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Multinational Enterprises' Profitability and Survival in European Global Cities

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Master in Business Administration

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Department of Marketing, Operations and General Management

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Resumo

Esta dissertação explora a rentabilidade e a sobrevivência das empresas multinacionais que se estabelecem em cidades globais europeias *versus* outras cidades europeias. Especificamente, examina se estas empresas são mais propensas a estabelecer subsidiárias em cidades globais dentro da União Europeia (UE) *versus* cidades fora da UE, e se as subsidiárias sediadas em cidades globais da UE apresentam melhor rentabilidade e sobrevivência relativamente às localizadas em outras cidades da UE. Para tal, abordagens quantitativas e qualitativas são combinadas. São utilizados: *Firth penalised logistic regression* para avaliar a escolha da localização; *OLS regression* para avaliar a rentabilidade; e *Cox proportional-hazards model* para analisar a sobrevivência. Isto é complementado por uma análise qualitativa de seis subsidiárias que saíram dos seus mercados, oferecendo informações adicionais sobre os motivos de saída.

Os resultados demonstram que, controlados os fatores de aglomeração, a adesão à UE não é um fator determinante para a localização em cidades globais. No entanto, a densidade dos serviços avançados surge como o indicador mais forte, enquanto a conectividade dos transportes demonstra uma associação negativa com a localização nestas cidades. A análise da rentabilidade revela que o tamanho da empresa tem mais influência nesta, do que as subsidiárias estarem localizadas em cidades globais ou na UE, que não revela quaisquer vantagens. A análise de sobrevivência não assinala diferenças entre cidades globais e não globais, quer estas pertençam ou não à UE. Por último, os casos qualitativos reforçam estas conclusões, demonstrando que as saídas são frequentemente motivadas por questões estratégicas, financeiras ou fatores externos.

Palavras-chave: Empresas multinacionais, Cidades globais, União Europeia, Rentabilidade, Sobrevivência, Estratégia de localização

Classificação JEL: F2; M16

Abstract

This dissertation explores the profitability and survival of multinational enterprises that establish in European global cities versus other European cities. Specifically, it examines whether MNEs are more likely to establish subsidiaries in global cities within the European Union (EU) compared to non-EU cities, and whether subsidiaries based in EU global cities exhibit higher profitability and survival than those located in EU non-global cities. In order to achieve this, the empirical analysis combines quantitative and qualitative approaches. A Firth penalised logistic regression is used to assess location choice, an ordinary least squares (OLS) regression to evaluate profitability, and a Cox proportional-hazards model to examine survival. These are complemented by a qualitative review of six subsidiaries that exited their host markets, offering additional insights into exit dynamics.

The findings show that EU membership is not a significant determinant of global city location once agglomeration factors are controlled for. Instead, the density of advanced producer services emerges as the strongest predictor, while transport connectivity shows a negative association with global city location. The OLS regression analysis reveals that firm size dynamics are more influential regarding profitability, compared to whether the subsidiaries are located in global cities or EU member states, which does not reveal any advantages. The survival analysis does not indicate any significant differences between global and non-global cities, whether these belong to the EU or not. Lastly, the qualitative cases reinforce these findings, demonstrating that exits are often driven by firm-specific strategies, financial reasons or external factors, rather than location itself.

Keywords: Multinational enterprises, Global cities, European Union, Profitability, Survival, Location strategy

JEL Classification: F2; M16

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List of Abbreviations

MNEs – Multinational enterprises

EU – European Union

OLS – Ordinary least squares

FDI – Foreign direct investment

ROA – Return on assets

EBITDA – Earnings Before Interest, Taxes, Depreciation and Amortisation

EBIT – Earnings Before Interest and Taxes

NUTS – Nomenclature of Territorial Units for Statistics

OECD – Organization for Economic Co-operation and Development

ECB – European Central Bank

IMF – International Monetary Fund

GDP – Gross domestic product

APS – Advanced Producer Services

ROC – Receiver-operator characteristics

HCCMEs – Heteroscedasticity-consistent Covariance Matrix Estimators

CPH – Cox proportional-hazards

OR – Odds ratios

CI – Confidence intervals

AUC – Area under the curve

HRs – Hazard ratios

1 Introduction

Multinational enterprises' (MNEs) governance and location choices are widely recognised as major determinants of their potential success or failure. For this reason, international business and economic geography researchers have devoted significant attention to understanding the factors that shape firms' location strategies, including the criteria for selecting host markets and the modes of entry employed. While much of this research has traditionally focused on the country-level, recent studies emphasise the importance of subnational dynamics, particularly global cities, as well as supra-national factors such as regional integration within the European Union (Belderbos et al., 2020; Blevins et al., 2016).

In this context, global cities have attracted scholarly interest. Defined by their cosmopolitan environments, concentration of advanced producer services and high connectivity, global cities function as pivotal centres of the world economy. They offer MNEs unique advantages, including access to specialised labour, knowledge spillovers and reputational capital, while also mitigating the liability of foreignness through diverse institutional environments and internationalised infrastructures (Belderbos et al., 2020; Goerzen et al., 2013). However, global cities also present risks, such as high operational costs and heightened exposure to systemic vulnerabilities, raising important questions about their long-term profitability and sustainability as host locations (Lizieri & Pain, 2014; Stevenson et al., 2014).

The European context offers a distinctive setting for exploring these dynamics. On the one hand, European Union (EU) global cities continue to represent highly attractive hubs for foreign investment. On the other hand, the EU has profoundly reshaped institutional and regulatory landscapes through integration processes, harmonisation efforts and policy reforms. These transformations have reduced uncertainty for cross-border business activity and diminished some of the institutional premiums once associated with global cities, thereby increasing the competitiveness of non-global locations. Moreover, differences between EU and non-EU European cities highlight the importance of supra-national institutional arrangements in shaping MNE strategies (Blevins et al., 2016; Goerzen et al., 2013).

Taking all of this into consideration, this dissertation focuses on the following research question: What are the profitability and survival implications for MNEs locating to European global cities versus other locations in Europe? To answer this question, this research aims to find two things: (i) whether

MNEs are more likely to choose global cities in EU member states over non-EU cities; and (ii) whether MNEs located in EU global cities exhibit higher profitability and better long-term survival rates compared to those in EU non-global cities. These will be tested using both quantitative and qualitative approaches. The quantitative approach is comprised of three models: (i) a Firth penalised logistic regression, (ii) an Ordinary least squares (OLS) regression, and (iii) a Cox proportional-hazards model. While the qualitative approach will examine the exit cases of six subsidiaries.

This dissertation contributes to the academic literature by moving beyond the country-level analyses of multinational enterprises' location choices and emphasising the importance of subnational dynamics in shaping profitability and survival outcomes, particularly the distinction between global cities and other locations. It further extends existing research by linking the defining characteristics of global cities, cosmopolitan environment, high density of advanced producer services and high connectivity, with long-term firm performance, rather than examining solely the market entry strategy. Finally, by observing these dynamics within the evolving institutional frameworks of the European Union and explicitly comparing EU and non-EU cities, the research offers fresh insights into the ways geographic and institutional factors influence the performance and strategic behaviour of MNEs in Europe.

The empirical findings indicate that the primary drivers of multinational enterprises' location in European global cities are agglomeration-related factors, particularly the density of advanced producer services, while EU membership and firm size do not significantly affect global city location choice. The profitability analyses don't reveal any systematic advantage for subsidiaries based in global cities or EU locations, with the financial performance being shaped by firm scale dynamics instead. Similarly, the survival analyses show no significant differences between subsidiaries in global and non-global cities, whether these are located in the EU or not. The complementary qualitative analysis reinforces that exits are largely driven by firm-specific strategies, financial reasons or external shocks rather than city type. Considering all of this, the results suggest that while global cities continue to serve as influential hubs in the international economy, their practical value for multinational enterprises appears to derive less from EU membership or formal global city status and more from the agglomeration of advanced producer services that characterise these locations.

The dissertation is structured as follows: Chapter 2 presents the literature review regarding global cities, MNEs and EU institutional frameworks, therefore establishing the theoretical basis for this research; Chapter 3 explains the methodology and data used; Chapter 4 presents and analyses the

results; finally, Chapter 5 concludes the dissertation by summarising the outcomes of the results analysis, as well as reporting the limitations of this research and suggestions for future research.

2 Literature Review

2.1 Global Cities and Multinational Enterprises

Multinational companies' governance and location choices are a major determinant impacting their potential success or failure. For this reason, several researchers have focused on analysing the underlying factors that guide these choices, including the criteria for selecting a location and the strategies for specifically entering different geographical regions (Blevins et al., 2016).

According to Belderbos et al. (2020), the choice of location regarding foreign investment is an important strategic decision when it comes to the internationalisation of companies, and has become a major focus of research for international business and international economy researchers. Nevertheless, the unit of analysis for the research related to the location strategy has mostly been at the country-level, although some researchers have recognised that this entails several limitations. Firstly, the dynamics of the world markets are not confined to the borders of any given country. Secondly, by focusing solely at the country-level, researchers might neglect other dimensions that are not necessarily related to the country's borders, for example, economic geography[1] which plays an important role in international business activities. Accordingly, an emerging set of studies has explored the correlation between economic geography and market entry strategies. Thirdly, some scholars have recognised the existence of regional diversification within countries, among which global cities stand out as the most distinct, therefore they choose to analyse the location choice at the sub-national level (Belderbos et al., 2020; Blevins et al., 2016; Chakravarty et al., 2021; Stevenson et al., 2014).

"Economic geography deals with the interrelation between spatial structures and economic activities" (Slangen, 2016, p. 146). It looks at how industries are located, how cities become financial centres and how economic clusters form. Factors like geographic proximity, agglomeration economies and local institutions play big roles. The field explores how these elements come together to shape the organisation of economic processes, showing the complex interaction between geography and economic activity (Goerzen et al., 2013; Stevenson et al., 2014).

As stated by Goerzen et al. (2013) global cities have three distinct characteristics: (i) a cosmopolitan environment, (ii) a high density of advanced producer services and (iii) high connectivity

[1] In this case, economic geography refers to how subnational and regional dynamics, such as industrial clusters, global cities with their unique advantages, etc., shape international business activities. These factors often happen within national borders, which means that by focusing solely on the country-level, there is a risk of researchers overlooking important determinants for MNEs' entry strategies.

with other locations in relation to other subnational locations. In contrast, industry clusters and megacities might possess some of these characteristics, but not all of them, therefore, global cities end up being perceived as "(…) the 'command and control centers' in the world economy and have been found to receive disproportionate shares of firms' foreign direct investments (…)" (Belderbos et al., 2020, p.1). The combination of these three characteristics underlines the emergence of global cities as pivotal centres in the world economy. These characteristics set global cities apart from other subnational regions and make them particularly attractive to MNEs seeking to optimise their international operations through enhanced coordination, control and access to critical resources. Additionally, they aid multinational enterprises in reducing the cost of conducting business in these cities and the challenges posed by geographical distance, influencing therefore the entry modes of the MNEs (Belderbos et al., 2020; Blevins et al., 2016; Goerzen et al., 2013; Lizieri & Pain, 2014; Stevenson et al., 2014).

A cosmopolitan environment in global cities is forged through a dynamic mix of politics, culture, education and communication. This environment is characterised by its culturally diverse population – encompassing, for example, professionals, expatriates, university students and consumers – fostering an atmosphere of openness and innovation. Such diversity not only encourages the combination of specific managerial skills essential for multinational enterprises but also further enhances coordination by leveraging expatriate expertise and fostering intense face-to-face knowledge exchange, creating a dynamic flow of ideas essential for overseeing complex global operations (Belderbos et al., 2020; Goerzen et al., 2013).

The high density of advanced producer services is another defining feature. These services – ranging from finance, law, accounting, marketing, consultancy, and advertising – provide the essential inputs that multinational enterprises require to function effectively in a global market. The specialisation and agglomeration of these services create localised ecosystems characterised by elevated and rapid information transmission, enabling quick and efficient responses to the needs of MNEs. The clustering of these services illustrates how proximity to clients drives the concentration of expertise supporting local and international business operations (Belderbos et al., 2020; Goerzen et al., 2013).

Complementing these characteristics is the high connectivity with other locations. Global cities are well-integrated into a broader network of global linkages, underpinned by robust physical and informational infrastructures. Major transportation nodes – such as airports, ports and other transit facilities – facilitate the rapid movement of people and goods, while advanced communication

networks, including mass media and digital platforms, enable the swift flow of information. These channels for ingoing and outgoing resource flows not only mitigate the challenges of geographic distance but also ensure that global cities remain crucial hubs for international economic coordination (Belderbos et al., 2020; Goerzen et al., 2013).

Moreover, academic research indicates that multinational enterprises' location decisions are influenced not only by rational, cost-based considerations but also by managerial perceptions and the imperative to establish legitimacy.

> "Studies have found that legitimacy motivations and uncertainty stemming from lack of contextual knowledge often influence MNE FDI as firms rely on cues from the foreign location decisions of other MNEs in their reference group (i.e., industry sector or country-of-origin) when making their own location choices (…)" (Chakravarty et al., 2021, p. 10).

This trend is especially pronounced in global cities, where a mix of diverse institutions and intense competition prevail. In these settings, multinational enterprises frequently adopt legitimacy-seeking behaviours by selecting locations that enhance their brand image and reflect the choices of their industry peers. The dual pressures of securing legitimacy and thriving in a highly competitive and diverse landscape compel firms to mirror the location patterns established by others in their field (Blevins et al., 2016; Chakravarty et al., 2021).

This highlights the evolving nature of multinational enterprises' location strategies. Previously viewed as a sequential process – from region to country, to city – MNEs now take a more integrated approach by simultaneously assessing sub-national locations across various regions and countries. Consequently, recognising the spatial nuances within global city regions has become essential (Belderbos et al., 2020; Blevins et al., 2016).

2.1.1 Liability of Foreignness

Multinational enterprises often face what is known as the liability of foreignness, which refers to the additional challenges and costs they encounter when operating in a foreign country. These costs arise because firms must navigate environments different from their home markets (Belderbos et al., 2020; Puig et al., 2014).

A key factor contributing to these challenges is contextual distance, which refers to the differences in cultural norms, administrative systems and economic conditions between the home country and the target country or region (Beugelsdijk et al., 2018). The greater these differences, the more pronounced the liability of foreignness tends to be, making it more difficult for foreign firms to compete with local companies (Rickley, 2019). Contextual distance can be divided into several dimensions: (i) cultural, (ii) administrative, and (iii) economic (Belderbos et al., 2020).

Cultural distance involves differences in shared values, norms and social practices, such as (i) attitudes towards power, (ii) the emphasis on individualism and (iii) approaches to time. Global cities' cosmopolitan nature fosters an environment with high cultural diversity and international networks which help dilute cultural contrasts, easing the challenges that arise when foreign companies try to adapt their practices to local expectations (Belderbos et al., 2020; Goerzen et al., 2013).

Administrative distance reflects the disparities in the (i) political systems, (ii) legal frameworks and (iii) regulatory environments. These differences can create significant hurdles for foreign investors, who must navigate unfamiliar bureaucratic processes and regulatory requirements. However, global cities often offer streamlined processes, greater transparency and specialised institutions that cater to multinational enterprises. This facilitates an understanding and compliance with local regulations for foreign firms and reduces the friction that typically comes with cross-border investments (Belderbos et al., 2020; Goerzen et al., 2013).

Economic distance denotes the contrasts in (i) economic development, (ii) market complexity and (iii) infrastructure. Such differences can hinder the transferability of technologies, business models and/or capital flows. Global cities are usually among the most economically advanced areas within a country, therefore they possess robust infrastructure, advanced financial systems, and highly developed service sectors. This reduces the hardships of operating in a market with a different economic environment, allowing foreign companies to integrate more smoothly into the local market (Belderbos et al., 2020; Goerzen et al., 2013).

Global cities offer a strategic advantage in mitigating these challenges due to their previously mentioned characteristics. In such environments, MNEs can more easily access local knowledge, engage with multicultural professionals and tap into networks that span local and global markets. This unique setting helps reduce the liability of foreignness (Belderbos et al., 2020; Goerzen et al., 2013).

According to Belderbos et al. (2020) and Goerzen et al. (2013). when the contextual distance between the home and target country is high, multinational enterprises are more likely to choose global cities as their entry point. This preference is especially noticeable in knowledge-intensive sectors, where detailed local market knowledge is crucial. On the other hand, MNEs that already have significant experience in the target country, particularly within global cities, face lower knowledge-related barriers and are therefore less dependent on the specific advantages provided by these cities.

As stated by Nachum (2003), the liability of foreignness tends to diminish over time, as firms become more familiar with the local environment – ie, they learn to navigate local regulations, understand customer preferences and adapt their strategies to better align with the market – which reduces the uncertainty and complexity they usually face. Additionally, foreign firms' competitive advantages, such as unique technology or management expertise may erode over time as local competitors may imitate or adapt to their strategies, narrowing the gap in capabilities between them. Moreover, changes in the host country's regulatory system or market conditions can reduce the advantages that the foreign firms initially held. As these advantages diminish and the firms become more integrated into the local market the liability of foreignness lessens, allowing foreign firms to operate more similarly to local firms. Eventually, the multinational enterprises' continued presence in the market leads to a reduction in the disadvantages initially faced.

2.1.2 Profitability and Survival Factors in European Global Cities

As mentioned earlier, the profitability and survival of MNEs in Europe's global cities are shaped by a mix of institutional benefits, regional integration, and the unique features of each city. Cities such as Paris, Milan, and others have long served as major economic hubs, offering (i) robust infrastructure, (ii) expert labour markets, and (iii) prompt access to producer services. These elements help reduce operational ineffectiveness and encourage knowledge transactions, aiding multinational enterprises in harnessing location-specific benefits that boost their profitability and ensure long-term success (Blevins et al., 2016; Goerzen et al., 2013; Lizieri & Pain, 2014; Stevenson et al., 2014).

Global cities, however, carry their own set of risks. According to Stevenson et al. (2014), the dense clustering of multinational enterprises in financial hubs not only heightens exposure to economic shocks but also amplifies systemic vulnerabilities. For instance, when office market cycles in these centres move in unison, downturns can intensify significantly, potentially undermining firm profitability. In addition, as per Lizieri & Pain (2014) the high operating costs associated with these cities, driven by elevated real estate prices and intense competition, compel MNEs to meticulously

reconsider their long-term survival strategies in such challenging environments. Even with these challenges, the strategic advantages of global cities generally surpass the risks. Their enduring reputation as centres of international connectivity and innovation continues to draw multinational enterprises in search of profitability and sustainable growth (Chakravarty et al., 2021).

In conclusion, profitability and longevity in European global cities stem from a complex and multifaced interplay of institutional stability, regional integration and unique advantages specific to each city. For multinational enterprises, achieving success in these competitive and interconnected urban markets hinges on effectively balancing these opportunities with the inherent challenges (Lizieri & Pain, 2014; Stevenson et al., 2014).

2.1.3 European Global Cities and Non-Global Locations

As previously noted, European global cities stand apart from other cities, even within the same country, due to their distinctive qualities such as cosmopolitanism, global interconnectedness and greater accessibility. These attributes make them especially attractive to multinational enterprises and in addition to mitigating uncertainty in managing complex, broad-raging issues, these cities attract businesses seeking a dynamic environment. Furthermore, the cultural diversity and concentration of skilled professionals in these cities further cement their status as innovation and economic growth centres (Blevins et al., 2016; Goerzen et al., 2013).

Nonetheless, the competitive edge of global cities has shifted, especially amid the EU's drive for integration and harmonisation. Blevins et al. (2016) show that as the Union becomes more unified, the gap between acquisition targets in global cities and those elsewhere narrows. Their findings reveal that during the early integration phase (1933-1997), firms in global cities were nearly twice as likely to be targeted for acquisition. This premium dropped to 1.35 times between 1998 and 2002 and in the post-harmonisation period (2003-2007), this difference was no longer statistically significant. Interestingly, during this later phase, acquisition activity began to shift away from global cities.

> "One explanation could be that institutional inertia in these cities may actually be creating a lag in the harmonization. Given the size and complexity of global cities, they are likely to be deeply embedded in legacy institutions (North, 1990). These now become a liability when looking at acquisitions, rather than the supporting mechanisms they were in the early period" (Blevins et al., 2016, p. 327).

Although this evolution has made less prominent cities increasingly attractive, global cities continue to enjoy unique benefits due to their well-established infrastructure and strong connectivity to international markets (Lizieri & Pain, 2014). For instance, these cities often serve as epicentres of innovation and key resource gateways, offering firms based there a competitive advantage, even as the EU strives to create equal conditions across its member states (Blevins et al., 2016; Chakravarty et al., 2021; Stevenson et al., 2014).

2.2 Institutional and Policy Impacts on MNEs in European Cities

As previously highlighted, the location selection strategy is vital for multinational enterprises, as the institutional quality of a host country plays a crucial role in their ability to internalise knowledge-intensive assets or engage in collaborations with foreign firms. As countries shifted toward market-oriented economic models, firms adapted their entry strategies to align with these changes, reallocating investment capital to capitalise on emerging opportunities. Cross-border corporate activities like acquisitions and strategic alliances exemplify this trend, underlining the increasing significance of location-specific factors in influencing international expansion decisions. This suggests that "(…) knowledge intensive assets can now either be developed and deployed via risk-sharing activities with foreign firms, or be internalized by leveraging one's own capabilities in locations where economies are most efficient" (Blevins et al., 2016, p. 320). Consequently, national institutions play a key role in multinational enterprises' location choices. However, as previously noted, sub-national considerations – such as global cities – and supra-national factors like regional integration, particularly within the European Union, pose actual challenges to traditional country borders (Blevins et al., 2016).

Over the past decades, Europe's institutional and policy landscape has undergone significant transformations, profoundly affecting the strategies of MNEs operating in the region. The European Union was originally formed to ensure political stability among its member states through several political and economic reforms designed to harmonise their conditions. These reforms involved the establishment of a common market, the introduction of the euro in 2002, and regulatory measures such as the 2002 Takeover Directive. Collectively, these changes have redefined the institutional landscapes of EU member states, directly influencing the entry strategies of multinational enterprises (Blevins et al., 2016).

Formally adopted as Directive 2004/25/EC but commonly known as the 2002 Takeover Directive, this measure marked a pivotal advancement in standardising corporate takeover rules across the European Union. Originally drafted in 1985, its primary aim was to establish a transparent and

equitable framework for corporate control by promoting efficient takeover processes within a unified regulatory setting and safeguarding and empowering all shareholders, especially minority ones. The Directive required member states to ensure fair treatment of all shareholders during takeovers and to guarantee equal access to essential information for well-informed decision-making. By addressing and harmonising national governance disparities, the Directive has streamlined cross-border corporate restructuring while reducing legal and procedural uncertainties (Blevins et al., 2016; European Parliament & Council of the European Union, 2004).

In paragraphs 1 and 4 of Article 5 of the Directive 2004/25/EC of the European Parliament and the Council of 21 April 2004 on takeover bids, it is stated that if an individual or entity acquires enough voting rights to control a company, they must make a bid for all the company's securities to protect minority shareholders – that is to ensure that these shareholders have the opportunity to sell their shares under the same terms as the acquirer. This mandatory bid must be extended to every shareholder at the earliest opportunity. The equitable price offered is determined by the highest price paid by the offeror for the same securities between 6 to 12 months before the bid. In case additional shares are purchased at a higher price after the said bid is announced but before it closes, it must be adjusted to reflect this new price, guaranteeing that all shareholders receive the most favourable terms.

More recently, the Regulation on foreign subsidies was established, which is the first effort to address subsidies that can distort competition in the internal market. By identifying significant shortcomings in international frameworks and existing EU legal systems, the Regulation seeks to counteract unfair trade practices and ensure that all market participants compete on equal terms. It is designed to apply only when the recipient is engaged in economic activity within the EU, covering not just direct monetary transfers but also "(…) services, investments and other financial flows in relation to the establishment and operation of undertakings (…)" (István Nagy, 2023, p. 893).

The Regulation defines a foreign subsidy as any financial aid that is offered directly or indirectly by a third country, whether the beneficiary is an EU-owned enterprise or a multinational enterprise. It does not intend to ban all foreign subsidies, but instead focuses on those that distort competition without posing any mitigating benefits. For a subsidy to fall under its scope, four criteria must be met: (i) the contribution must be financial, (ii) originate from a third country, (iii) provide a benefit to an undertaking operating in the internal market and (iv) be targeted to one or more undertakings or industries. This definition is complemented by an illustrative list, clarifying that even subsidies provided by central governments, public authorities or state-controlled enterprises may come under the

Regulation if their activities can be linked to a non-EU country. Due to sovereign immunity concerns, the procedural mechanism is directed against the subsidised undertaking rather than the subsidising state (European Parliament & Council of the European Union, 2022; István Nagy, 2023).

Articles 3 and 4 of the Regulation set out the general prohibition against subsidies that confer an unfair competitive advantage, while Article 6 introduces a balancing test, allowing the European Commission to weigh the negative competitive effects against any redeeming benefits. In doing so the Commission can exempt subsidies if the positive outcomes sufficiently compensate the distortive effects (European Parliament & Council of the European Union, 2022; István Nagy, 2023).

Considering this, multinational enterprises investing in EU countries must navigate a complex mix of national, supra-national and sub-national factors, adjusting their strategies to align with country-specific and regional dynamics. These reforms have promoted increased cross-border business interactions, reduced transaction costs and enhanced investor protections, allowing firms to adopt more effective governance strategies, such as preferring acquisitions over strategic alliances, while also minimising uncertainty. As a result, corporate activity within the European Union has surged, unlocking economic prospects and efficiencies that individual member states could not have realised on their own (Blevins et al., 2016).

While the EU has made significant progress in promoting integration, reaching complete institutional and political unity throughout the continent remains a formidable challenge. Though the European Union has broadened opportunities for cross-border operations, it has also heightened competition at national and city levels, raising transaction costs for possible entrants, including the challenges of navigating local regulations and occasional nationalist sentiments. Europe's cultural diversity, varying fiscal policies, differences in infrastructure and localised regulatory frameworks continue to shape the business environment, introducing complexities for MNEs. Consequently, despite Europe's growing interconnectedness, local variations remain crucial in shaping the strategic decisions of firms operating in the region. Global cities within the EU add another layer of complexity. Historically, these cities have provided unique institutional stability and infrastructure that draw foreign direct investment. However, EU harmonisation efforts have gradually diminished the institutional advantages of these cities due to the equal conditions now available across the region – making less traditionally globalised cities more attractive in certain circumstances – although they still maintain some unique benefits, such as their cosmopolitanism and connectivity (Blevins et al., 2016; Goerzen et al., 2013).

Despite the aforementioned factors, research indicates that multinational enterprises are more inclined to invest in cities and regions within the EU than in non-EU parts of Europe. This trend is largely driven by the Union's rigorous membership standards, which guarantee the existence of stable institutions, competitive market economies and lower risks for foreign investors. The EU's robust monitoring and regulatory frameworks further enhance investment certainty, making its locations more attractive. On the other hand, the lack of similar oversight in non-EU European countries creates heightened uncertainty and risk, further prompting MNEs to prioritise investments within the EU (Blevins et al., 2016).

To summarise, the existing literature highlights the strategic significance of location choice for multinational enterprises, with recent research moving beyond country-level analyses and starting to emphasise the role of economic geography and, in particular, global cities. These cities' characteristics, namely (i) a cosmopolitan environment, (ii) a high density of advanced producer services and (iii) high connectivity, mitigate the liability of foreignness and provide strategic advantages that enhance profitability and survival prospects. At the same time, EU integration has reshaped the institutional landscape, reducing uncertainty and increasing the competitiveness of non-global urban centres, which has resulted in the reduction of the unique institutional premium traditionally associated with global cities. Nonetheless, these cities continue to attract investment due to maintaining some unique benefits, such as their cosmopolitanism and connectivity. Overall, MNE location strategies are shaped by the complex interplay between subnational dynamics, national institutional contexts and supra-national EU regulatory frameworks.

This dissertation contributes to the academic literature by extending the analysis of multinational enterprises' location choices beyond the country-level, highlighting the significance of the subnational dimension (global cities versus other locations) in showing how urban-level dynamics shape profitability and survival outcomes. It also advances existing research by linking the distinctive characteristics of global cities (cosmopolitan environment, high density of advanced producer services and high connectivity) to profitability and survival, rather than focusing solely on entry mode. Furthermore, by examining these dynamics within the evolving institutional framework of the European Union and comparing EU and non-EU cities, this study provides new insights into how geographic and institutional factors interact and influence MNE performance in Europe.

3 Methodology

Subnational factors, such as the unique characteristics of global cities - namely, the concentration of advanced producer services, superior infrastructure, and robust global connectivity - reduce operational risks and enhance competitive advantages (Goerzen et al., 2013). Supra-national factors, such as the EU's institutional frameworks, institutional stability, and drive for harmonisation and integration, reduce investment uncertainty and transaction costs, thereby enhancing profitability and survival prospects (Blevins et al., 2016). All of this plays a decisive role in MNEs' location decisions and performance. Therefore, this research has two main goals: (i) whether MNEs are more likely to choose global cities in EU member states over non-EU cities; and (ii) whether MNEs located in EU global cities exhibit higher profitability and better long-term survival rates compared to those in EU non-global cities.

3.1 Research Design

In order to determine whether EU membership and global city status are significantly important factors in where MNEs choose to locate and how well they perform, this research combines two approaches. Firstly, a quantitative approach is employed that utilises three statistical models. A Firth penalised logistic regression is used to test whether a subsidiary is more likely to locate in a GaWC 2024 classified global city when that city is located in an EU member state, while controlling for selected firm-specific and city level characteristics. This approach follows the logic of Blevins et al. (2016), who employed a logistic regression to analyse how EU membership and global city status influence entry mode choice, highlighting how discrete-choice models can isolate the effect of institutional and locational factors on firm decisions.

Afterwards, an ordinary least squares (OLS) regression examines whether subsidiaries in EU global cities earn higher returns on assets (ROA) than those in non-global cities. In order to implement robustness checks, the model is then replicated using EBIT margin. While the literature reviewed does not provide a direct example of this application of OLS specifically to MNE's subsidiaries' ROA or EBIT margins across European cities, this approach follows the methodological logic of Stevenson et al. (2014), who used OLS with robust standard errors to examine synchronisation of economic cycles across cities, allowing for valid inference in the presence of clustering and heteroscedasticity.

Finally, a parsimonious Cox proportional-hazards model examines survival times, in this case, the length of time from incorporation until exit, to determine whether operating in an EU global city

reduces the risk of a subsidiary closing or being sold. This follows Puig et al. (2014), who applied a Cox proportional-hazards regression to estimate failure risk for new ventures, conditional on survival up to a given time, while accommodating right-censored data. Collectively, these models follow well-established empirical strategies in international business and urban economics research. By adopting these methods, this study situates its research design within existing literature while enabling robust inference on MNE location, profitability and survival in European cities.

Secondly, a qualitative approach will also examine the exit cases of the only six subsidiaries that became inactive or exited their host markets, for which information was available and whose existence could be confirmed, to provide context for these broad patterns. The reason for the exit of each subsidiary was gathered through corporate filings and press releases. Afterwards, this will be reviewed alongside the statistical results, demonstrating cases where extraordinary events or firm-specific decisions shaped outcomes in ways not captured by the models. By summarising the recurring patterns across all six exit cases and highlighting instances where extraordinary events overwhelmed any local advantages, this qualitative review enriches the numerical findings, clarifying certain outcomes in ways that the models might not be able to capture.

This research thus focuses on individual foreign subsidiaries of non-European parent firms operating in European cities from both within and outside the EU. Each subsidiary represents one data point for all location choice, profitability and survival analyses. Regarding the survival analysis, each subsidiary provides one record of the time until the event, measuring the number of years from its incorporation until it exits the market, is sold, or remains active until the end of the observation period in 2024, in which case the data are right-censored.

3.2 Data Sources and Sample

A multi-layered dataset was built by combining firm-level, city-level, and country-level data sources to capture the full range of factors influencing the location, profitability, and survival of MNEs. At the firm-level, detailed parent company information was retrieved from Eikon for 17 non-European multinational enterprises, including financial details (total revenue, employee count, market capitalisation, EBITDA, and ROA) and organisational characteristics (headquarters country, organisation type, and industry classification). These 17 companies were selected from an initial sample of 156 enterprises retrieved from Eikon's screener – all headquartered outside Europe, with market capitalisations exceeding 1 billion euros and all belonging to the commercial sector. The subset of firms was chosen to increase diversity in headquarters countries among the selected companies and

because information on their subsidiaries was available. Regarding these companies' subsidiaries, Eikon was used to retrieve total revenue, EBIT, ROA, total assets, net income, year of incorporation, and city and country of headquarters for the 63 active enterprises. Additionally, the last three pieces of information were supplemented through manual collection on official company websites. Concerning the 6 inactive subsidiaries, their incorporation and exit dates, headquarters locations and the publicly stated reasons for exit were also collected manually via official company websites, Gov.UK filings and OpenCorporates. For these 6 subsidiaries, no financial data was available, therefore, it is not possible to test their profitability. These 6 inactive or sold subsidiaries are the only ones presented because they were the only ones for which verifiable information was available and whose existence could be confirmed. Further information is posted in Table 3.1.

At the city-level, a set of regional indicators was assembled: global city status from the GaWC 2024 list; population density, advanced producer services density (Belgium's APS was only available at the country level, so that was used as a proxy), transport and digital connectivity indices (regarding transportation in Moscow, there was only information for railways and airports, and there was no information for digital connectivity) were retrieved from Eurostat NUTS datasets, national statistical offices, CityPopulation.de and Statista; and rent price proxies, since they were only available at the country level, from the OECD. The city-level indicators in Eurostat were published using different NUTS levels (1, 2 or 3). In some cases, in order to retrieve the information, it was necessary to use the codes from the NUTS classification for 2021 or 2016. To ensure consistency and that each subsidiary's headquarters city is linked to a single and uniform NUTS code, the official Eurostat correspondence tables were used to translate those codes into their NUTS 2024 classification equivalents. Where necessary, observations with missing values in key predictors were dropped in the model-building stage.

Finally, the country-level controls were collected from Eurostat, the World Bank database, the European Central Bank, the International Monetary Fund and OECD, covering GDP per capita (Russia's and the UK's were converted to euros using ECB exchange rates from the 1st of March of 2022), ease of doing business scores, governance indicators (control of corruption and political stability), price-level indices, labour-cost measure (for Russia the labour-costs were converted to euros using the same exchange rates as the GDP per capita), port-throughput per capita and a dummy for EU membership. However, the final models use a reduced set of predictors to avoid overfitting. In total, the cross-sectional sample includes 69 subsidiaries (63 active and 6 exited) located across 74 European cities in

both EU and non-EU countries. Table 3.1 summarises the sample composition across the three statistical models.

Table 3.1: Sample Composition

Analysis	Total subsidiaries used	Active	Inactive	Notes
Location Choice (Logistic regression)	69	63	6	Uses all subsidiaries (active and inactive).
Profitability (OLS)	63	63	0	Only uses active subsidiaries (no financial data for the inactive ones).
Survival (Cox proportional-hazards model)	69	63	6	Time-to-exit for all subsidiaries, and censored at 2024 for active ones.

3.3 Variables

To employ the three statistical models, three sets of dependent variables are be used, as well as two independent variables and an ensemble of control variables. For clarity, Table 3.2 provides definitions, measurement units, type (binary or continuous) and data sources for each variable.

Table 3.2: Variable Definitions

Variable	Type	Definition	Sources
global_city	Binary	1 if a subsidiary is headquartered in a GaWC 2024 listed global city and 0 otherwise.	(Globalization & World Cities (GaWC), 2025)
is_eu	Binary	1 if a subsidiary's host country is an EU member and 0 otherwise.	(European Union, 2025)
EBIT margin	Continuous	EBIT ÷ total revenue (active subsidiaries only)	(Eikon, 2025); author calculation

ROA	Continuous	Net income ÷ total assets (active subsidiaries only)	(Eikon, 2025); author calculation
Event indicator	Binary	1 if the subsidiary exited before the 2024 cutoff, and 0 if it remains active	(Eikon, 2025; GOV.UK, n.d.; KSE Institute, 2022; OpenCorporates: The Open Database Of The Corporate World, n.d.)
Survival time	Continuous	Exit Year - Incorporated Year (for active subsidiaries, Exit year = 2024)	(Asics Corp, n.d.; BRF SA, n.d.; Citizen Watch Co Ltd, n.d.; Coca-Cola Europacific Partners plc, n.d.; Costco Wholesale Corp, n.d.; Daiwa House Industry Co Ltd, n.d.; Eikon, 2025; Ezaki Glico Co Ltd, n.d.; GOV.UK, n.d.; Gruma SAB de CV, n.d.; Harvey Norman Holdings Ltd, n.d.; Hasbro Inc, n.d.; House Foods Group Inc, n.d.; Kao Corp, n.d.; KSE Institute, 2022; Mattel Inc, n.d.; OpenCorporates: The Open Database Of The Corporate World, n.d.; Strauss Group Ltd, n.d.; Thai Union Group PCL, n.d.; Truworths International Ltd, n.d.; Viña Concha y Toro S.A., n.d.); author calculation
ln(total revenue) – Subsidiary	Continuous	Natural logarithm of the subsidiary's total revenue.	(Eikon, 2025); author calculation
ln(total revenue) –	Continuous	Natural logarithm of the parent company's total revenue.	(Eikon, 2025); author calculation

Parent Company			
Total employee count – Parent Company	Continuous	Total number of employees at the parent company.	(Eikon, 2025)
Industry dummies	Binary	A set of indicator variables (0/1), one for each parent company industry sector, where each dummy equals 1 if the firm belongs to that sector and 0 otherwise.	(Eikon, 2025); author calculation
Advanced producer services density (APS density)	Continuous	Total enterprises in Finance and insurance, Professional, scientific and technical, and Business administration and support services sectors per km^2 of NUTS 3 region.	(CityPopulation.de, n.d.; Eurostat, 2022, 2024b, 2025b, 2025i; Office for National Statistics, 2024; Russian Federal State Statistics Service, 2025; Statbel, n.d.); author calculation
Transport connectivity	Continuous	Z-score of combined road, rail and waterways network density (km) plus air-freight volumes, aggregated at NUTS 2	(Eurostat, 2025a, 2025h; Melkadze, 2025a, 2025b); author calculation
Digital connectivity	Continuous	A composite z-score of > 30 megabits per second and > 100 megabits per second, percentage of households with internet access and fixed-broadband traffic (Exabyte).	(Eurostat, 2024c, 2025e, 2025c); author calculation
Population density	Continuous	Total population ÷ land area (people per km^2)	(CityPopulation.de, n.d.; Eurostat, 2025f)
Rent-price index	Continuous	Residential rent index ÷ consumer price index	(Organisation for Economic Co-operation and Development (OECD), n.d.-a)

Annual Labour Costs (€)	Continuous	Hourly Labour cost for LCI (compensation of employees plus taxes minus subsidies) × Annual hours worked per employee; For Russia, Average Annual Wage (EUR) is used as a proxy.	(European Central Bank, 2022; Eurostat, 2023, 2025d; Statista Research Department, 2025); author calculation
Labour Cost Non-wage Share (%)	Continuous	Percentage share of non-wage labour costs. This variable is missing for Russia.	(Eurostat, 2025d)
ln(GDP per capita) (in euros)	Continuous	Natural log of GDP per capita (annual, in euros).	(European Central Bank, 2022; Eurostat, 2025g; International Monetary Fund, n.d.); author calculation
Ease of doing business	Continuous	The World Bank's ease of doing business score (1-100, where higher = easier)	(World Bank, n.d.-a)
Control of corruption	Continuous	The World Bank's Worldwide Governance Indicators score (ranging from -2.5 to 2.5; higher = more stable	(World Bank, n.d.-b)
Political stability	Continuous	The World Bank's Worldwide Governance Indicators score (ranging from -2.5 to 2.5; higher = more stable	(World Bank, n.d.-b)
Price-level index	Continuous	PPP-adjusted price-level index for OECD and EU economies (OECD average = 100)	(Organisation for Economic Co-operation and Development (OECD), n.d.-b)
Port-throughput (Tonnes per capita)	Continuous	Annual port cargo throughput (in tonnes). It reflects port infrastructure and trade exposure intensity at the national level.	(Eurostat, 2024a)

3.3.1 Dependent Variables

To capture the different dimensions of subsidiary behaviour, three sets of dependent variables are used. Firstly, location choice is a binary outcome: a subsidiary is flagged as 1 if it is headquartered in a GaWC-listed global city and 0 otherwise. Secondly, profitability for active subsidiaries is primarily measured by their return on assets, calculated as net income divided by total assets. Subsequently, in order to conduct robustness checks, EBIT margin, calculated as EBIT divided by total revenue, is used as an alternative profit measure. Thirdly, for the survival analysis, each subsidiary provides two pieces of information: an event indicator, 1 if the subsidiary exited before the 2024 cutoff, and 0 if it remains active; and survival time, which is computed as the exit year or 2024 (for right-censored cases) minus the incorporation year.

3.3.2 Independent Variables

Two binary indicators are employed, each playing a different role depending on the model. In the location choice analysis, the independent variable is whether a subsidiary's host country is an EU member (in which case it equals 1) or not (it equals 0) – is_eu. It serves to capture whether global cities within the European Union are more likely to be chosen as a subsidiary's headquarters.

In the profitability and survival models, besides using is_eu as the independent variable, whether the subsidiary is placed in a global city or not (global_city), and the interaction between these two variables is also considered. The Global city variable tests whether the agglomeration of advanced producer services, superior infrastructure, and robust global connectivity affects the profitability and survival rates. While the interaction between is_eu and Global city tests whether these agglomeration benefits differ inside versus outside the EU.

3.3.3 Control Variables

Three levels of control variables are included to isolate the effects of the key predictors. At the parent company level, it consists of the natural logarithm of the parent company's total revenue, the total employee count, and a set of industry dummies (Industry classification was retrieved from Eikon and transformed into dummy variables in R to control for industry heterogeneity where relevant) to account for differences in location and performance, and at the subsidiary level, it consists of the

natural logarithm of the subsidiary's total revenue. At the city-level, z-score composites were created for:

- Advanced producer services density: total enterprises in the Finance and insurance, the Professional, scientific and technical, and the Business administration and support services sectors per km^2 of the corresponding NUTS 3 region (all recoded to the 2024 NUTS classification).
- Transport connectivity: a standardised blend of road, rail and waterways network density (km) plus air-freight volumes, aggregated at NUTS 2 and harmonised to NUTS 2024.
- Standardised population density (people per km^2).

Finally, at the country-level, to account for the macroeconomic and institutional context, the following variables are included: the natural log of GDP per capita (in euros); the ease of doing business scores; the governance indicators (control of corruption and political stability); the price-level index; the port-throughput per capita; the digital connectivity; the national rent-price index; and national labour costs.

To facilitate the comparison of coefficient magnitudes, all continuous controls, including parent company employee count, are standardised, unless otherwise noted. Table 3.3 presents the raw distributions of all the continuous controls. For each variable, the number of non-missing observations is presented, alongside its mean, standard deviation, minimum, and maximum values. Note that sample sizes vary across the proposed specifications, reflecting data availability as per each specification. Overall, the statistics demonstrate sufficient dispersion without extreme outliers that might distort the regression results.

Table 3.3: Descriptive Statistics

Variable	Number of non-missing observations	Mean	Standard deviation	Min	Max
EBIT margin	63	-1.41	10.85	-86.15	0.50
ROA	63	0.04	0.16	-0.98	0.28
Survival time	69	29.07	18.53	2	120
ln(total revenue) - Subsidiary	63	3.88	1.81	-2.04	9.93

ln(total revenue) – Parent Company	17	8.57	1.45	6.85	12.37
Total employee count – Parent Company	17	43994.24	79478.85	3444	333000
Advanced producer services density (APS density)	82	92.41	295.20	0.14	2015.53
Road, rail and waterways network density (km)	52	20187.88	20629.43	11	104492
Air-freight volumes	43	220.16	464.27	0	1955.69
More than 30 megabits per second (%)	19	94.61	5.12	81	99.8
More than 100 megabits per second (%)	19	90.81	6.96	77.1	98.7
Households with internet access (%)	19	95.13	3.32	88.5	99.66
Fixed-broadband traffic (Exabyte)	14	41.79	54.95	0.8	181
Population density	82	2405.18	3814.52	10.52	15794.2
Rent-price index	20	120.83	15.55	104.79	158.88
Annual Labour Costs (€)	20	58343.24	24924.95	7664.17	101247.6
Labour Cost Non-wage Share (%)	19	20.82	6.08	12.4	31.9
ln(GDP per capita) (in euros)	20	10.36	1.06	7.32	11.53
Ease of doing business	20	77.93	3.89	69.60	85.29
Control of corruption	20	1.28	0.87	-1.10	2.38
Political stability	20	0.60	0.48	-1.13	1.21
Price-level index (OECD = 100)	19	104.16	28.00	49	160
Port-throughput (Tonnes per capita)	16	13.58	10.26	3.2	39.2

3.4 Statistical Techniques

All variables (connectivity z-scores, etc.) were assembled and cleaned in Microsoft Excel, and all subsequent model-building, estimation and diagnostics were carried out in R using the packages readxl, dplyr, janitor, tidyr, logistf, sandwich, lmtest, survival, broom, pROC, pscl, ggplot2 and writexl. Subsidiaries were flagged as global if located in one of the GaWC global cities, and an is_eu dummy captured EU membership of each host country.

For the location choice analysis, a reduced-covariate Firth penalised logistic regression[2] (D'Angelo & Ran, 2025; Ranganathan et al., 2017) is used that predicts the odds of a subsidiary being in a GaWC global city based on EU membership and control variables: natural logarithm of revenue for parent companies, z-score of APS density, and z-score of transport connectivity.

EU membership is the core explanatory variable of interest, it reflects the institutional integration effects such as common market access and harmonised regulation. The natural logarithm of parent company revenue was kept as a control because bigger firms usually have more resources and international experience, allowing them to better manage the higher costs of global cities and still benefit from the opportunities these locations provide. Adding this control also ensures that any EU effect identified is not simply reflecting differences in the distribution of large firms across locations. APS density captures how many specialised services, such as financial, marketing, consultancy, etc., are in a city, which is a key feature of global cities, according to Goerzen et al. (2013). Transport connectivity reflects the physical accessibility and network advantages of highly connected urban centres, which is also a defining feature of global cities (Goerzen et al., 2013). It was kept as a control because transport is a classic factor in location choice, and not including it could make it look like firms choose cities only for their APS density, when in fact transport connectivity is also important. These four predictors were retained because they capture the main theoretical drivers of location choice while ensuring statistical stability, since the inclusion of a broader set of controls caused convergence problems given the limited sample size.

Because the dependent variable is perfectly or nearly perfectly separated on some predictors, a penalised logistic model is fitted rather than a generalised linear model, reporting exponentiated coefficients (odds ratios) and profile-likelihood confidence intervals (D'Angelo & Ran, 2025). To evaluate how well this model distinguishes global from non-global locations, both the receiver-

[2] A logistic regression is a statistical method used to measure how one or more independent variables, whether categorical or continuous, relate to a dichotomous outcome (such as success versus failure or yes versus no).

operator characteristics (ROC) curve[3] (Jokiel-Rokita & Pulit, 2013) and McFadden's pseudo-R^2 [4] (Sung et al., 2016) are reported.

In the profitability analysis, an OLS regression[5] (Kane, 2021) is run with the subsidiary's ROA as the dependent variable. The key regressors are the global city indicator, is_eu, and the interaction between these two, alongside two firm-level controls that are added to make sure the location effects don't just reflect differences in company size: the natural logarithm of subsidiary revenue, for subsidiary scale; and the z-score of the total employee count, for parent company size. The global city indicator tests whether subsidiaries located in a GaWC 2024 classified global city systematically perform better in terms of profitability.

The EU membership variable shows whether subsidiaries in EU countries, which benefit from harmonised rules, free movement of goods and services and fewer trade barriers, perform better than those outside the EU. The inclusion of the interaction between the global city indicator and is_eu allows the model to estimate whether the effect of being in a global city differs for subsidiaries in EU countries compared with those outside the EU. The natural logarithm of subsidiary revenue is included because larger subsidiaries often benefit from economies of scale, stronger market positions and greater resources. The z-score of the total employee count of the parent company accounts for the additional resources and support a large MNE can provide to its subsidiaries. Without both of these last two controls, the model might mistakenly attribute higher profitability to location, when it could simply be that big subsidiaries and subsidiaries belonging to large parent companies might be both more profitable and more likely to locate in a global city. These variables were chosen because they capture the institutional, locational and firm-level dimensions that are more relevant to profitability, and the interaction term explicitly reflects the core research question. Other variables, such as labour costs, control of corruption, etc., were excluded to avoid overfitting and convergence problems given the relatively small sample size.

[3] The ROC curve graphically illustrates the trade-off between true positive and false positive rates. This statistical tool is commonly used to evaluate the performance of a diagnostic test.

[4] McFadden's pseudo-R^2 (analogous to R^2 in linear regression) is used to forecast the likelihood of a particular option from a set of alternatives being chosen by a decision maker or 'nature', based on each option's characteristics. It is defined as $1 - \frac{\ln L(\hat{\beta})}{\ln L(0)}$, comparing the fitted model's log-likelihood to that of a null model with equal choice probabilities.

[5] "Ordinary least squares (OLS) regression provides optimal linear predictions of a dependent variable, y, given an independent variable, x (…)" (Kane, 2021, p. 1). The model's predictions rely on the observed values of the independent variable, and any discrepancies between predicted and actual outcomes are attributed solely to the error in the dependent variable.

Clustered standard errors[6] (Zeileis et al., 2020) are applied to account for intra-firm correlation at the parent company level, using heteroscedasticity-consistent covariance matrix estimators (HCCMEs)[7] (Hayes & Cai, 2007; Muhammad & Rana, 2019). HC3 is used as the primary estimator, as it makes a stronger adjustment for influential observations and is recommended for small to moderate samples because it is less likely to underestimate standard errors (Muhammad & Rana, 2019). HC1 is included as a sensitivity check and, by contrast, is the more traditional correction between both, applying a simple degrees-of-freedom adjustment and often reported as a default benchmark in large samples (Hayes & Cai, 2007). Reporting both ensures that the results are robust and not dependent on a single heteroscedasticity adjustment method, that is if the findings remain stable across HC3 and HC1, then they are less sensitive to the choice of estimator and therefore more reliable. To confirm that the OLS assumptions hold, residual plots[8] (Law & Jackson, 2017) are examined, and the Breusch Pagan test[9] (Herwartz, 2006) is run to detect any heteroscedasticity (non-constant error variance). Finally, to ensure that the findings do not hinge on the choice of profitability metric, the entire OLS model, the residual plots and the Breusch Pagan test are replicated using the subsidiary's EBIT margin as the dependent variable. Due to missing financial data, inactive subsidiaries are excluded from this analysis.

Finally, for the survival analysis, a parsimonious Cox proportional-hazards (CPH) model[10] (Westers et al., 2025) is used, which relates each subsidiary's time-to-exit (or censoring at 2024) and its exit

[6] Clustered standard errors are usually applied when there are correlated observations or clustered data. These are used to adjust the resulting assumption to account for that clustering, after estimating an OLS regression or a generalised linear model.

[7] Heteroscedasticity-consistent covariance matrix estimators are statistical tools used to adjust the standard errors of regression coefficients when the assumption of constant error variance (homoscedasticity) is breached. In a linear regression model with heteroscedasticity, where the error terms have unequal spread, the ordinary least squares estimates of the coefficients remain unbiased and consistent, but the standard errors computed in the usual way become biased and inconsistent. To address this, researchers use HCCMEs (such as HC0, HC1, HC2, HC3, HC4 and HC5), which provide corrected standard errors that remain valid even when error variance is not constant, allowing for a more reliable statistical inference while still using the original OLS estimates of the coefficients.

[8] Residual plots are a common diagnostic tool for evaluating how well a model captures the data. "The adequacy of the modeling assumptions in linear regression are often informally checked by examining residual plots, where we typically plot the difference between observed and fitted outcome values (the residuals) against covariates or fitted values" (Law & Jackson, 2017, p. 3159). By examining these plots, it is possible to spot patterns, such as curvature or changing spread, that indicate breaches of modelling assumptions, which helps in assessing whether the linear regression framework is appropriate.

[9] The Breusch Pagan test is used to detect non-constant error variance (heteroscedasticity) in a regression model. Under the null hypothesis (no heteroscedasticity), the test statistic follows a chi-square distribution, and large values suggest evidence against the null hypothesis.

[10] The Cox Proportional Hazards (CPH) model (…) is a widely used statistical method to analyze survival data" (Westers et al., 2025, p. 2). It assesses how one or more covariates (explanatory variables) affect the survival time, while leaving the baseline hazard function unspecified.

indicator to three predictors: the global city and the EU membership dummies, and their interaction. The model leaves the baseline hazard unspecified and uses clustered standard errors at the subsidiary-level to account for within-subsidiary dependence. The key proportional-hazards assumption[11], that the effect of each variable on exit risk remains constant over time, is verified by inspecting the Schoenfeld residuals[12] for systematic patterns (Westers et al., 2025). This is complemented by the Kaplan-Meier curves[13] (Rich et al., 2010), which are presented for global versus non-global cities, both for the full sample and for EU subsidiaries only. Kaplan-Meier curves were inspected, but no formal log-rank test[14] (Klinglmüller et al., 2025) was applied.

To ensure that any single specification or outlier does not drive the findings, sensitivity checks are conducted in the two models that include the Russian subsidiary. Therefore, both the Firth penalised logistic regression and the parsimonious Cox proportional-hazards will be re-estimated without that subsidiary. This test serves to examine whether excluding this non-EU, geopolitically exceptional case materially alters the estimated effect of EU membership on global city location or the hazard ratio for global city status on subsidiary survival. By comparing the original and reduced-sample coefficient estimates and standard errors, the extent to which the results depend on this potentially high-leverage observation is examined.

[11] The proportional hazards assumption states that an individual's hazard at time t can be expressed as the product of a common baseline hazard and a scaling factor given by a linear combination of their covariates, and that neither the baseline hazard nor the covariate effects change over time. As a result, each individual's risk curve is simply the baseline curve stretched or shrunk by a constant factor, making the hazard ratio between any two individuals depend solely on their covariate values and remain constant throughout the research.

[12] Schoenfeld residuals provide a way to check the proportional hazards assumption in a Cox model, by comparing at each observed time event an individual's actual covariate value to its model-predicted counterpart. For each failure time, the risk-weighted average of the covariate across all subjects still at risk is computed, and this expected value is subtracted from the covariate value of the subject that failed. By plotting these residuals against time, it is possible to see if they behave like random noise (which supports the proportional hazards assumption) or if they show a systematic trend, which suggests that a covariate's effect changes over time and therefore the assumption may be breached.

[13] Kaplan-Meier curves provide an estimate of the survival time (time-to-event). They plot a step-wise survival function that drops at each observed event and remains flat between events, while properly accounting for subjects that are censored (e.g., reach the end of the period in analysis without the event).

[14] The log-rank test "(…) is designed to test the null hypothesis of equal hazard functions or, equivalently, equal survival functions" (Klinglmüller et al., 2025, p. 2). When the proportional hazards assumption holds, any significant variation found by the log-rank test can be interpreted as one group exhibiting superior or inferior survival compared to the other.

4 Empirical Results Analysis

In this chapter, it will be evaluated (i) whether multinational enterprises are more likely to choose EU global cities over non-EU cities and (ii) if MNEs located in EU global cities versus those in EU non-global cities exhibit higher profitability and better survival rates. The research combines both quantitative and qualitative approaches. The quantitative approach involves three models as discussed in Chapter 3: a Firth penalised logistic regression to predict location choice; an OLS regression model to estimate profitability; and a parsimonious Cox proportional-hazards model to analyse survival rates. In addition to the quantitative analysis, a qualitative review is also conducted in this chapter for the only six subsidiaries that became inactive or exited their host markets, for which information was available and whose existence could be confirmed. This analysis aims to identify whether common patterns could be observed in their exit circumstances, beyond what is captured by the survival model. Data construction, variable definitions, and full descriptive tables are presented in Chapter 3, while the key results and diagnostics are reported in this chapter. The sensitivity checks mentioned in Chapter 3, which excluded the single Russian subsidiary whose exit was due to the war in Ukraine, were conducted for both the Firth logistic regression and the Cox proportional-hazards models and exhibited identical results to those reported in this chapter. The detailed outputs for these sensitivity checks are provided in Annex A to G.

4.1 Location Choice (Firth Logistic Regression)

Table 4.1: Firth logistic regression results

Term	estimate	conf.low	conf.high	p.value
(Intercept)	9.969465	0.404815	302.2715	0.161553
is_eu	1.184955	0.320715	4.633347	0.794846
ln_revenue_parent	0.73805	0.5051	1.047258	0.089941
z_aps_density	3.691255	1.034864	23.95506	0.036171
z_transport_connectivity	0.644391	0.398856	0.9132	0.010726

Table 4.1 presents the results from the Firth penalised logistic regression estimating the odds of a subsidiary being located in a GaWC 2024 listed global city. As mentioned in Chapter 3, four predictors were included: EU membership, natural logarithm of parent company revenue, advanced producer services density, and transport connectivity (all continuous variables were standardised unless otherwise noted). Odds ratios (OR) and profile-likelihood 95% confidence intervals (CI) are reported.

Neither EU membership (OR = 1.184955, 95% CI [0.320715, 4.633347], p = 0.794846) nor parent company size (OR = 0.73805, 95% CI [0.5051, 1.047258], p = 0.089941) were statistically significant at the 5% level. This indicates that, after controlling for APS density and transport connectivity, institutional membership of the EU does not systematically affect the location choice of global cities, and larger parent firms do not necessarily have more subsidiaries in global cities.

APS density emerged as a strong and statistically significant driver of location choice (OR = 3.691255, 95% CI [1.034864, 23.95506], p = 0.036171). A one-standard-deviation increase in APS density was associated with a more than threefold increase in the odds of a subsidiary being located in a global city. This finding aligns with the theoretical expectation that the concentration of specialised business services in global cities enhances their attractiveness to multinational enterprises. Transport connectivity, by contrast, displayed a significant negative association (OR = 0.644391, 95% CI [0.398856, 0.9132], p = 0.010726).

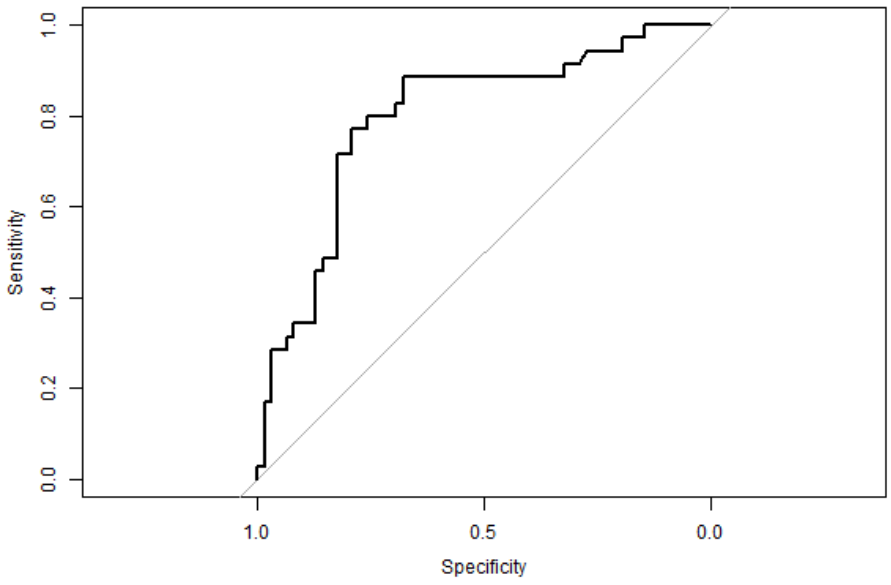


Figure 4.1: ROC curve for the Firth logistic regression model

Model performance was good. The ROC curve (Figure 4.1) indicated strong discrimination between global and non-global city locations, with an area under the curve (AUC) of 0.797. This means that, given a randomly selected pair of subsidiaries, one in a global city and one not, the model will correctly assign a higher predicted probability to the global city case approximately 80% of the time. McFadden's pseudo R^2 (value = 0.156219307) indicates an improvement of approximately 15.6% in model fit compared to the null model (Sung et al., 2016).

4.2 Profitability (OLS Regression)

The profitability analysis was conducted using OLS regressions with ROA as the primary dependent variable and EBIT margin as a robustness check. Both models included the same core predictors, as previously mentioned in Chapter 3: global city, EU membership, their interaction term (global_city:is_eu), and two firm size controls, ln_revenue_sub (subsidiary size) and z_emp_count_parent (parent company size). Standard errors were adjusted for clustering at the parent company level to account for within-group correlation, with HC3 used as the primary heteroscedasticity-consistent estimator and HC1 reported as a robustness check, as described in Chapter 3.

Table 4.2: OLS regression results for ROA (HC3)

Term	estimate	std.error	statistic	p.value
(Intercept)	0.027923	0.036393	0.76726	0.445053
global_city	0.008177	0.029268	0.279394	0.780622
is_eu	-0.04737	0.049882	-0.94971	0.344953
ln_revenue_sub	0.007014	0.003913	1.792563	0.076601
z_emp_count_parent	-0.04199	0.023608	-1.77874	0.078858
global_city:is_eu	0.032478	0.056023	0.579724	0.563634

Table 4.3: OLS regression results for ROA (HC1)

Term	estimate	std.error	statistic	p.value
(Intercept)	0.027923	0.020191	1.382915	0.170313
global_city	0.008177	0.02084	0.392385	0.695756
is_eu	-0.04737	0.040029	-1.1835	0.239912
ln_revenue_sub	0.007014	0.002467	2.842784	0.005599
z_emp_count_parent	-0.04199	0.008187	-5.12918	1.81E-06
global_city:is_eu	0.032478	0.042759	0.75955	0.449625

In the primary model, global city location was not significantly associated with ROA under either HC3 (Table 4.2) or HC1 (Table 4.3) cluster-robust standard errors. The same was true for EU

membership and the interaction term (global_city:is_eu), suggesting no direct location-driven profitability advantage for subsidiaries in global cities.

By contrast, both firm size controls were influential. Under HC3, ln_revenue_sub was positively associated with ROA (β = 0.007014, p = 0.076601), while z_emp_count_parent was negatively associated (β = -0.04199, p = 0.078858), with both results reaching marginal significance at the 10% level (none of the explanatory variables reach conventional levels of statistical significance at the 5% level under HC3). Under HC1, these effects strengthened substantially, with ln_revenue_sub significant at the 1% level (β = 0.007014, p = 0.005599) and z_emp_count_parent at the 0,1% level (β = -0.04199, p = 1.81E-06), confirming their robustness to alternative standard error calculations.

The model showed limited explanatory power (R^2 = 0.061630446, adjusted R^2 = 0.006432237), suggesting that the predictors account for only a small portion of profitability variation. The Breusch-Pagan test (p = 0.634315288) indicated no evidence of heteroscedasticity, reinforcing the reliability of the variance estimates.

Table 4.4: OLS regression results for EBIT margin (HC3)

Term	estimate	std.error	statistic	p.value
(Intercept)	-7.24288	16.51031	-0.43869	0.662
global_city	1.780015	2.525161	0.704911	0.482792
is_eu	0.564868	1.171301	0.482257	0.630863
ln_revenue_sub	1.113608	3.238833	0.34383	0.731823
z_emp_count_parent	-3.58327	19.31057	-0.18556	0.853232
global_city:is_eu	-3.60623	4.201185	-0.85838	0.393094

Re-estimating the model using EBIT margin as the dependent variable (Table 4.4) yielded consistent findings: global city location, EU membership and their interaction did not exhibit statistically significant effects on profitability. Firm size controls were also statistically insignificant in this model.

The EBIT margin model exhibited slightly higher explanatory power (R^2 = 0.147348346, adjusted R^2 = 0.097192366), though still relatively modest. However, unlike the ROA model, the Breusch Pagan test indicated significant heteroscedasticity (p = 0.007757181), suggesting that variance in residuals is not constant and that robust standard errors are essential in interpreting these results.

For reference, Annex H presents the OLS results estimated with conventional (non-clustered) standard errors. While the level of statistical significance for some coefficients changes, the direction and relative magnitude of the effects are broadly consistent with the results obtained using clustered robust standard errors.

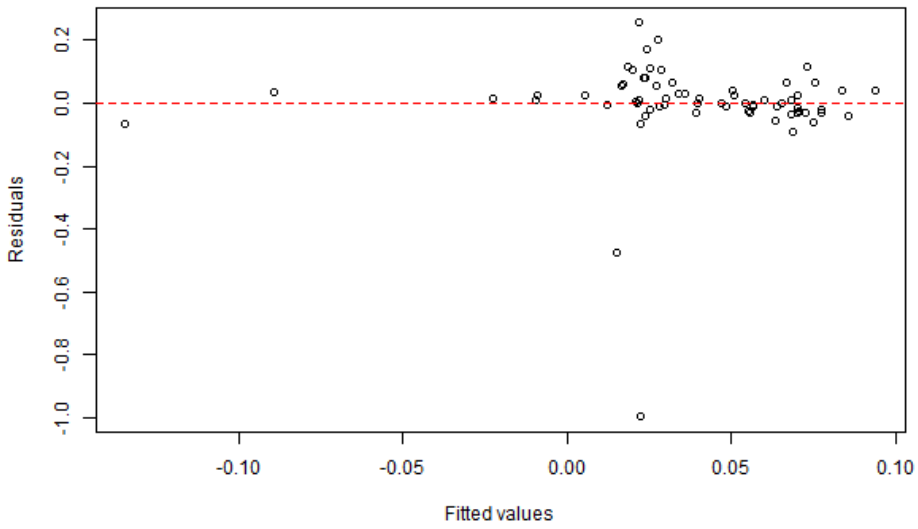


Figure 4.2: Residuals vs Fitted values for the OLS regression ROA model

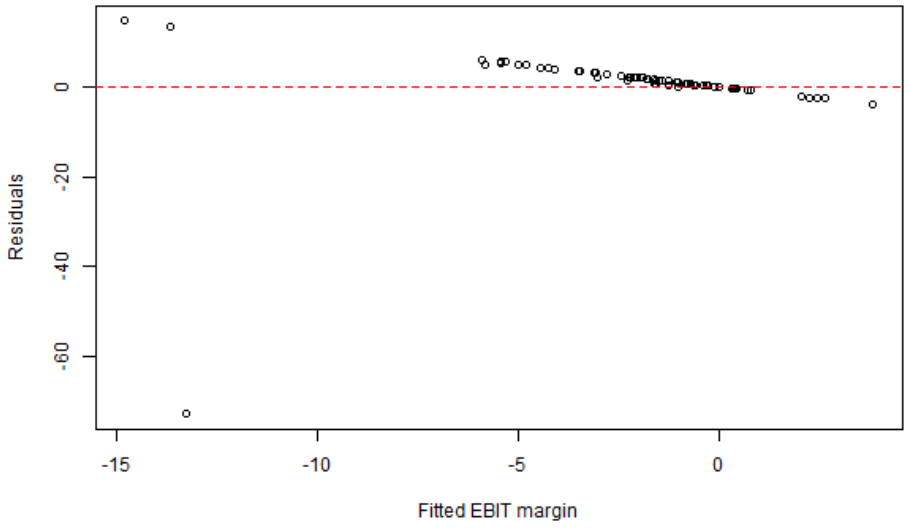


Figure 4.3: Residuals vs Fitted values for the OLS regression EBIT margin model

The residual plots for both models (Figures 4.2 and 4.3) displayed a generally even spread of residuals across the range of fitted values. In the EBIT margin, however, the plot displayed one extreme

outlier and several smaller outliers. These unusual observations likely reflect atypical profitability figures for a small number of subsidiaries, which may partly explain the difference in the heteroscedasticity test outcomes observed between the ROA and EBIT margin models.

In conclusion, the profitability results indicate that a subsidiary's financial performance is not systematically higher for firms located in global cities within this sample, regardless of EU membership status. Instead, profitability appears more closely linked to firm scale dynamics, that is, larger subsidiaries tend to achieve higher profitability, while subsidiaries embedded in very large corporate groups may face constraints or strategic roles that reduce their individual returns. These size effects are more statistically pronounced for ROA than EBIT margin, but the direction of association is consistent across both measures, underscoring the robustness of the findings.

4.3 Survival (Cox proportional-hazards)

Table 4.5: Cox proportional-hazards model estimates

Term	estimate	std.error	robust.se	statistic	p.value	conf.low	conf.high
global_city	0.628789	1.225169	1.216463	-0.3814	0.702906	0.05795	6.822757
is_eu	0.219816	1.000139	0.945193	-1.60281	0.108977	0.034475	1.401553
global_city:is_eu	1.812304	1.732177	1.699316	0.349905	0.72641	0.064829	50.66308

The parsimonious Cox proportional-hazards model examined the association between global city location, EU membership and subsidiary survival duration. Table 4.5 reports the hazard ratios (HRs), the confidence intervals and the p-values. Neither the coefficient for global city location (HR = 0.628789, 95% CI [0.05795, 6.822757], p = 0.702906), EU membership (HR = 0.219816, 95% CI [0.034475, 1.401553], p = 0.108977), nor the interaction term (global_city:is_eu) (HR = 1.812304, 95% CI [0.064829, 50.66308], p = 0.72641), were statistically significant. In Table 4.6, it is possible to observe a hazard ratio of 1.139558 (95% CI [0.101726, 12.76555], p = 0.915601), which reinforces the absence of a statistically meaningful difference in hazard within the EU subgroup.

Table 4.6: Cox proportional-hazards model estimates for EU global cities vs EU non-global cities

contrast	logHR	se_logHR	z	p_value	HR	CI_low	CI_high
EU global vs EU non-global (is_eu=1)	0.13064	1.232732	0.105976	0.915601	1.139558	0.101726	12.76555

Table 4.7: Schoenfeld residuals test for the proportional-hazards assumption

Chisq	df	p
0,511605	1	0,474445
0,497285	1	0,480695
0,000348	1	0,985117
2,590671	3	0,459127

The Schoenfeld residual tests (Table 4.7) showed no evidence of violation of the proportional-hazards assumption, with all p-values greater than 0.05, indicating that the results are not statistically significant. The corresponding scaled Schoenfeld residuals plot (Figure 4.4) didn't show any strong time trends, visually confirming that the assumption holds.

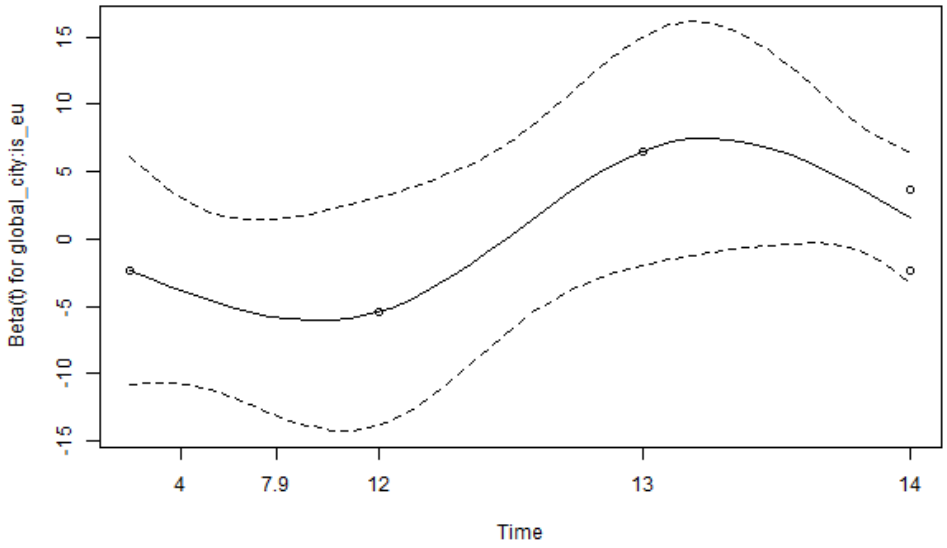


Figure 4.4: Scaled Schoenfeld residuals plot

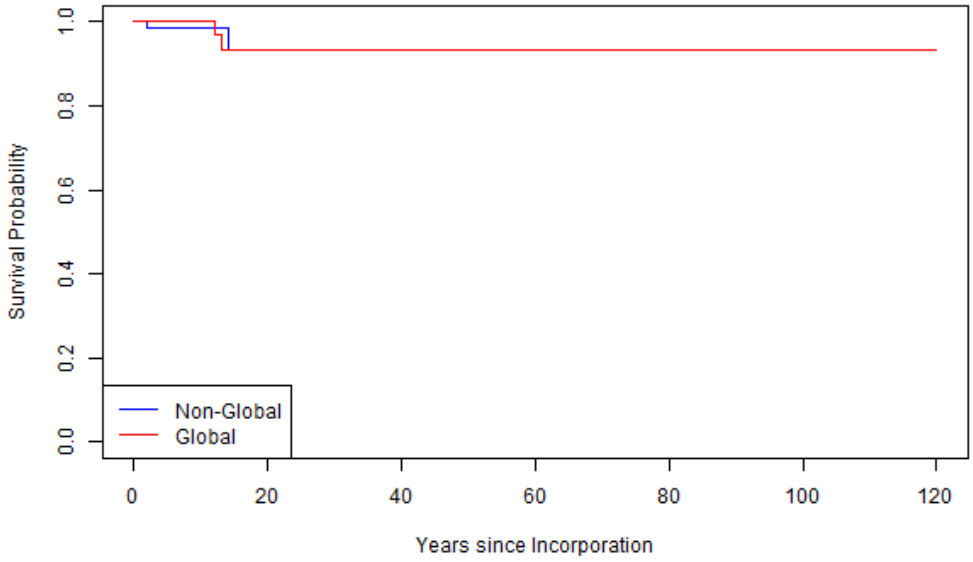


Figure 4.5: Kaplan-Meier curves for global vs non-global cities

The Kaplan-Meier curves in Figure 4.5 show the unadjusted survival patterns for subsidiaries in global cities versus those in non-global cities. The two curves are close to each other throughout the observation period, suggesting that location in a global city is not strongly associated with different survival probabilities, with both groups maintaining high survival probabilities over the observation period. When the analysis was restricted to EU-only cities to explore possible within-EU differences, the unadjusted Kaplan-Meier plot (Figure 4.6) demonstrated a high degree of overlap between EU global and EU non-global city curves, indicating minimal differences in survival probabilities.

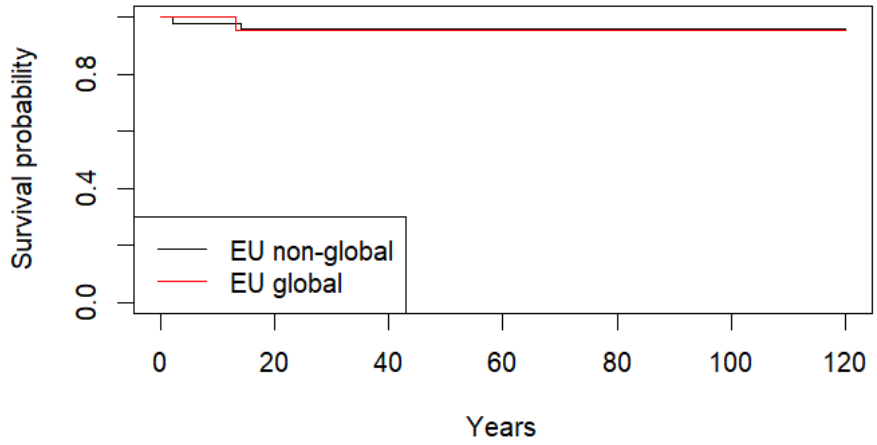


Figure 4.6: Kaplan-Meier curves (EU only) for global vs non-global cities

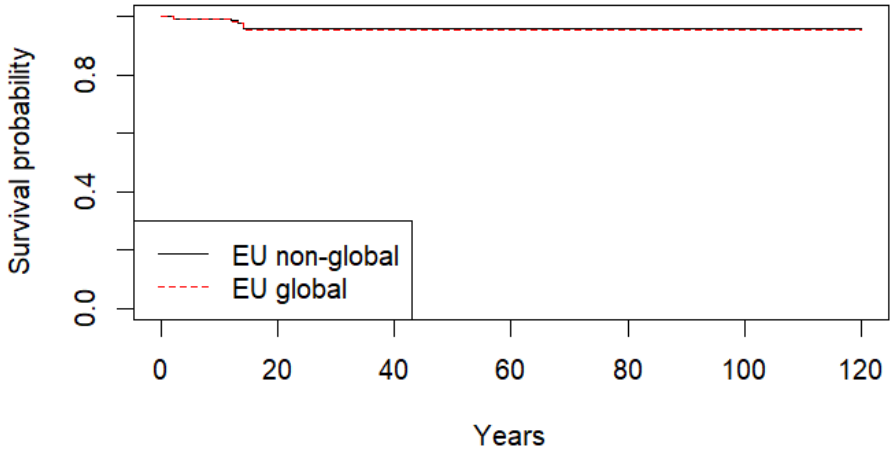


Figure 4.7: Cox-predicted survival curves (EU only for global vs non-global cities

Finally, model-based predicted survival functions were generated from the Cox model for EU-only cities (Figure 4.7). These adjusted curves also overlapped substantially, reinforcing that the location in a global city within the EU does not significantly change the predicted survival probability over time. Overall, both the unadjusted and adjusted analyses provide consistent evidence, within the available sample and observation window, that location in a global city, EU membership or their combination does not significantly affect subsidiary survival rates.

4.4 Qualitative Cases

While the quantitative models provide systematic evidence on location, profitability and survival, they cannot capture the detailed circumstances behind individual exits. To complement those results, this section will review the only six subsidiaries that became inactive or exited their host markets, for which information was available and whose existence could be confirmed. This qualitative perspective helps illustrate how firm-level strategies and external shocks can complement the broader patterns in the statistical results. These cases are examined alongside the location, profitability and survival analyses presented previously. The exits are relevant to the location analysis because they occurred in both global and non-global cities, and across EU and non-EU countries. They connect to the profitability analysis because several exits were tied to strategic restructuring or financial reasons. Finally, they directly link to the survival analysis, since each case represents an observed exit. By connecting the cases to these three analyses, the qualitative evidence provides context to the statistical findings without suggesting statistical significance.

Table 4.8: Inactive Subsidiaries

Parent Company	Subsidiary	Incorporation Date	Exit date	Reason for exit	City	Country
Asics Corp	Haglöfs Holding AB	2010	2023	Sold	Stockholm	Sweden
Asics Corp	Asiks Rus OOO	2008	2022	Invasion of Ukraine	Moscow	Russia
Kao Corp	Kao Corporate Limited	2011	2023	Voluntary Strike-off	London	United Kingdom
Costco Wholesale Corp	Costco Wholesale Corporation	2015	2017	Discontinued	Aarhus	Denmark
Hasbro Inc	Group Grosvenor Limited	1997	2011	Solvency	Uxbridge	United Kingdom
Hasbro Inc	Wizards Of The Coast France	1995	2009	Ceased	Savoie	France

Table 4.8 lists the only six subsidiaries that became inactive or exited their host markets, for which information was available and whose existence could be confirmed, along with their parent company, incorporation and exit dates, reasons for exit and host city and country. The six cases were distributed across Sweden, Russia, Denmark, France and the United Kingdom, with only the last one appearing twice. The subsidiaries exited between 2009 and 2023, with no clear temporal clustering, though the most recent exits (2022 and 2023) were largely linked to big external events (war) or company strategy (restructuring).

The reasons for exit varied: three subsidiaries left as part of corporate strategic or operational restructuring (the sale of Haglöfs Holding AB by Asics Corp, the voluntary strike-off of Kao Corporate Limited, and the discontinuation of Costco Wholesale Corporation in Aarhus); one subsidiary exited due to geopolitical disruption (Asiks Rus OOO in Moscow following the invasion of Ukraine); another closed due to solvency (Group Grosvenor Limited); and finally one ceased its operations for unspecified reasons, as no financial information was available (Wizards Of The Coast France).

From a location perspective, both global cities (London and Moscow) and non-global cities experienced exits. This mirrors the quantitative results, where global city status was not statistically significant for survival. The case evidence therefore helps illustrate that exit outcomes in this sample were linked to diverse factors such as corporate strategy, financial reasons and geopolitical events, rather than city type alone. The two Asics Corp cases demonstrate that exit drivers can differ substantially even within a single corporate group.

Overall, the qualitative review provides context to the quantitative results: it shows that survival outcomes in this dataset were shaped by a mix of firm-level decisions and external factors, and that these drivers operated independently of whether a subsidiary was located in a global or non-global city.

5 Conclusion

The academic literature consistently highlights the strategic relevance of location choices for multinational enterprises, with recent research shifting the focus from country-level analysis to the subnational scale. Global cities, in particular, have been emphasised as offering distinctive advantages through their cosmopolitan environments, dense networks of advanced producer services and high connectivity, all of which help firms overcome the liability of foreignness and enhance performance. At the same time, the European Union's integration has reshaped the institutional landscape, reducing the unique institutional premium traditionally associated with global cities, though these locations continue to attract investment by maintaining important strategic benefits. This dissertation investigates the profitability and survival implications for multinational enterprises locating to European global cities compared to other locations in Europe. More specifically, it examined whether MNEs are more likely to choose global cities in EU member states over non-EU ones, and whether subsidiaries in EU global cities exhibit higher profitability and survival rates compared to those in EU non-global cities. By combining insights from international business, economic geography and EU institutional theory, this research positioned itself within continuing debates about the multi-dimensional determinants of multinational enterprises' location strategies.

The empirical findings provide a nuanced picture. The Firth logistic regression results indicate that EU membership does not significantly predict global city location alone once agglomeration variables are controlled for. Among the controls, APS density was the strongest and statistically significant factor associated with global city location, while transport connectivity displayed a negative coefficient, however these results should be interpreted cautiously given the small sample and reduced model. The OLS regression analysis indicated no systematic profitability advantage for subsidiaries located in global cities or in EU member states. Likewise, the Cox proportional-hazards survival model did not reveal statistically significant differences in survival between subsidiaries in global versus non-global cities, whether these were part of the EU or not. The qualitative review of the only six subsidiary exit cases, for which information was available and whose existence could be confirmed, illustrated how closure was linked to diverse firm strategies, financial reasons or external factors, rather than to city type or EU status.

Taken together, these findings add nuance to the literature. Prior studies often emphasise the role of global cities as hubs that mitigate liability of foreignness and provide access to dense service networks, and this aligns with the observed importance of APS density for location choice. However, this study did not find significant evidence that global city status or EU membership systematically

improved profitability or survival outcomes. Instead, the results point to the importance of local service ecosystems and firm-level characteristics, with location type (global or non-global cities) playing a more limited role in this sample.

These results make three main contributions to existing academic literature. First, the study extends the analysis of multinational enterprises' location choice beyond the country-level, highlighting the importance of subnational and urban-level dynamics, particularly service agglomeration, in explaining MNE strategies. Second, it shifts the discussion of global cities beyond their role in subsidiaries' entry mode and considers their impact on longer-term outcomes, namely profitability and survival. Third, it incorporates the EU institutional context by comparing EU and non-EU cities, thereby clarifying the role of EU membership relative to local economic geography in shaping MNE performance.

Several limitations should be acknowledged. First, the sample size was modest and therefore constrained the statistical power, limiting the detection of smaller or more context-specific effects. Second, there were considerable difficulties in retrieving data, particularly for financial indicators such as ROA and EBIT. A further challenge concerned inactive subsidiaries, since in numerous cases, there was no official mention that these entities had ever existed, making it difficult to know about their existence, trace their exit reasons and timelines. These data gaps restrict the applicability of the findings. The analysis was also restricted to European cities within a specific observation period, which also limits the applicability of the findings. The results reflect the institutional and economic context of Europe during this timeframe and, therefore, may not fully apply to other regions where global city dynamics and integration processes differ, or to future periods, as changes in policy, market conditions or geopolitical events could alter the patterns observed.

To conclude, future studies could expand the findings of this paper in several ways. Firstly, the analysis could go beyond Europe, enabling researchers to test whether the patterns observed in this dissertation hold in other regions where global cities exist within different institutional and economic contexts. Secondly, applying longer observation periods could reveal how the role of global cities changes as integration advances and as geopolitical events and technological transformations unfold over time. Thirdly, although this paper focused on a single sector, future research could broaden the scope to encompass multiple sectors, evaluating whether the role of global cities varies across sectors with different levels of dependence on knowledge-intensive services or manufacturing infrastructures. To sum up, these expansions would provide a deeper understanding of how global city advantages operate across diverse economic and institutional environments.

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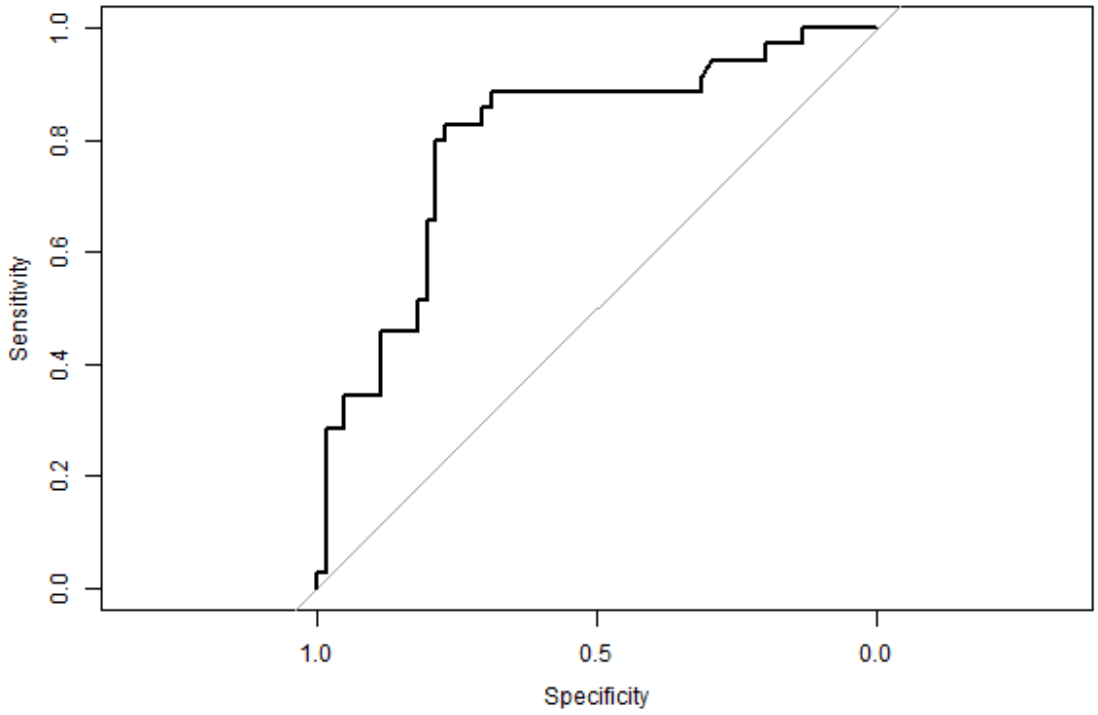
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Annexes

term	estimate	conf.low	conf.high	p.value
(Intercept)	13.21804	0.515814	428.1134	0.120291
is_eu	1.020364	0.269788	3.952767	0.975493
ln_revenue_parent	0.726921	0.495559	1.03413	0.076902
z_aps_density	3.665574	1.023106	26.08327	0.040277
z_transport_connectivity	0.618255	0.369168	0.8905	0.006958

Annex A: Firth logistic regression results (without Russia)



Annex B: ROC curve for the Firth logistic regression model (without Russia)

metric	value
AUC_Firth_noRU	0.799766
McFadden_pR2_noRU	0.169355

Annex C: Firth logistic regression model diagnostics (with Russia)

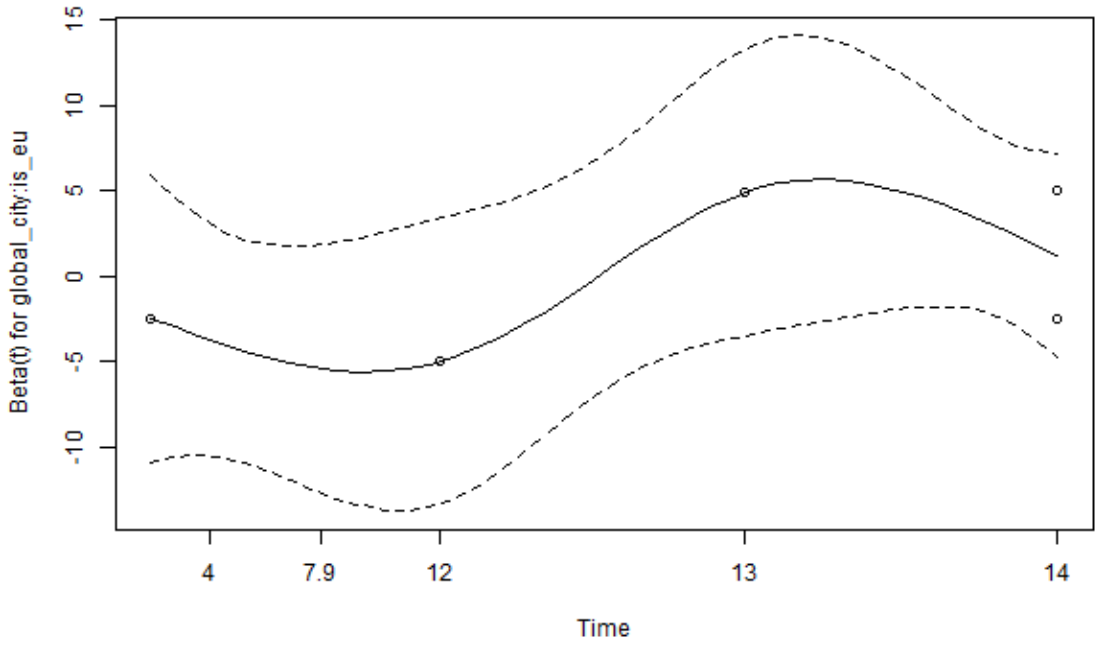
term	estimate	std.error	robust.se	statistic	p.value	conf.low	conf.high
global_city	1.155459	1.414716	1.393129	0.103722	0.91739	0.075322	17.72508

is_eu	0.406853	1.224789	1.166776	-0.77076	0.44085	0.041331	4.004971
global_city:is_eu	0.9783	1.87091	1.825299	-0.01202	0.99041	0.027339	35.00816

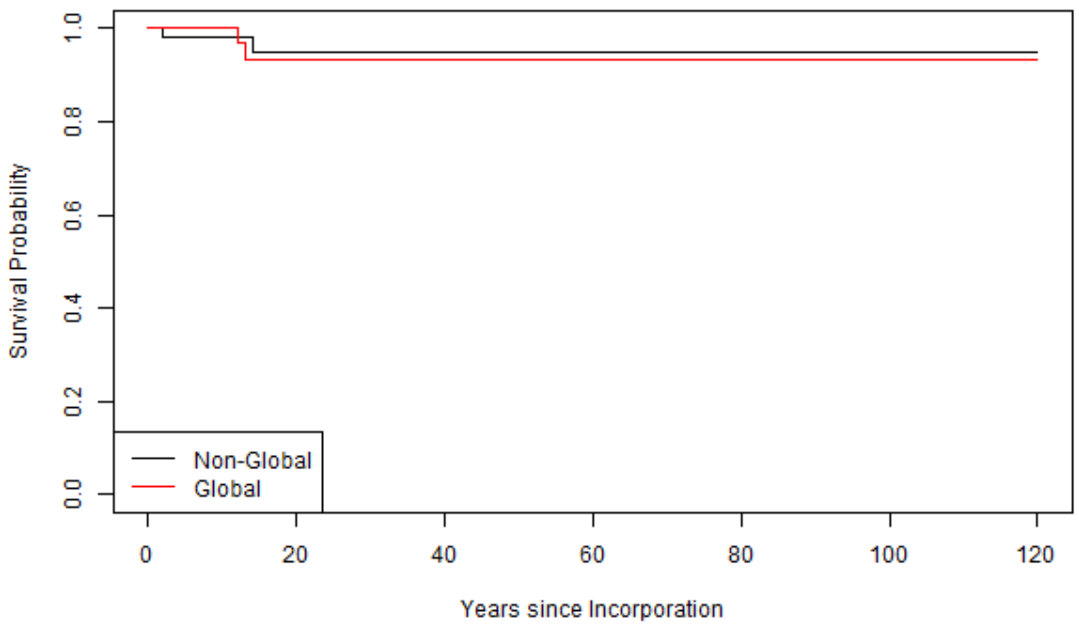
Annex D: Cox proportional-hazards model estimates (without Russia)

chisq	df	P
0.187495	1	0.66501
0.09506	1	0.757841
0.045085	1	0.831847
1.6451	3	0.649208

Annex E: Schoenfeld residual test (without Russia)



Annex F: Scaled Schoenfeld residuals plot (without Russia)



Annex G: Kaplan-Meier curves for global vs non-global cities (without Russia)

Estimate	Std. Error	t value	Pr(>|t|)
0.027923	0.055859	0.499877	0.618453
0.008177	0.063785	0.128202	0.898292
-0.04737	0.048409	-0.97861	0.33055
0.007014	0.005218	1.34425	0.182444
-0.04199	0.024028	-1.74767	0.084132
0.032478	0.071335	0.455287	0.650064

Annex H: OLS regression results with conventional standard errors