to the probability of Y=0. Supposing that a i_{th} regressor increases by one unit, we can say that $\exp\{x'\beta\}$ becomes $\exp\{x'\beta + \beta_i\}$, thus $\frac{p}{1-p}=\exp\{x'\beta + \beta_i\}$. That is equal to say that the odds ratio of formula is multiplied by $\exp\{\beta_i\}$. In our example $\exp\{\beta_i\}=\exp 0{,}1 \cong 1{,}105$. For this reasons, economists tend to interpret the coefficient B as a semi-elasticity, meaning that a one-unit increase in the regressors increases the odds ration by a multiple 0.1 (see Cameron, A. Colin, and Pravin K. Trivedi. Microeconometrics: methods and applications. Cambridge university press, 2005.).

In other terms, the semi-elasticity can be expressed as:

$$\frac{\delta p}{100 \times \frac{\delta x}{x}} = \beta \times p \times (1-p) \times 100 \tag{3.6}$$

and can be interpreted as the change in probability for a 1% change in x.

3.4   The dependent variable

The first part of the paper was intended to introduce the reader into the FDI context, by catching a glimpse on the literature that tells about this topic. The remaining part of the research will focus on the empirical analysis of the data used, the model and the results found. Regarding the collection of the data about the investments made, we have used the fDi Markets from Financial Times, a central bank that tracks all the Greenfield investments worldwide in more than 65 sectors. The dataset that collects all the projects' data in Germany has a total of 11.037 observations, and for each of them we have the investing company, the country, state and city for both

the origin and destination parties of the investments. What fDi Markets call "Admin region" has became NUTS-2 for us: the research indeed has been carried out under this level of detail, since it seems reasonable to assume that investors could be attracted differently according to the differences between all the Administrative Regions of Germany. Regional data may or may not be the true mirror of the scenario, since regions contains in turn many cities that could be significantly different between each other. For instance, one city may have a better infrastructure system with respect to another, thus being more attractive for investors. Although this seems reasonable, it may be too difficult, or sometimes too irrelevant, to find all the data by NUTS3 level, and we prefer to leave it for future research. By analysing the Source Countries of foreign investors from year 2003 to 2018, it is possible to classify the most investing countries, as depicted in the figure 3.3 below.
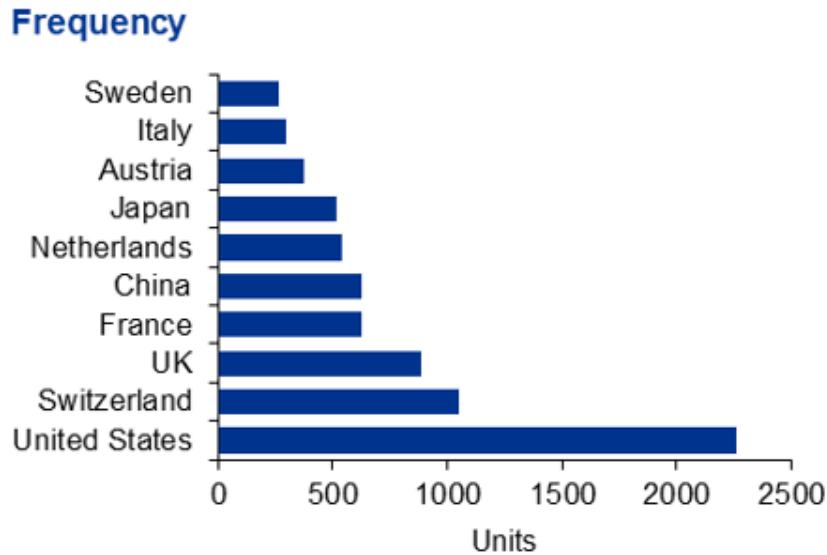
Figure 3.3: Most investing company in Germany from 2003-2018 (own calculations).

At the top of the list there is the power of United States, most probably interested in the favourable German location within EU. It is followed by Switzerland and UK, which is making steps outside the borders since the Brexit referendum in 2016. The 38_{th} Administrative Regions that have been figured out are part of sixteen Federal States, among which Nordrhein-Westfalen and Baden-Wurttemberg have registered the highest number of projects, from 2003 to 2018, as can be observed in figure 3.4.
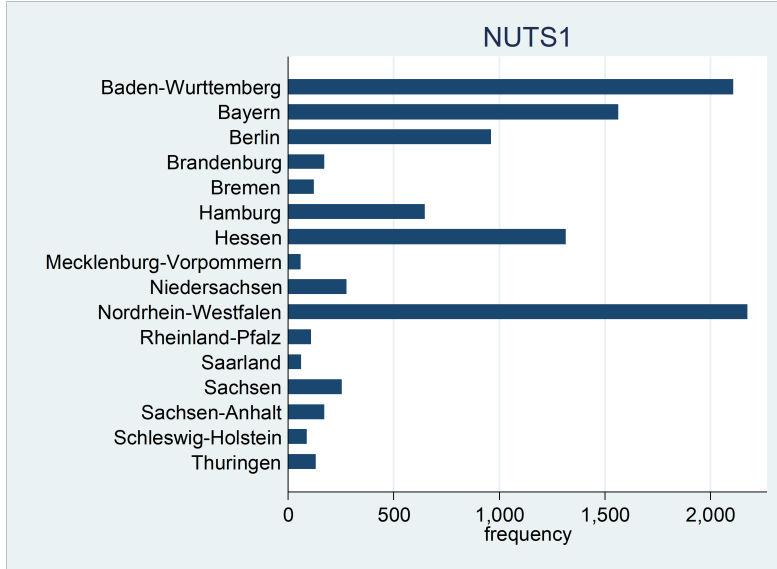
Figure 3.4: Most targeted German regions (NUTS-1) by foreign investors (own calculations).

If the reader focuses his attention on the NUTS1 level, it is interesting to analyse how the investments are collocated geographically. For this purpose, we have generated a new variable called "location" that describes whether the Destination State of the underlying observation belongs to the East or to the West. The relative findings confirm that most of the projects are concentrated in the Western part of the country, while only the 16% represents the ones that are located in the East Germany (see table). This suggest that investors prefer federal states in the West, since they are attracted by the presence of the high number of existing firms, according to what is known as "network externalities effect". (Spies, 2010) The same analysis at the NUTS-2 level confirms our findings: foreign investors are interested in the Eastern part of Germany for only 80.832 over 303.120 observations.

The dataset is also detailed in the type of the Greenfield project: *New Greenfield investments* are the one we consider along the paper, which entail the establishments of new commercial relationship, plants and activities from scratch (UNCTAD, 2009). *Expansion* refers to the investment made to enlarge the activities already established in the past, while *Co-location* represents a minor part of the project whereby companies decides to locate their R&D centres next to the production plants, due to
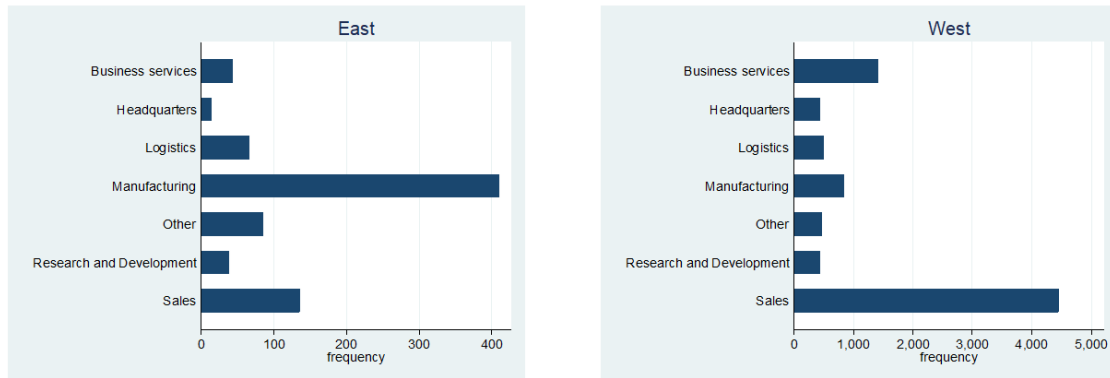
Figure 3.5: Sectorial diversification within Germany (own calculations).

their high reciprocal attraction (Brakman, Steven, and Harry Garretsen, 2008).

Each observation has also the amount of the capital invested, the number of jobs created and a dummy variable that indicates whether this latter have been estimated or declared by the company itself. Further, as mentioned in some rows above, every project is tagged to the sector to which the investment goes: for each rows we have the industry sector and sub-sector, which have been aligned so close as possible to SIC industry codes. The last point of attention goes to its industry activity and its cluster, which is not sector dependent, but instead defines the "end-user industry". In order to reduce the diversification of the different industry activities, we have defined seven macro categories: Business services, Manufacturing, Headquarters, Research and Development, Logistics, Sales and Other, which comprehend all the ones that are not covered by the previous categories. Figure 3.6 shows how the fDi Markets' industry activities have been grouped according to the underlying categories chosen.

We then analysed the frequencies of each macro category and what came out is that Sales represents the half of the investments collected, followed by Business Services that totalized a good 16% and Manufacturing with a 12% of the total projects, as the reader can observe in figure 3.7.

MACRO CATEGORIES	fDi Markets' INDUSTRY ACTIVITIES
Business services	Business Services
Manufacturing	Manufacturing
Headquarters	Headquarters
Research and Development	Research and Development Design, Development & Testing
Logistics	Logistics, Distribution & Transportation
Sales	Customer Contact Centre Retail Sales, Marketing & Support
Others	ICT & Internet Infrastructure Maintenance & Servicing Construction Electricity Recycling Technical Support Centre Shared Services Centre Education and Training Extraction

Figure 3.6: Macro categories of German investments.

3.5   The explanatory variables

The data about the determinants have been mostly retrieved by Eurostat official website, the European Statistics Office. All the explanatory data are collected at the level of Administrative Regions, which correspond to the Nomenclature des unités territoriales statistiques (NUTS) 2. Figure 3.8 shows a detailed description of all the variables, collected according to the classification we have seen in the previous section.

The explanatory variables that have been chosen will be further analysed in order to evaluate to which extent the literature discussed in section 2.13 mirrors the real facts, within the limits of the data available. The problem of missing data could be relevant for NUTS-2 data. Whenever data have not been available for a long period of time, the linear regression on panel data with fixed effects was the approach used
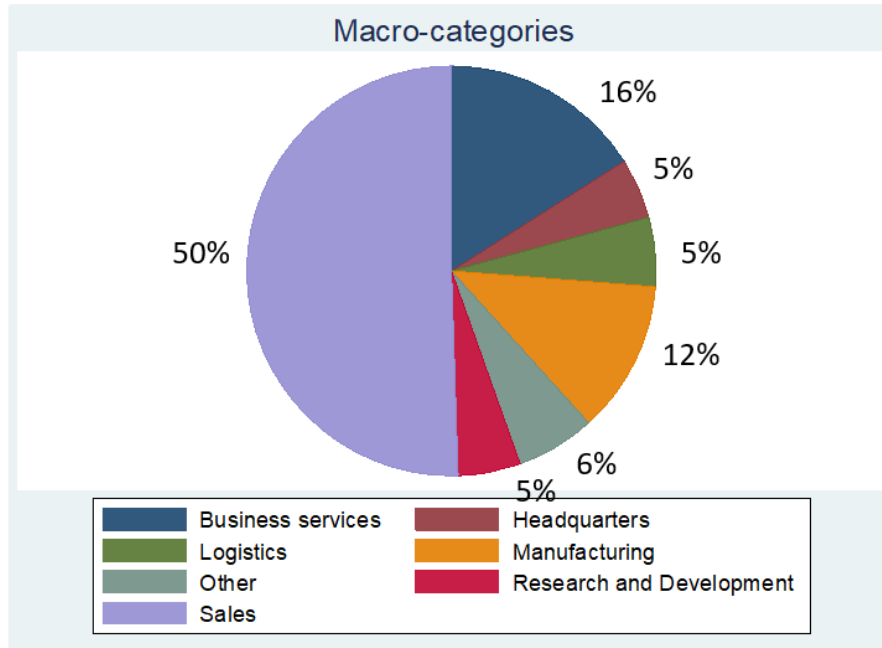
Figure 3.7: Frequencies of Macro-categories of German investments (own calculations).

to estimate those missing data.

- **GDP variable**

  We have used this variable since it proxies the market's dimension, by representing the total value of all the finished goods and services produced within Germany from 2000 to 2017. An additional variable *"gdppc"* that represents the GDP per capita, which was computed by dividing the *"gdp"* values to the number of population.

- **PEOPLE variable**

  It represents the number of the population on 1 January by NUTS 2 region. The computation is based on the concept of *usual resident population*, which

means that all people having usual residence in the given area on 1 January of the year in question was taken into account.

- **SPACE variables**

    Km_dist

    This indicator was retrieved with own computations, by first finding the geographic coordinates of each NUTS-2 and then applying the mathematic formula below to compute the distance (in km) with those countries of interest:

$$
\begin{aligned}
km_{dist} = {} & 6371.01 \times \arccos(\sin\frac{latc \times \pi}{180}) \times \sin\frac{lat \times \pi}{180} \\
& + \cos\frac{latc \times \pi}{180} \times \cos\frac{lat \times \pi}{180} \times \cos\frac{(lonc - lon) \times \pi}{180}
\end{aligned}
\tag{3.7}
$$

    Near

    Another way to study how distance matters for investors is to introduce a dummy variable which tells whether the investing country is bordering with the host region. Since our analysis is carried at the NUTS-2 level, measuring the distance in kilometres may not be sufficient, since the distance between the same foreign country and two German regions could be almost the same. By introducing the variable border, it is possible to understand whether distance is attractive or not for the investor's location choice.

- **AREA variable**

    This variable indicates the measure in Square kilometre of the German Regions. It indicates the Total Surface Area, including land area and inland waters.

- **UNEMPL variable**

    This expresses the Unemployment rate by NUTS-2 level. It is computing as a percentage of total number of unemployed workers over the total labour force, hence the sum of employed and unemployed workers. It comprehend all 15 to

74 years-old workers who are not employed during the week of question, who are ready to start a job position within the next two weeks or who have been actively seeking for a job position in the previous three months. of researchers, the higher the innovation rate of the country.

- **PATENTS variable**

"Data refer to applications filed directly under the European Patent Convention or to applications filed under the Patent Co-operation Treaty". They are expressed per million inhabitants, from 2001 to 2012.

- **CUM_BILATERAL variable**

This variable computes for each Region the amount of projects that have already been run by the same Country until the year of question. It conveys the effects of the information economies of scale from which the Source Country can benefit if it addresses all its investments in the same Region. In such cases, the acquisition of knowledge and information about the targeted Region will lower as much as the number of investments in the same Region increases.

- **CUM_INV variable**

This variable, instead, indicates for each Region the amount of projects that have already been run by the same Investing Company until the year of question. As well as CUM_BILATERAL it measures to which extent the investor decides to invest in that specific Region, conditioned by the fact that other investments have already been done in the underlying Region.

- **CUM_PARENT variable**

This variable works exactly the same as CUM_INV with the difference of calculating the amount of projects that have already been run by the same Parent Company until the year of question, rather than the Investing Company.

- **EAST variable**

This is a dummy variable that indicates whether the Administrative Regions belongs to the Eastern Germany or not. This is to control to which extent the foreign investor is attracted to the East part of the Country.

- **BERLIN variable**

This is a dummy variable that indicates whether the Administrative Region is Berlin or not. This is to control to which extent the foreign investor is attracted to the Region of Berlin.

VARIABLE	DESCRIPTION	PERIOD	SOURCE
GDP	Gross domestic product (GDP)	2000-2017	Eurostat
GDPPC	GDP per capita at current market prices by NUTS 2 regions	2000-2017	Own calculations
PEOPLE	Population on 1 January by NUTS 2 region	1990-2019	Eurostat
KM_DIST	Distance from the investing country	Time invariant	Own calculations
NEAR	Dummy variable equal to 1 if the investing country share common borders with the host region, 0 otherwise.	Time invariant	Own calculations
UNEMPL	Unemployment (thousand hours worked) by NUTS 2 regions	1999-2018	Eurostat
AREA	Total Surface Area, including land area and inland waters	Time invariant	Eurostat
PAT	Patent applications to the European patent office (EPO) by NUTS 2 regions	1995-2012	Eurostat
CUM_BILATERAL	Amount of investment made by the same Country in the Region and year of question	2003-2018	Own calculations
CUM_INV	Amount of investment made by the same Investing Company in the Region and year of question	2003-2018	Own calculations
CUM_PARENT	Amount of investment made by the same Parent Company in the Region and year of question	2003-2018	Own calculations
EAST	Dummy variable that indicates whether the Region belongs to East or not	Time invariant	Own calculations
BERLIN	Dummy variable that indicates whether the Region is Berlin or not	Time invariant	Own calculations

Figure 3.8: List of the explanatory variables used.

Chapter 4

Results

Table 1 displays the results from the conditional logit for the period 2003-2018. All the regressors have been taken in log as a measure of the elasticity of the investor's probability of choosing region i (Train, 2003). Column 1 contains all the variables that have been described when talking about the model in section 3.1, whose coefficient's sign reveals whether the relationship with the dependent variable is positively or negatively correlated. *Patents* show the expected positive sign, thus reflecting that technological innovation is attractive for foreign investors. The same works with *GDP* per capita, which shows a significant positive coefficient, since flourish economies increase the probability for a region being chosen as an FDI location. Further, space factors variables seem to confirm our evidences. *Km_dist*, which measures the distance in kilometres between the investing country and the targeted region, is negatively related to the FDI investment, since the more distant the host Region will be, the less it would likely be chosen as a location. The opposite occurs with *near* variable, which indicates whether the two are neighboured: the fact that the geographical proximity seems to encourage the FDI inflows is completely logical, since geographical distances are one of the main commercial barriers that compete to increase the transactional costs of running a business. Then comes the number of the population (variable *people*), which proxies the size of the market, showing a significant positive coefficient. As the literature confirms, big sized markets offer a higher number of potential customers, bigger workforce and a vast skill base (Abdul Aziz, 2012). Surprisingly, the variable *unempl* shows a positive relationship

with FDI, suggesting that a higher level of unemployment may translates in bigger opportunities of finding a workforce for the multinational enterprises. The last variable controlled in this column is the time-invariant *area*, which shows a positive coefficient, which the reader may interpret by thinking about the game of darts. The probability of hitting the targeted Region increases as its area increases, thus it is likely that bigger Regions will be chosen more than smaller ones (see Figure 4.1).
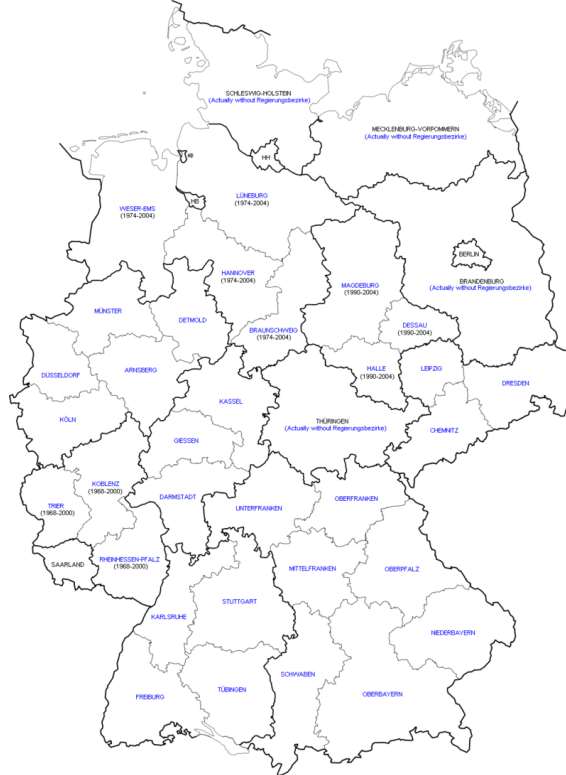
Figure 4.1: Germany representation at the level of NUTS-2 Regions.

From Column 2 to 4 some variables that capture effects of the economies of information have been added, while Column 5 adds the effect of being an Eastern Region, and Column 6 of being specifically Berlin. In particular, in Columns 2 the variable *cum_bilateral* computes all investment made by the Source Country until the year of question. If the same Country has been investing in the same Region since many years, it may be advantaged by exploiting economies of information, since it already knows all the dynamics that regulate the host Region. This is confirmed by the significant positive coefficient of the variable. The reader may

note that the introduction of this variable alters the coefficient of the variable near and GDP per capita: this may be explained by the fact that those variables' effect becomes smoother all over the years since the Country has been already investing in the same Regions, thus being attracted by its characteristics once. Columns 3 adds the variable *cum_inv*, which computes the amount of projects run by the same Investing Country until the year of question. By the same way of the previous variable, it shows a positive relationship with the FDI inflows, capturing the benefits of the information economies. In columns 4 *cum_parent* works almost the same of *cum_inv*, with the only difference of referring to the Parent Company, rather than the investing Company. Column 5 introduces one of the most interesting variable of our research, the east variable, a dummy that indicates whether the Region belong to the Eastern Germany or not. As the table displays, the coefficient is negative while not significant, while in the following Column becomes positive and still not significant. Berlin coefficient is surprisingly negative, suggesting that investors are not attracted by its Region.

	(1) choice	(2) choice	(3) choice	(4) choice	(5) choice	(6) choice
choice						
ln_pat2	0.492***	0.341***	0.431***	0.431***	0.439***	0.506***
	(0.0419)	(0.0438)	(0.106)	(0.106)	(0.107)	(0.115)
ln_gdppc2	3.007***	0.421***	-0.121	-0.107	-0.170	-0.153
	(0.0626)	(0.0729)	(0.184)	(0.185)	(0.205)	(0.205)
ln_kmdist	-0.691***	-0.111**	-0.121	-0.112	-0.0933	-0.0797
	(0.0480)	(0.0472)	(0.114)	(0.114)	(0.117)	(0.118)
near	1.531***	0.0368	-0.0733	-0.0393	-0.0483	-0.0261
	(0.0753)	(0.0771)	(0.231)	(0.231)	(0.231)	(0.232)
ln_people2	0.850***	-0.189***	-0.282*	-0.281*	-0.305*	-0.358**
	(0.0618)	(0.0680)	(0.161)	(0.161)	(0.165)	(0.168)
ln_unempl2	1.376***	0.498***	0.376**	0.375**	0.428**	0.501***
	(0.0597)	(0.0611)	(0.149)	(0.149)	(0.167)	(0.173)
area1	0.0254**	-0.00167	0.0106	0.0157	0.0180	0.00419
	(0.0108)	(0.0110)	(0.0260)	(0.0262)	(0.0264)	(0.0275)
cum_bilate~1		1.200***	0.0871**	0.0737*	0.0847*	0.0863*
		(0.0170)	(0.0439)	(0.0442)	(0.0468)	(0.0468)
cum_inv1			9.788***	9.202***	9.203***	9.195***
			(0.105)	(0.243)	(0.243)	(0.243)
cum_parent1				0.599***	0.599***	0.602***
				(0.225)	(0.226)	(0.225)
east					-0.0880	0.0413
					(0.123)	(0.148)
berlin						-0.251
						(0.161)
N	383952	383952	383952	383952	383952	383952

Table 4.1: Conditional logit for the period 2003-2018 - Stata, own calculations.

To better understand the change of the variable within the different specifications, it is necessary to have a look at the Correlation matrix, which displays all the Correlation coefficients between the variables. By analysing in figure 4.2 the correlation between the output of the country and the number of IPO applications, it comes out that their correlation coefficient goes up to 0.57. This is not surprising at all, since innovation can boost the economic recovery, by accelerating production time and improving the efficiency of the business operations (Raghupathi, V., Raghupathi, W., 2017). This means that by introducing both variables in the regression part of the effects of one variable may be explained by the coefficient of the other variable, since they are correlated, thus becoming redundant. It is interesting to see how east and the level of unemployment are positively related with the matrix showing a coefficient of 0.59. This may be a signal of the economic recession that characterises the Eastern Regions of Germany, where people take lower wages and the level of unemployment rate is still about 2,8 percent above the national average (see Caroline Copley, 2016, "Lagging economy in Germany's former east risks stoking radicalism).

	ln_pat2	ln_gdp~2	ln_kmd~t	near	ln_peo~2	ln_une~2	area1	cum_bi~1	cum_inv1	cum_pa~1	east	berlin
ln_pat2	1.0000											
ln_gdppc2	0.5667	1.0000										
ln_kmdist	−0.0318	−0.0523	1.0000									
near	0.0148	0.0125	−0.3904	1.0000								
ln_people2	0.7503	0.2086	−0.0032	0.0143	1.0000							
ln_unempl2	−0.4099	−0.5882	0.0703	−0.0257	0.0553	1.0000						
area1	−0.0135	−0.2611	0.0090	0.0071	0.1626	−0.0477	1.0000					
cum_bilate~1	0.4467	0.4358	0.0989	−0.0114	0.4823	−0.1134	−0.0488	1.0000				
cum_inv1	0.1620	0.1450	−0.0111	0.0233	0.1744	−0.0163	−0.0184	0.2144	1.0000			
cum_parent1	0.1682	0.1544	−0.0121	0.0242	0.1826	−0.0201	−0.0226	0.2337	0.8889	1.0000		
east	−0.4158	−0.5285	0.0316	−0.0072	0.0101	0.5961	0.1439	0.0340	−0.0145	−0.0107	1.0000	
berlin	0.0861	0.0053	0.0143	−0.0042	0.1884	0.2541	−0.2245	0.1849	0.0806	0.0877	0.3184	1.0000

Figure 4.2: Correlation matrix - Stata, own calculations.

The analysis of the effects of the German reunification has been deepened by running the conditional logit for two sub-periods, the first that goes from 2003 to 2010 and the second that goes from 2011 to 2018. Table 4.2 displays the conditional logit for the first sub-period, while Table 4.3 for the second. In general, all the results that have been analysed by running the regression over the entire period remain stable in both sub-groups, but what stands immediately out is the different behaviour of the variable east and berlin. Table 4.2 shows a negative relationship between the variable east and the FDI inflows, thus suggesting that foreign investors

were not attracted by the East part of Germany from 2003 to 2010. On the contrary, Table 4.3 shows the opposite. This finding gives an interesting answer to our preliminary question: our data prove that the effects of the reunification of Germany of 1989 have shaped the foreign investors' decision all over the years. It seems that the period from 2003 to 2010 has not been affected by this political and geographical change, since foreign investors have continued to prefer West Germany instead of the Eastern part. This can be justified by the fact that it takes time to absorb the effects of a dramatic transformation that involves not only a geographical reallocation, but also political and economic factors.

	(1) choice	(2) choice	(3) choice	(4) choice	(5) choice	(6) choice
choice						
ln_pat2	0.422***	0.267***	0.476***	0.473**	0.601***	0.589***
	(0.0629)	(0.0653)	(0.183)	(0.184)	(0.192)	(0.210)
ln_gdppc2	2.932***	0.261**	−0.353	−0.348	−0.796**	−0.798**
	(0.102)	(0.113)	(0.312)	(0.313)	(0.363)	(0.364)
ln_kmdist	−0.435***	−0.213**	−0.156	−0.153	−0.0399	−0.0417
	(0.0858)	(0.0833)	(0.212)	(0.213)	(0.219)	(0.219)
near	1.000***	−0.116	−0.298	−0.288	−0.362	−0.364
	(0.145)	(0.147)	(0.459)	(0.460)	(0.463)	(0.463)
ln_people2	0.906***	0.00303	−0.330	−0.325	−0.560*	−0.550*
	(0.0969)	(0.106)	(0.290)	(0.290)	(0.306)	(0.314)
ln_unempl2	1.493***	0.504***	0.501*	0.499*	1.026***	1.009***
	(0.104)	(0.0961)	(0.279)	(0.279)	(0.354)	(0.373)
area1	0.0800***	−0.00124	0.0151	0.0169	0.0421	0.0448
	(0.0204)	(0.0168)	(0.0469)	(0.0474)	(0.0487)	(0.0522)
cum_bilate~1		1.381***	0.0783	0.0756	0.182*	0.181*
		(0.0313)	(0.0907)	(0.0912)	(0.102)	(0.102)
cum_inv1			10.97***	10.82***	10.79***	10.79***
			(0.241)	(0.595)	(0.596)	(0.596)
cum_parent1				0.149	0.180	0.182
				(0.547)	(0.549)	(0.549)
east					−0.681**	−0.699**
					(0.279)	(0.304)
berlin						0.0428
						(0.301)
N	132886	132886	132886	132886	132886	132886

Table 4.2: Conditional logit for the period 2003-2010 - Stata, own calculations.

The second sub-period from 2011 to 2018 shows, indeed, the same relationship but with the opposite sign. The coefficient of the variable east is positive, albeit not significant. This mirrors the evolution of the investors' FDI decision, who are nowadays considering German as a unified country, without underestimating the potentiality of the Eastern part of the Country, which is living a period of recovery. The presence of a negative coefficient for Berlin may suggest that it has lost its primate over the other German Regions.

	(1) choice	(2) choice	(3) choice	(4) choice	(5) choice	(6) choice
choice						
ln_pat2	0.579***	0.382***	0.440***	0.452***	0.451***	0.544***
	(0.0570)	(0.0607)	(0.136)	(0.137)	(0.137)	(0.147)
ln_gdppc2	3.097***	0.442***	0.00463	0.0157	0.0366	0.0568
	(0.0817)	(0.0972)	(0.236)	(0.237)	(0.261)	(0.261)
ln_kmdist	−0.782***	−0.0794	−0.108	−0.101	−0.107	−0.0868
	(0.0584)	(0.0576)	(0.136)	(0.136)	(0.140)	(0.141)
near	1.760***	0.117	0.0472	0.0850	0.0883	0.118
	(0.0892)	(0.0914)	(0.267)	(0.267)	(0.268)	(0.269)
ln_people2	0.777***	−0.295***	−0.287	−0.297	−0.291	−0.368*
	(0.0814)	(0.0902)	(0.199)	(0.200)	(0.202)	(0.207)
ln_unempl2	1.357***	0.486***	0.328*	0.331*	0.318*	0.414**
	(0.0741)	(0.0801)	(0.179)	(0.180)	(0.193)	(0.201)
area1	−0.00142	−0.0100	0.00317	0.00714	0.00658	−0.00954
	(0.0125)	(0.0146)	(0.0318)	(0.0320)	(0.0322)	(0.0326)
cum_bilate~1		1.142***	0.0980*	0.0813	0.0778	0.0802
		(0.0207)	(0.0517)	(0.0521)	(0.0553)	(0.0554)
cum_inv1			9.334***	8.686***	8.686***	8.681***
			(0.117)	(0.263)	(0.263)	(0.263)
cum_parent1				0.667***	0.668***	0.675***
				(0.245)	(0.245)	(0.245)
east					0.0267	0.214
					(0.140)	(0.176)
berlin						−0.336*
						(0.195)
N	251066	251066	251066	251066	251066	251066

Table 4.3: Conditional logit for the period 2011-2018 - Stata, own calculations.

4.1 Marginal effects

An overview of the marginal effects of the regressors on the dependent variable will close at best the explanation of the results. As explained in section 4.1, they are widely recommended in order to reach a better interpretation from the economic point of view.

Figure A.1 shows the list of the probability associated to the event of chosing the the Administrative Region i, which will be the main focus of this section. By looking at all the probabilities, what stands out is that Dusseldorf, Darmstadt and Oberbayern are in order the Regions with the highest probability of being chosen by foreign investors (please note that they are marked with a star in the following mentioned figures). The marginal effects are instead reported in figures A.2, A.3, A.4 and A.5. They have been calculated for each variable introduced in the conditional logit, and for each of the three analysis run above, thus for each row: number 1 represents the coefficients from the first regression from 2003 to 2018, number 2

represents the sub-period 2003-2010, while number 3 is the sub-period 2011-2018. Since they are considered the key issue of the regression, the focus has been put on the variable *East* and *Berlin*. While the reader is free to have a look on the complete tables A.6, A.7, A.8 and A.9, we will draw our conclusions by looking at ten Administrative Regions, which are representative of the total 38. As figure 4.3 suggests, even after the change in the regressors, the most chosen Regions keep on being the aforementioned three, Dusseldorf, Darmstadt and Oberbayern.

	Arnsberg	Berlin	Brandenburg	Braunschweig	Bremen	Chemnitz	Darmstadt	Detmold	Dresden	Dusseldorf
	0,01326207	0,09511085	0,01692399	0,00366192	0,01197546	0,00168250	0,12292162	0,00742280	0,01138163	0,12420823
%EAST1	0,040752277	0,037371922	0,04060104	0,04114876	0,040805414	0,041230513	0,036223337	0,040993438	0,040829939	0,0361702
	0,01380253	0,098665325	0,01761112	0,0038126	0,012464124	0,00175187	0,127374251	0,007727086	0,011846341	0,128700867
%EAST2	-0,689729813	-0,632517516	-0,6871701	-0,69644032	-0,690629153	-0,697823933	-0,613077788	-0,693811463	-0,691044241	-0,612178447
	0,004114825	0,034951571	0,00529433	0,00111161	0,003704858	0,000508411	0,047561105	0,002272776	0,00351642	0,048170629
%EAST3	0,211161917	0,193646278	0,21037827	0,21321635	0,211437252	0,213639945	0,187694773	0,212411521	0,211564331	0,187419439
	0,016062514	0,113528712	0,02048443	0,0044427	0,014507518	0,002041949	0,145993366	0,008999488	0,013789577	0,147487267
%BERLIN1	-0,24767122	-0,227127177	-0,2467521	-0,25008086	-0,24799416	-0,250577693	-0,220146673	-0,249136877	-0,248143211	-0,219823734
	0,009977437	0,073508591	0,01274796	0,00274614	0,009005616	0,001260903	0,095860834	0,005573507	0,008557356	0,096904313
%BERLIN2	0,042232383	0,038729256	0,04207565	0,04264327	0,04228745	0,042727989	0,037538955	0,042482304	0,042312866	0,037483888
	0,013822159	0,098794422	0,01763608	0,00381808	0,012481872	0,00175439	0,127535969	0,007738138	0,011863219	0,128864037
%BERLIN3	-0,331543944	-0,304042754	-0,3303135	-0,33476959	-0,331976245	-0,33543468	-0,294698336	-0,333505939	-0,332175772	-0,294266035
	0,008865111	0,066193085	0,01133377	0,00243602	0,007999892	0,001118131	0,086696823	0,004947252	0,007600928	0,087657967

Figure 4.3: The effects of East and Berlin on the dependent variable choice.

The first row reports the probability listed in table A.1, the row %EAST1 represents the percentage increase of the probability itself due to a change in the variable *East* for the period 2003-2018, while the following row computes the new value of the probability after the change of the explanatory variable. Being East a dummy variable, note that its increase could be interpreted as if people were moving from West to East. The same has been computed for the period 2003-2010 (%EAST2), the period 2011-2018 (%EAST3), and the variable Berlin. For example, the Region of Brandenburg has a probability of being chosen by foreign investors of 0,01692399 on average. An increase in the variable East will make the probability increases up to 0,01761112 in the period 20013-2018, while up to 0,21037827 in the period 2011-2018. This interesting finding suggests that by focusing on more recent years, the relative effects of the variable East has more influence on the dependent variable. Another drawback of this analysis is that marginal effects seem to have more influence on the Regions that are normally less preferred. If we look at the change of the variable Berlin in the period 2003-2018, we can observe an average marginal effect of -0,24704068 against -0,222365861, which represents the average of probability of the three most chosen Regions. This seems reasonable since the Regions that are

normally preferred are not affected by the changes of the regressors as much as could be the Regions that are not usually attractive for investors.

Finally, figure 4.4 gives an overall view of all the regressors employed in the analysis.

COEFFICIENTS		REGION	Arnsberg	Berlin	Brandenburg	Braunschweig	Bremen	Chemnitz	Darmstadt	Detmold	Dresden	Dusseldorf
0,506		1	0,499289393	0,45787391	0,497436461	0,504147068	0,499940417	0,505148655	0,44380166	0,502244063	0,500240895	0,443150636
0,589		2	0,581188641	0,532979709	0,57903177	0,586843129	0,581946454	0,588009008	0,516599166	0,584627971	0,58229622	0,515841353
0,544	ln_pat2	3	0,536785434	0,492259698	0,534793349	0,542007916	0,53748535	0,54308472	0,477130639	0,539961997	0,537808393	0,476430723
-0,153		1	-0,150970903	-0,13844804	-0,15041063	-0,152439726	-0,15167755	-0,152742578	-0,134192992	-0,151864312	-0,151258611	-0,133996141
-0,798		2	-0,787416868	-0,722101542	-0,784494656	-0,795077788	-0,788443583	-0,796657385	-0,699908547	-0,792076606	-0,788917459	-0,698881832
0,0568	ln_gdppc2	3	0,056046714	0,051397704	0,055838717	0,056592003	0,056119794	0,056704434	0,049818052	0,056378385	0,056153523	0,049744973
-0,080		1	-0,078643013	-0,072119665	-0,078351158	-0,079408145	-0,078745556	-0,079565905	-0,069903147	-0,079108403	-0,078792884	-0,069800604
-0,0417		2	-0,041146972	-0,037733878	-0,04099427	-0,041547298	-0,041200623	-0,04162984	-0,036574168	-0,041390469	-0,041225386	-0,036520517
-0,0866	ln_kmdist	3	-0,085648852	-0,078544378	-0,085330998	-0,086482145	-0,08576053	-0,086653959	-0,076130403	-0,086155701	-0,085812075	-0,076018726
-0,026		1	-0,0275386	-0,023617607	-0,025658284	-0,026004424	-0,02578744	-0,026056087	-0,022891746	-0,025906265	-0,025802939	-0,022858165
-0,364		2	-0,359172607	-0,329379651	-0,357839668	-0,362667061	-0,359640933	-0,36338757	-0,31925653	-0,361298101	-0,359857087	-0,318788204
0,118	near	3	0,116435076	0,10677692	0,116002969	0,117567893	0,116586896	0,117801465	0,103495249	0,11712411	0,116656968	0,103343429
-0,358		1	-0,353252179	-0,323950316	-0,35194 1212	-0,356689033	-0,353712785	-0,357397665	-0,31399406	-0,355342638	-0,353925376	-0,313533454
-0,55		2	-0,542705862	-0,497689033	-0,540691806	-0,547985944	-0,543413497	-0,549074625	-0,482393109	-0,54591746	-0,543740104	-0,481685474
-0,368	ln_people2	3	-0,363119558	-0,332999207	-0,361771972	-0,366652413	-0,363593031	-0,36738084	-0,322764844	-0,36526841	-0,36381156	-0,322291371
0,501		1	0,494355703	0,453349464	0,492521081	0,499165378	0,495000295	0,500157068	0,439416268	0,497281177	0,495297803	0,438771677
1		2	0,995618571	0,913033152	0,991923694	1,005305123	0,996916761	1,007302358	0,884972085	1,001510395	0,997515935	0,883673896
0,414	n_unempl2	3	0,408509503	0,374624108	0,406993468	0,412483965	0,40904216	0,413303445	0,363110449	0,410926961	0,409288005	0,362577793
0,004		1	0,004134432	0,003791486	0,004119088	0,004174657	0,004139823	0,00418295	0,003674958	0,004158898	0,004142311	0,003669568
0,0448		2	0,044205859	0,040539034	0,044041805	0,044635946	0,044263499	0,044724624	0,03929311	0,044467459	0,044290103	0,039235471
-0,00954	area1	3	-0,0094 1348	-0,008632642	-0,009378545	-0,009505065	-0,009425754	-0,009523949	-0,008367328	-0,009469186	-0,009431419	-0,008355053
0,086		1	0,085155483	0,078091934	0,08483946	0,085983976	0,085266518	0,0861548	0,075691864	0,085659412	0,085317765	0,07558083
0,181		2	0,178599565	0,163784936	0,177936758	0,180337192	0,178832442	0,180695468	0,158751187	0,179656473	0,178939925	0,15851831
0,0802	cum_bilate1	3	0,079136382	0,07257211	0,078842696	0,079906314	0,079239568	0,080065064	0,070341686	0,079604691	0,079287193	0,0702385
9,195		1	9,073055266	8,320455734	9,039383912	9,161328646	9,084885645	9,179529413	8,064735704	9,126747354	9,090345912	8,052905325
10,79		2	10,64690226	9,763753929	10,60739015	10,75048788	10,66078479	10,77184583	9,46367572	10,70990799	10,66719221	9,449793198
8,681	cum_inv1	3	8,56587197	7,855342711	8,534082843	8,649210872	8,577041032	8,666394218	7,613917417	8,616562673	8,58219607	7,602748355
0,602		1	0,594016234	0,544743268	0,591811758	0,599795524	0,594790773	0,600987135	0,528001185	0,597531474	0,595148259	0,527226646
0,182		2	0,179586303	0,164689825	0,178919834	0,181333531	0,179820466	0,181693785	0,159628265	0,18064905	0,179928543	0,159394102
0,675	cum_paren1	3	0,666048103	0,610800176	0,663576307	0,672528204	0,666916565	0,673864313	0,592027907	0,66998961	0,6673174	0,591159445
0,041		1	0,040752277	0,037371922	0,040601039	0,041148763	0,040805414	0,041230513	0,036223337	0,040993438	0,040829939	0,0361702
-0,699		2	-0,689729813	-0,632517516	-0,687170131	-0,696440318	-0,690629153	-0,697823933	-0,613077788	-0,693811463	-0,691044241	-0,612178447
0,214	east	3	0,211161917	0,193646278	0,210378266	0,213216349	0,211437252	0,213639945	0,187694773	0,212411521	0,211564331	0,187419439
-0,251		1	-0,24767122	-0,22712177	-0,246752079	-0,250080858	-0,24799416	-0,250577693	-0,220146673	-0,249136877	-0,248143211	-0,219623734
0,0428		2	0,042232383	0,038729256	0,042075653	0,04264327	0,04228745	0,042727989	0,037538955	0,042482304	0,042312866	0,037483888
-0,336	berlin	3	-0,331543944	-0,304042754	-0,330313539	-0,334769595	-0,331976245	-0,33543468	-0,294698336	-0,333505939	-0,332175772	-0,294266035

Figure 4.4: The effects of the explanatory variables on the dependent variable.

The reader may immediately notice that the most influent regressors are the ones that refer to the Investing Company, Patents and the level of unemployment. More in details, a one unit change in the variable Patents reflect in almost 50% increase in the dependent variable, thus suggesting that patents could be the focus of the strategy for attracting foreign investments. Unsurprisingly, the variable *cum_inv* has proved to be strongly significant, since the more investments in the same Regions are held by the same Investing Company, the more experienced it will be. Lastly, it is interesting to analyse the effects of the change in the variable *unemployment*. From the analysis it came out that in the first sub-period from 2003 to 2010, a one unit change in the variable translated into 0,995618571 percent increase in the probability of the Region being chosen, while the effect began smoother in the second sub-period with an increase of 0,408509503 percent of the dependent variable. This may be interpreted by thinking that during the years immediately following the reunification the gap between East and West Germany was greater, especially because of the level

of unemployment that translated into more demand and high possibility of finding availability of workforce. Time passing by, the level of unemployment became less attractive, thus suggesting that companies are more oriented on the quality rather than the quantity of workers.

Chapter 5

Conclusions

This study examines the main determinants of locational choice of inward FDI into German Administrative Regions. The results have been achieved by maximizing the profit function of foreign investors who take into account many exogenous variable specific to each of the German Administrative Region, combined to the data available from 2003 to 2018 from fDi database from Financial Times.

What stands out is that innovation, distance and experience matter. The first point is raised by the attractiveness of patents, which are in turn strongly correlated with R&D expenditure and personnel. A strong presence of patents means technology and product innovation, which are all ingredients to market success. Unsurprisingly, *"Move fast and break things"* is the motto adopted by many giants such as Amazon, Google and Facebook, and to be fast the reader may agree that companies should be able to innovate.

Another interesting issue is distance. The insight that investors tend to invest in closeby companies confirms the evidence that commercial and transportation costs represents a real fiscal burden.

Then it comes experience. This latter strategy may be interesting for regional policy makers, who can focus on investors coming from certain countries. The analysis has shown that where it already exists a critical mass of affiliates from one country, the other investors of this latter are swept up with high probability.

Additionally, the economic regression tries to give evidence of the effects of the German Reunification by introducing the variable *East* and *Berlin.*

The issue is addressed by dividing the timeframe in two sub-periods in order to examine the evolution of the investors' perception all over the years. During the years from 2003 to 2010 the negative sign of the variable East underlines the less attractiveness of the East Regions of Germany, while in the following sub-period the effects of this variable completely switch sides, although with insignificant coefficients. Thus it seems reasonable to affirm that the gap between East and West German has mostly reduced its dimension, but the historical events have left definitely their mark over the country.

I believe that the results of this research could be of particular interest not only for the policy makers but also for future foreign investors investing in Greenfield projects in Germany. Although insightful, this research is limited by the availability and completeness of data, since many determinants were not considered in the profit function for the underlying reason.

Additionally, since the aim of the paper is to investigate whether the investor perceives the German Regions as equal alternatives to invest in or not, it would be reasonable to use a model that does not hold their independence as its main assumption. Although the use of the conditional logit model has simplified the analysis, the imposition of the so-called Independence of Irrelevant Alternatives (IIA) represents a limitation for the research.

One solution could be the separation of the set of alternatives into subsets, by using the so-called nested logit model. Bringing the model into our context, the foreign investors would be involved in a double-step choice: he would decide between East or West in the upper level, and then which regions among the ones in the nest in the lower level model. Because of the forementioned reasons the further development of the model is left for future research.

Appendix A

Summary of choice			
GEO/TIME	Mean	Std. Dev.	Freq.
Arnsberg	.01326207	.11440056	10,104
Berlin	.09511085	.2933825	10,104
Brandenburg	.01692399	.12899308	10,104
Braunschweig	.00366192	.06040586	10,104
Bremen	.01197546	.10878058	10,104
Chemnitz	.0016825	.04098582	10,104
Darmstadt	.12292162	.32836346	10,104
Detmold	.0074228	.08583958	10,104
Dresden	.01138163	.10608112	10,104
Dusseldorf	.12420823	.32983529	10,104
Freiburg	.06146081	.24018552	10,104
Giessen	.00316706	.05619025	10,104
Hamburg	.06423199	.24517787	10,104
Hannover	.01128266	.10562417	10,104
Karlsruhe	.05047506	.21893394	10,104
Kassel	.00366192	.06040586	10,104
Koblenz	.00079177	.02812858	10,104
Koln	.06066904	.23873406	10,104
Leipzig	.0064331	.07995213	10,104
Lüneburg	.00316706	.05619025	10,104
Mecklenburg-Vorpomm..	.0057403	.07555074	10,104
Mittelfranken	.01197546	.10878058	10,104
Munster	.01009501	.09997045	10,104
Niederbayern	.00376089	.06121367	10,104
Oberbayern	.12143705	.32665066	10,104
Oberfranken	.00316706	.05619025	10,104
Oberpfalz	.0040578	.06357463	10,104
Rheinhessen-Pfalz	.00989707	.0989954	10,104
Saarland	.00603721	.07746844	10,104
Sachsen-Anhalt	.01672605	.12824943	10,104
Schleswig-Holstein	.00870942	.09292159	10,104
Schwaben	.00653207	.08056079	10,104
Stuttgart	.07274347	.2597278	10,104
Thuringen	.0131631	.1139786	10,104
Trier	.00039588	.01989385	10,104
Tubingen	.02345606	.15135434	10,104
Unterfranken	.00415677	.06434206	10,104
Weser-Ems	.0040578	.06357463	10,104

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Figure A.1: List of the probability choice - the event of chosing the Administrative Region *i*.

COEFFICIENTS	REGION		Arnsberg	Berlin	Brandenburg	Braunschweig	Bremen	Chemnitz	Darmstadt	Detmold	Dresden	Dusseldorf
0,506		1	0,499289393	0,45787391	0,497436461	0,504147068	0,499940417	0,505148655	0,44380166	0,502244063	0,500240895	0,443150636
0,589		2	0,581188641	0,532979709	0,57903177	0,586843129	0,581946454	0,588009008	0,516599166	0,584627971	0,58229622	0,515841353
0,544	ln_pat2	3	0,536785434	0,492259698	0,534793349	0,542007916	0,53748535	0,54308472	0,477130639	0,539961997	0,537808393	0,476430723
-0,153		1	-0,150970903	-0,13844804	-0,15041063	-0,152439726	-0,15167755	-0,152742578	-0,134192992	-0,151864312	-0,151258611	-0,133996141
-0,798		2	-0,78741686	-0,722101542	-0,784494656	-0,795077788	-0,788443583	-0,796657365	-0,699908547	-0,792076606	-0,788917459	-0,698881832
0,0568	ln_gdppc2	3	0,056046714	0,051397704	0,055838717	0,056592003	0,056119794	0,056704434	0,049818052	0,056378385	0,056153523	0,049744973
-0,080		1	-0,078643013	-0,072119665	-0,078351158	-0,079408145	-0,078745556	-0,079565905	-0,069903147	-0,079108403	-0,078792884	-0,069800604
-0,0417		2	-0,041146972	-0,037733878	-0,04099427	-0,041547298	-0,041200623	-0,04162984	-0,036574168	-0,041390469	-0,041225386	-0,036520517
-0,0868	ln_kmdist	3	-0,085648852	-0,078544378	-0,085330998	-0,086482145	-0,08576053	-0,086653959	-0,076130403	-0,086155701	-0,085812075	-0,076018726
-0,026		1	-0,02575386	-0,023617607	-0,025658284	-0,026004424	-0,02578744	-0,026056087	-0,022897746	-0,025906265	-0,025802939	-0,022858165
-0,364		2	-0,359172607	-0,329379651	-0,357839668	-0,362667061	-0,359640933	-0,36338757	-0,31925653	-0,361298101	-0,359857087	-0,318788204
0,118	near	3	0,116435076	0,10677692	0,116002969	0,117567893	0,116586896	0,117801465	0,103495249	0,11712411	0,116656968	0,103343429
-0,358		1	-0,353252179	-0,323950316	-0,351941212	-0,356689033	-0,353712785	-0,357397665	-0,31399406	-0,355342638	-0,353925376	-0,313533454
-0,55		2	-0,542705862	-0,497689033	-0,540691806	-0,547985944	-0,543413497	-0,549074625	-0,482393109	-0,54591746	-0,543740104	-0,481685474
-0,368	ln_people2	3	-0,363119558	-0,332999207	-0,361771972	-0,366652413	-0,363593031	-0,36738084	-0,322764844	-0,36526841	-0,36381156	-0,322291371
0,501		1	0,494355703	0,453349464	0,492521081	0,499165378	0,495000295	0,500157068	0,439416268	0,497281177	0,495297803	0,43877677
1		2	0,995618571	0,913033152	0,991923694	1,005305123	0,996916761	1,007302358	0,884972085	1,001510395	0,997515935	0,883673896
0,414	n_unempl2	3	0,408509503	0,374624108	0,406993468	0,412483965	0,40904216	0,413303445	0,363110449	0,410926961	0,409288005	0,362577793
0,004		1	0,004134432	0,003791486	0,004119088	0,004174657	0,004139823	0,00418295	0,003674958	0,004158898	0,004142311	0,003669568
0,0448		2	0,044205859	0,040539034	0,044041805	0,044635946	0,044263499	0,044724624	0,039293111	0,044467459	0,044290103	0,039235471
-0,00954	area1	3	-0,00941348	-0,008632642	-0,009378545	-0,009505065	-0,009425754	-0,009523949	-0,008367328	-0,009469186	-0,009431419	-0,008355053
0,086		1	0,085155483	0,078091934	0,08483946	0,085983976	0,085266518	0,086548	0,075631864	0,085659412	0,085317765	0,07558083
0,181		2	0,178599565	0,163784936	0,177936758	0,180337192	0,178832442	0,180695468	0,158751187	0,179656473	0,178939925	0,15851831
0,0802	cum_bilate1	3	0,079136382	0,07257211	0,078842696	0,079906314	0,079239568	0,080065064	0,070341686	0,079604691	0,079287193	0,0702385
9,195		1	9,073055266	8,320455734	9,039383912	9,161328646	9,084885645	9,179529413	8,064735704	9,126747354	9,090345912	8,052905325
10,79		2	10,64690226	9,763753929	10,60739015	10,75048788	10,66078479	10,77184583	9,46367572	10,70990799	10,66719221	9,449793198
8,681	cum_inv1	3	8,56587197	7,855342711	8,534082843	8,649210872	8,577041032	8,666394218	7,613917417	8,616562673	8,58219607	7,602748355
0,602		1	0,594016234	0,544743268	0,591811758	0,599795524	0,594790773	0,600987135	0,528001185	0,597531474	0,595148259	0,527226646
0,182		2	0,179586303	0,164689825	0,178919834	0,181333531	0,179820466	0,181693785	0,159628265	0,18064905	0,179928543	0,159394102
0,675	cum_parent	3	0,666048103	0,610800176	0,663576307	0,672528204	0,666916565	0,673864313	0,592027907	0,66998961	0,6673174	0,591159445
0,041		1	0,040752277	0,037371922	0,040601039	0,041148763	0,040805414	0,041230513	0,036223337	0,040993438	0,040829939	0,0361702
-0,699		2	-0,689729813	-0,632517516	-0,687170131	-0,696440318	-0,690629153	-0,697823933	-0,613077788	-0,693811463	-0,691044241	-0,612178447
0,214	east	3	0,21116917	0,193646278	0,210378266	0,213216349	0,211437252	0,213639945	0,187694773	0,212411521	0,211564331	0,187419439
-0,251		1	-0,24767122	-0,22727177	-0,246752079	-0,250080858	-0,24799416	-0,250577693	-0,220146673	-0,249136877	-0,248143211	-0,219623734
0,0428		2	0,042232383	0,038729256	0,042075653	0,04264327	0,0422874	0,042727989	0,037538955	0,042482304	0,042312866	0,037483888
-0,336	berlin	3	-0,331543944	-0,304042754	-0,330313539	-0,334769595	-0,331976245	-0,33543468	-0,294698336	-0,333505939	-0,332175772	-0,294266035

Figure A.2: Marginal effects computed for each of the explanatory variables.

			Freiburg	Giessen	Hamburg	Hannover	Karlsruhe	Kassel	Koblenz	Koln	Leipzig	Lüneburg
0,506		1	0,47490083	0,504397468	0,473498613	0,500290974	0,48045962	0,504147068	0,505599364	0,475301466	0,502744851	0,504397468
0,589		2	0,552799583	0,587134602	0,551167358	0,582354513	0,55927019	0,586843129	0,588533647	0,553265935	0,585210904	0,587134602
0,544	ln_pat2	3	0,510565319	0,542277119	0,509057797	0,537862233	0,516541567	0,542007916	0,543569277	0,510996042	0,540500394	0,542277119
-0,153		1	-0,143596496	-0,15251544	-0,143172506	-0,151273753	-0,145277316	-0,152439726	-0,152878859	-0,143717637	-0,152015736	-0,15251544
-0,798		2	-0,748954274	-0,795472686	-0,746742872	-0,788996437	-0,757720902	-0,795077788	-0,797368168	-0,749586106	-0,792866386	-0,795472686
0,0568	ln_gdppc2	3	0,053309026	0,056620111	0,053151623	0,056159145	0,053933017	0,056592003	0,056755027	0,053353999	0,0564346	0,056620111
-0,080		1	-0,074801573	-0,079447585	-0,07458071	-0,078800772	-0,075677138	-0,079408145	-0,079636896	-0,074864676	-0,079187282	-0,079447585
-0,0417		2	-0,039137084	-0,041567934	-0,039021526	-0,041229513	-0,03959519	-0,041547298	-0,041666983	-0,039170101	-0,04143174	-0,041567934
-0,0868	ln_kmdist	3	-0,081465202	-0,086525099	-0,081224663	-0,085820665	-0,082418765	-0,086482145	-0,086731274	-0,081533927	-0,086241607	-0,086525099
-0,026		1	-0,024495873	-0,02601734	-0,024423545	-0,025805523	-0,024782601	-0,026004424	-0,026079335	-0,024516538	-0,025932096	-0,02601734
-0,364		2	-0,341628265	-0,36284719	-0,340619556	-0,359893112	-0,345627078	-0,362667061	-0,363711796	-0,341916469	-0,361658352	-0,36284719
0,118	near	3	0,110747624	0,117626287	0,110420625	0,116668646	0,112043943	0,117567893	0,117906571	0,110841053	0,117240894	0,117626287
-0,358		1	-0,33599703	-0,356866193	-0,335004948	-0,353960808	-0,339929929	-0,356689033	-0,35771646	-0,336280484	-0,35569695	-0,356866193
-0,55		2	-0,516196555	-0,548258117	-0,514672406	-0,543794537	-0,522238717	-0,547985944	-0,549564527	-0,516632028	-0,546461795	-0,548258117
-0,368	ln_people2	3	-0,345382422	-0,366834522	-0,344362628	-0,363847981	-0,349425118	-0,366652413	-0,367708629	-0,345673793	-0,365632619	-0,366834522
0,501		1	0,470208134	0,499413303	0,468819773	0,495347387	0,475711995	0,499165378	0,500603323	0,470604811	0,497777017	0,499413303
1		2	0,946986043	1,005804436	0,944189922	0,997615796	0,958070664	1,005305123	1,008201104	0,947784939	1,002509002	1,005804436
0,414	n_unempl2	3	0,388555225	0,412688837	0,387407956	0,409328979	0,393103325	0,412483965	0,413672207	0,388683017	0,411336597	0,412688837
0,004		1	0,003932479	0,00417673	0,003920868	0,004142726	0,003978509	0,004174657	0,004186662	0,003935797	0,004163045	0,00417673
0,0448		2	0,042046556	0,044658116	0,041922407	0,044294537	0,042538717	0,044635946	0,044764529	0,042082027	0,044511797	0,044658116
-0,00954	area1	3	-0,008953664	-0,009509786	-0,008927227	-0,009432363	-0,009058468	-0,009505065	-0,009522447	-0,008961217	-0,009478628	-0,009509786
0,086		1	0,080995932	0,086026683	0,080756779	0,085326306	0,081944002	0,085983976	0,08623167	0,081064262	0,085744823	0,086026683
0,181		2	0,169875593	0,180426762	0,16937401	0,178957839	0,171864014	0,180337192	0,18085669	0,170018904	0,179835609	0,180426762
0,0802	cum_bilate1	3	0,075270843	0,079946002	0,075048594	0,079295131	0,0761519	0,079906314	0,080135337	0,075334343	0,079684065	0,079946002
9,195		1	8,629867852	9,165878883	8,604386852	9,091255941	8,730881623	9,161328646	9,187719675	8,637148177	9,135847646	9,165878883
10,79		2	10,12683786	10,75582742	10,09693683	10,6682601	10,2453741	10,75048788	10,7814568	10,13538106	10,72058685	10,75582742
8,681	cum_inv1	3	8,147458708	8,653506752	8,123402095	8,583055229	8,242826004	8,649210872	8,674126645	8,154332064	8,625154259	8,653506752
0,602		1	0,565000592	0,60009343	0,563332342	0,595207839	0,571614014	0,599795524	0,601523354	0,565477238	0,598127274	0,60009343
0,182		2	0,170814133	0,181423595	0,170309778	0,179946556	0,172813539	0,181333531	0,181855898	0,170958235	0,180829176	0,181423595
0,675	cum_parent	3	0,633513953	0,672862235	0,631643407	0,667384205	0,640929335	0,672528204	0,674465555	0,634048398	0,670657658	0,672862235
0,041		1	0,038761669	0,0411692	0,038647219	0,040834026	0,03921538	0,041148763	0,0412673	0,038794369	0,04104313	0,0411692
-0,699		2	-0,656038894	-0,696786225	-0,654101839	-0,691113421	-0,663717933	-0,696440318	-0,698446553	-0,656592341	-0,694503263	-0,696786225
0,214	east	3	0,200847387	0,213322249	0,200254354	0,211585511	0,203198337	0,213216349	0,213830561	0,201016825	0,212623317	0,213322249
-0,251		1	-0,235573337	-0,250205068	-0,234877771	-0,248168052	-0,23833076	-0,250080858	-0,250801266	-0,235772071	-0,249385292	-0,250205068
0,0428		2	0,040169477	0,04266445	0,040050871	0,042317102	0,040639667	0,04264327	0,042766112	0,040203365	0,042524663	0,04266445
-0,336	berlin	3	-0,315349168	-0,334935868	-0,314418051	-0,332209026	-0,31904038	-0,334769595	-0,335733965	-0,315615203	-0,333838478	-0,334935868

Figure A.3: Marginal effects computed for each of the explanatory variables.

			Mecklenburg-Vorpomm,	Mittelfranken	Munster	Niederbayern	Oberbayern	Oberfranken	Oberpfalz	Rheinhessen-Pfalz	Saarland
0,506		1	0,503095408	0,499940417	0,500891925	0,50409699	0,444552853	0,504397468	0,503946753	0,500992083	0,502945172
0,589		2	0,585618963	0,581946454	0,583054039	0,586784836	0,517473578	0,587134602	0,586609956	0,583170626	0,585444083
0,544	ln_pat2	3	0,540877277	0,53748535	0,538508315	0,541954076	0,477938245	0,542277119	0,541792557	0,53865994	0,540715758
-0,153		1	-0,152121734	-0,151167755	-0,151455463	-0,152424584	-0,134420131	-0,15251544	-0,152339157	-0,151485748	-0,152076307
-0,798		2	-0,793419241	-0,788443583	-0,789944182	-0,79499881	-0,701093234	-0,795472686	-0,794761876	-0,790102138	-0,793182306
0,0568	ln_gdppc2	3	0,056473951	0,056119794	0,056226603	0,056586381	0,049902376	0,056620111	0,056569517	0,056237846	0,056457086
-0,080		1	-0,079242498	-0,078745556	-0,078895428	-0,079400257	-0,070021467	-0,079447585	-0,079376593	-0,079911204	-0,079218834
-0,0417		2	-0,041460629	-0,041200623	-0,041279038	-0,041543171	-0,036636075	-0,041567934	-0,04153079	-0,041287292	-0,041448248
-0,0868	ln_kmdist	3	-0,086301742	-0,08576053	-0,085923753	-0,086473555	-0,076259264	-0,086525099	-0,086447783	-0,085940934	-0,08627597
-0,026		1	-0,025950178	-0,02578744	-0,02583652	-0,026001841	-0,022930493	-0,02601734	-0,025994091	-0,025841686	-0,025942429
-0,364	near	2	-0,361910531	-0,359640933	-0,360325416	-0,362631036	-0,319796914	-0,36284719	-0,362522961	-0,360397467	-0,361802456
0,118		3	0,117322645	0,116586896	0,116808789	0,117556215	0,103670428	0,117626287	0,1175218	0,116832146	0,117287609
-0,358		1	-0,355944973	-0,353712785	-0,354385986	-0,356653601	-0,314525536	-0,356866193	-0,356547308	-0,354456849	-0,355838679
-0,55	ln_people2	2	-0,546842835	-0,543413497	-0,544447745	-0,547931511	-0,483209623	-0,548258117	-0,54776821	-0,544556612	-0,546679535
-0,368		3	-0,36588757	-0,363593031	-0,364285036	-0,366615992	-0,323311166	-0,366834522	-0,36650673	-0,364357878	-0,365778307
0,501		1	0,49812411	0,495000295	0,4959424	0,499115794	0,440160038	0,499413303	0,498967042	0,496041568	0,497975358
1		2	1,003208037	0,996916761	0,998814135	1,005205262	0,886470017	1,005804436	1,00490568	0,999013856	1,002908455
0,414	n_unempl2	3	0,411623516	0,40904216	0,409820666	0,412442992	0,363725061	0,412688837	0,412320071	0,409902613	0,411500595
0,004		1	0,004165948	0,004139823	0,004147702	0,004174242	0,003681179	0,00417673	0,004172998	0,004148531	0,004164704
0,0448		2	0,044542835	0,044263499	0,044347744	0,04463512	0,03935962	0,044658116	0,044618211	0,044356611	0,044529533
-0,00954	area1	3	-0,009485238	-0,009425754	-0,009443694	-0,009504121	-0,008381491	-0,009509786	-0,009501289	-0,009445582	-0,009482405
0,086		1	0,085804612	0,085266518	0,085428801	0,085975435	0,075811983	0,086026683	0,085949812	0,085445883	0,085778989
0,181		2	0,179961006	0,178832442	0,179172803	0,180319279	0,159019894	0,180426762	0,180265538	0,17920863	0,179907265
0,0802	cum_bilate	3	0,079739628	0,079239568	0,07939038	0,079898377	0,070460749	0,079946002	0,079874564	0,079406255	0,079715816
9,195		1	9,142217942	9,084885645	9,102176383	9,160418616	8,078386325	9,165878883	9,157688529	9,103996441	9,139487854
10,79		2	10,72806216	10,66078479	10,68107484	10,74942	9,479694231	10,75582742	10,74621634	10,68321061	10,7248585
8,681	cum_inv1	3	8,631168456	8,577041032	8,593365218	8,648351714	7,626804969	8,653506752	8,645774238	8,595083535	8,62859098
0,602		1	0,598544339	0,594790773	0,595922804	0,599735944	0,528894896	0,60009343	0,599557204	0,596041964	0,5983656
0,182		2	0,180955265	0,179820466	0,180162708	0,181315518	0,159898457	0,181423595	0,18126148	0,180198733	0,180901228
0,675	cum_paren	3	0,671125298	0,666916565	0,668185868	0,672461399	0,593029991	0,672862235	0,672260985	0,668319478	0,670924883
0,041		1	0,041062926	0,040805414	0,040883076	0,041144675	0,03628465	0,0411692	0,041132413	0,040891251	0,041050663
-0,699		2	-0,69498753	-0,690629153	-0,691943588	-0,696371138	-0,614115502	-0,696786225	-0,696163598	-0,692081948	-0,69477999
0,214	east	3	0,212771576	0,211437252	0,211839668	0,21319517	0,188012471	0,213322249	0,21313631	0,211882027	0,212708037
-0,251		1	-0,249559185	-0,24799416	-0,248466152	-0,250056017	-0,2205193	-0,250205068	-0,249981492	-0,248515835	-0,24948466
0,0428		2	0,042554315	0,04228745	0,042367934	0,042639304	0,037602494	0,04266445	0,042626326	0,042376405	0,042541607
-0,336	berlin	3	-0,334071259	-0,333976245	-0,332608077	-0,334736341	-0,295197151	-0,334935868	-0,334636579	-0,332674584	-0,333971497

Figure A.4: Marginal effects computed for each of the explanatory variables.

			Sachsen-Anhalt	Schleswig-Holst	Schwaben	Stuttgart	Thuringen	Trier	Tubingen	Unterfranken	Weser-Ems
0,506		1	0,497536619	0,501593033	0,502694773	0,469191804	0,499339471	0,505799685	0,494131234	0,503896674	0,503946753
0,589		2	0,579148357	0,583870152	0,585152611	0,546154096	0,581246934	0,588766827	0,575184381	0,585551662	0,586609956
0,544	ln_pat2	3	0,534901029	0,539262076	0,540446554	0,504427552	0,536839274	0,543784641	0,531239903	0,541738717	0,541792557
-0,153		1	-0,150440914	-0,151667459	-0,152000593	-0,141870249	-0,150986046	-0,15293943	-0,149411223	-0,152364014	-0,152379157
-0,798		2	-0,784652612	-0,791049883	-0,792787408	-0,739950711	-0,787495846	-0,797684088	-0,779282064	-0,794682898	-0,794761876
0,0568	ln_gdppc2	3	0,05584996	0,056305305	0,056428978	0,052568171	0,056052336	0,056777514	0,055467696	0,056563895	0,056569517
-0,080		1	-0,078366934	-0,079005859	-0,079179394	-0,073902345	-0,078650901	-0,079668448	-0,077830552	-0,079368705	-0,079376593
-0,0417		2	-0,041002524	-0,041336817	-0,041427613	-0,038666597	-0,041151099	-0,041683492	-0,040721882	-0,041526663	-0,04153079
-0,0868	ln_kmdist	3	-0,085348179	-0,086044022	-0,086233016	-0,080485867	-0,085657443	-0,086765638	-0,084764014	-0,086439192	-0,086447783
-0,026		1	-0,02566345	-0,025872684	-0,025929513	-0,024201395	-0,025756443	-0,026089668	-0,025487797	-0,025991508	-0,025994091
-0,364	near	2	-0,357911218	-0,360829771	-0,361622327	-0,337521377	-0,359208632	-0,3638559	-0,355461994	-0,362486936	-0,362522961
0,118		3	0,116026326	0,116972288	0,11722926	0,109416271	0,11646754	0,117953286	0,115232185	0,117509501	0,1175218
-0,358		1	-0,352012041	-0,354982028	-0,355661519	-0,331957838	-0,35328761	-0,357858275	-0,349602731	-0,356511876	-0,356547308
-0,55	ln_people2	2	-0,540800673	-0,545209819	-0,546407362	-0,509991092	-0,542760295	-0,549782266	-0,537099167	-0,547713777	-0,54776821
-0,368		3	-0,36184814	-0,364794933	-0,365596198	-0,341230403	-0,363155979	-0,367854316	-0,35936817	-0,366470309	-0,36650673
0,501		1	0,492620249	0,496636581	0,497727433	0,464555522	0,494405287	0,500801664	0,489248514	0,498917458	0,498967042
1		2	0,99212346	1,000212141	1,002409141	0,935601839	0,995718432	1,008600557	0,985332835	1,004805819	1,00490568
0,414	n_unempl2	3	0,407075415	0,4103943	0,411295723	0,383984203	0,408550477	0,413836106	0,404289191	0,412279097	0,412320071
0,004		1	0,004119918	0,004153508	0,004162631	0,003885205	0,004134847	0,004188341	0,004091719	0,004172583	0,004172998
0,0448		2	0,044050673	0,044049818	0,044507363	0,041541093	0,044210293	0,044782265	0,043749169	0,044613777	0,044618211
-0,00954	area1	3	-0,009380433	-0,009456912	-0,009477684	-0,008846027	-0,009414424	-0,009536223	-0,009316229	-0,009500344	-0,009501289
0,086		1	0,084856542	0,085548377	0,085736282	0,080022239	0,085164024	0,086265836	0,084275542	0,085941271	0,085949812
0,181		2	0,177972585	0,179423595	0,17981695	0,167833432	0,178617479	0,180928346	0,176754453	0,180247625	0,180265538
0,0802	cum_bilate	3	0,078858571	0,079501505	0,079676128	0,074365974	0,079144319	0,08016825	0,078318824	0,079866627	0,079874564
9,195		1	9,04120397	9,114916883	9,134937616	8,526123793	9,073965296	9,191359883	8,97932528	9,1567785	9,157688529
10,79		2	10,60952592	10,69602536	10,71951896	10,05009796	10,64797015	10,78572845	10,53690911	10,74514845	10,74621634
8,681	cum_inv1	3	8,53580116	8,605393525	8,6242951	8,049513937	8,566731129	8,677563366	8,477377943	8,64491508	8,645774238
0,602		1	0,591930918	0,596756929	0,598067694	0,558208431	0,594075814	0,60176168	0,587879452	0,599497624	0,599557204
0,182		2	0,178955859	0,180414886	0,18081163	0,168760688	0,179604316	0,18192795	0,177730997	0,181243468	0,18126148
0,675	cum_paren	3	0,663709916	0,669121142	0,670590853	0,625898158	0,666114908	0,674732781	0,65916716	0,67219418	0,672260985
0,041		1	0,040609124	0,040940301	0,041030226	0,038295695	0,040756364	0,04128365	0,040331265	0,041128325	0,041132413
-0,699		2	-0,687308491	-0,692912115	-0,694434083	-0,648152314	-0,689798993	-0,69872328	-0,682604214	-0,696094418	-0,696163598
0,214	east	3	0,210420625	0,212136184	0,212602137	0,198432897	0,211183097	0,213915282	0,208980403	0,213110451	0,21313631
-0,251		1	-0,246801761	-0,248813936	-0,24936045	-0,232741389	-0,247696062	-0,250900634	-0,245112529	-0,249956651	-0,249981492
0,0428		2	0,042084125	0,042427237	0,042520427	0,039686579	0,042236619	0,042783056	0,041796081	0,04262209	0,042626326
-0,336	berlin	3	-0,330380047	-0,333073635	-0,333805224	-0,311558194	-0,331577198	-0,335866984	-0,328118764	-0,334603325	-0,334636579

Figure A.5: Marginal effects computed for each of the explanatory variables.

	Arnsberg	Berlin	Brandenburg	Braunschweig	Bremen	Chemnitz	Darmstadt	Detmold	Dresden	Dusseldorf
	0,01326207	0,09511085	0,01692399	0,00366192	0,01197546	0,00168250	0,12292162	0,00742280	0,01138163	0,12420823
%EAST1	0,040752277	0,037371922	0,04060104	0,04114876	0,040805414	0,041230513	0,036223337	0,040993438	0,040829939	0,0361702
	0,01380253	0,098665325	0,01761112	0,0038126	0,012464124	0,00175187	0,127374251	0,007727086	0,011846341	0,128700867
%EAST2	-0,689729813	-0,632517516	-0,6871701	-0,69644032	-0,690629153	-0,697823933	-0,613077788	-0,693811463	-0,691044241	-0,612178447
	0,004114825	0,034951571	0,00529433	0,00111161	0,003704858	0,000508411	0,047561105	0,002272776	0,00351642	0,048170629
%EAST3	0,211161917	0,193646278	0,21037827	0,21321635	0,211437252	0,213639945	0,187694773	0,212411521	0,211564331	0,187419439
	0,016062514	0,113528712	0,02048443	0,0044427	0,014507518	0,002041949	0,145993366	0,008999488	0,013789577	0,147487267
%BERLIN1	-0,24767122	-0,227127177	-0,2467521	-0,25008086	-0,24799416	-0,250577693	-0,220146673	-0,249136877	-0,248143211	-0,219823734
	0,009977437	0,073508591	0,01274796	0,00274614	0,009005616	0,001260903	0,095860834	0,005573507	0,008557356	0,096904313
%BERLIN2	0,042232383	0,038729256	0,04207565	0,04264327	0,04228745	0,042727989	0,037538955	0,042482304	0,042312866	0,037483888
	0,013822159	0,098794422	0,01763608	0,00381808	0,012481872	0,00175439	0,127535969	0,007738138	0,011863219	0,128864037
%BERLIN3	-0,331543944	-0,304042754	-0,3303135	-0,33476959	-0,331976245	-0,33543468	-0,294698336	-0,333505939	-0,332175772	-0,294266035
	0,008865111	0,066193085	0,01133377	0,00243602	0,007999892	0,001118131	0,086696823	0,004947252	0,007600928	0,087657967

Figure A.6: The effects of East and Berlin on the dependent variable choice.

	Freiburg	Giessen	Hamburg	Hannover	Karlsruhe	Kassel	Koblenz	Koln	Leipzig	Lüneburg
	0,06146081	0,00316706	0,06423199	0,01128266	0,05047506	0,00366192	0,00079177	0,06066904	0,00643310	0,00316706
%EAST1	0,038761669	0,0411692	0,03864722	0,04083403	0,03921538	0,041148763	0,0412673	0,038794369	0,041034313	0,0411692
	0,063843134	0,003297445	0,06671438	0,01174338	0,052454459	0,003812603	0,000824444	0,063022657	0,006697078	0,003297445
%EAST2	-0,656038894	-0,696786225	-0,6541018	-0,69111342	-0,663717933	-0,696440318	-0,698446553	-0,656592341	-0,694503263	-0,696786225
	0,021140128	0,000960296	0,02221773	0,00348506	0,016973858	0,001111611	0,000238761	0,020834213	0,001965291	0,000960296
%EAST3	0,200847387	0,213322249	0,20025435	0,21158551	0,203198337	0,213216349	0,213830561	0,201016825	0,212623317	0,213322249
	0,073805053	0,003842664	0,07709473	0,01366991	0,060731508	0,004442701	0,000961075	0,072864538	0,007800927	0,003842664
%BERLIN1	-0,235573337	-0,250205068	-0,2348778	-0,24816805	-0,23833076	-0,250080858	-0,250801266	-0,235772011	-0,249385292	-0,250205068
	0,046982282	0,002374646	0,04914532	0,00848266	0,038445301	0,002746144	0,000593193	0,046364975	0,004828779	0,002374646
%BERLIN2	0,040169477	0,04266445	0,04005087	0,0423171	0,040639667	0,04264327	0,042766112	0,040203365	0,042524663	0,04266445
	0,063929659	0,003302181	0,06680454	0,01176011	0,05252635	0,003818076	0,000825631	0,06310814	0,006706665	0,003302181
%BERLIN3	-0,315349168	-0,334935868	-0,3144181	-0,33220903	-0,31904038	-0,334769595	-0,335733965	-0,315615203	-0,333838478	-0,334935868
	0,042079195	0,002106298	0,04403629	0,00753446	0,034371478	0,002436021	0,000525946	0,041520969	0,004285484	0,002106298

Figure A.7: The effects of East and Berlin on the dependent variable choice.

	Mecklenburg-Vorpommen	Mittelfranken	Munster	Niederbayern	Oberbayern	Oberfranken	Oberpfalz	Rheinhessen-Pfalz	Saarland
	0,00574030	0,01197546	0,01009501	0,00376089	0,12143705	0,00316706	0,00405780	0,00989707	0,00603721
%EAST1	0,041062926	0,040805414	0,04088308	0,04114468	0,03628465	0,0411692	0,041132413	0,040891251	0,041050663
	0,005976014	0,012464124	0,01050773	0,00391563	0,125843351	0,003297445	0,004224707	0,010301774	0,006285041
%EAST2	-0,69498753	-0,690629153	-0,6919436	-0,69637114	-0,614115502	-0,696786225	-0,696163598	-0,692081948	-0,69477999
	0,001750863	0,003704858	0,00310983	0,00114191	0,046860675	0,000960296	0,001232907	0,003047487	0,001842677
%EAST3	0,212771576	0,211437252	0,21183967	0,21319517	0,188012471	0,213322249	0,213131631	0,211882027	0,212708037
	0,006961673	0,014507518	0,01223353	0,00456269	0,14426873	0,003842664	0,004922646	0,011994081	0,007321373
%BERLIN1	-0,249559185	-0,24799416	-0,2484662	-0,25005602	-0,2205193	-0,250205068	-0,249981492	-0,248515835	-0,24948466
	0,004307755	0,009005616	0,00758674	0,00282046	0,094657837	0,002374646	0,003043425	0,007437491	0,004531019
%BERLIN2	0,042554315	0,04228745	0,04236793	0,04263903	0,037602494	0,04266445	0,042626326	0,042376405	0,042541607
	0,005984575	0,012481872	0,01052271	0,00392125	0,126003386	0,003302181	0,004230769	0,010316472	0,006294043
%BERLIN3	-0,334071259	-0,331976245	-0,3326081	-0,33473634	-0,295197151	-0,334935868	-0,334636579	-0,332674584	-0,333971497
	0,003822631	0,007999892	0,00673733	0,00250198	0,085589179	0,002106298	0,002699912	0,006604566	0,004020954

Figure A.8: The effects of East and Berlin on the dependent variable choice.

	Sachsen-Anhalt	Schleswig-Holstein	Schwaben	Stuttgart	Thuringen	Trier	Tubingen	Unterfranken	Weser-Ems
	0,01672605	0,00870942	0,00653207	0,07274347	0,01316310	0,00039588	0,02345606	0,00415677	0,00405780
%EAST1	0,040609214	0,040940301	0,04103023	0,03829569	0,040756364	0,04128365	0,040331265	0,041128325	0,041132413
	0,017405282	0,009065986	0,00680008	0,07552923	0,01369958	0,000412223	0,024402073	0,004327731	0,004224707
%EAST2	-0,687308491	-0,692912115	-0,6944341	-0,64815231	-0,689798993	-0,69872328	-0,682604214	-0,696094418	-0,696163598
	0,005230094	0,002674557	0,00199598	0,02559462	0,004083207	0,000119269	0,007444855	0,001263266	0,001232907
%EAST3	0,210420625	0,212136184	0,21260214	0,1984329	0,211183097	0,213915282	0,208980403	0,213110451	0,213131631
	0,020245556	0,010557003	0,0079208	0,08717817	0,015942924	0,000480565	0,028357917	0,005042621	0,004922646
%BERLIN1	-0,246801761	-0,248813936	-0,2493605	-0,23274139	-0,247696062	-0,250900634	-0,245112529	-0,249956651	-0,249981492
	0,012598031	0,006542395	0,00490323	0,05581305	0,009902652	0,000296553	0,017706686	0,003117758	0,003043425
%BERLIN2	0,042084125	0,042427237	0,04252043	0,03968658	0,042236619	0,042783056	0,041796081	0,04262209	0,042626326
	0,017429951	0,009078937	0,00680982	0,07563041	0,013719065	0,000412817	0,024436431	0,00433394	0,004230769
%BERLIN3	-0,330380047	-0,333073635	-0,3338052	-0,31155819	-0,331577198	-0,335866984	-0,328118764	-0,334603325	-0,334636579
	0,011200097	0,005808542	0,00435163	0,05007965	0,008798516	0,000262917	0,015759687	0,002765901	0,002699912

Figure A.9: The effects of East and Berlin on the dependent variable choice.

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