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Article

Post-Brexit: Do board interlocks make banks take similar relocation decisions?

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Post-Brexit: Do board interlocks make banks take similar relocation decisions?

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Abstract: Because Brexit has implied a surge of relocation decisions by financial service firms during a short period of time, we examine the locational decisions of the financial industry in Europe. Adopting a relational perspective we analyze the association between similar relocation decisions of UK-based banks and the connectivity of their decision boards. Based on an analysis of relocation announcements in the media, press releases, and annual reports, as well as of interlocking directorships within the financial sector, our study connects research streams on relocation and internationalization with cross-board memberships and interlocks. Our findings suggest that the higher the competition between two banks and the stronger the connectivity in interlocking board memberships between them, the more likely are these banks to announce different relocation decisions. We interpret these robust findings as a behavior that effectively reduces competition for limited localized resources.

Keywords: Brexit, relocations, interlocking directorates, financial industry, network analysis

“Today, therefore, I am writing to give effect to the democratic decision of the people of the United Kingdom. I hereby notify the European Council in accordance with Article 50(2) of the Treaty on European Union of the United Kingdom’s intention to withdraw from the European Union. In addition, in accordance with the same Article 50(2) as applied by Article 106a of the Treaty Establishing the European Atomic Energy Community, I hereby notify the European Council of the United Kingdom’s intention to withdraw from the European Atomic Energy Community.” (Theresa May, 29th March 2017)

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1 Introduction

The geographical reorganization and relocation of business firms has been a key issue in economic geography. Brexit has offered and still offers a historical chance to study a surge of relocation decisions in the British financial industry within a short period of time that is likely to affect the spatial structure of the financial industries across Europe (Dörny & Dymski 2021; Lavery et al. 2018; Sants et al. 2016; Thurman et al. 2017). Given the UK’s decision to leave the common market and customs union, many financial service firms (FSFs) have decided to relocate at least partially from the UK to the EU to secure market access to the European market¹.

Because relocations are rare events, systematic research often compares apples with oranges by studying relocations at different times and places with their own social, economic and political contexts. Frequently, relocations from different industries realized in different times build the data basis for relocation studies (Brouwer et al. 2004; Laamanen et al. 2012; Valentino et al. 2019). Traditional relocation studies often interpret geographical reorganizations as single events, whereas we argue that they are continuous processes and subject to multiple unforeseen interventions. Brexit may serve as a quasi-natural experiment (Wójcik 2021b) as it offers the chance to study a surge of relocations under comparable environmental conditions. Studies in the social sciences have often focused on specific moments in time, e. g., an election or important treaty, to frame them as shock events that offer quasi experimental conditions. Although it also applies to the Brexit referendum on 23rd June 2016 (Born et al. 2019; Delis et al. 2018; Wu et al. 2017), we argue that Brexit is not a discrete event but rather an ongoing and unfinished sequence of events, which characterizes the unpredictable nature of this process. Just recall the tendinous series of unpredictable events and political twists. The official withdrawal process started on 29th March 2017 with an official letter of Theresa May to the European commission with the words quoted at the very beginning of this article. All regulations that allowed UK-based FSFs to offer their services within the European Market would

¹ By FSFs we refer to financial and connected business services (Wójcik 2021a)

have lost their applicability after two years from that date on except for the case of a new treaty regulating the relationships between the EU and the UK. By the end of 2018, UK and EU representatives agreed on a deal. The refusal of this deal through the British Parliament in three consecutive votes has led to two extensions of the Brexit process with a scheduled leave on 31st October 2019. UK Parliament voted for a third extension of the Brexit until the 31st of January 2020 and an election in December 2019. After the elections and other parliamentary votes, the UK left the EU on the 31st of January 2020. The following transition period during which the UK remained part of the EU market and customs union ended on 31st of December 2020. On 24th December 2020 UK and EU representatives found consensus about a treaty regulating the relationships between UK and EU after the transition period. However, this treaty explicitly excludes financial services. In June 2021, former UK-based financial service firms need a location within the EU to offer full services to their EU-based customers, which has led to the establishment of new sites, the extension of existing locations, and the relocations of competencies. In this context, we conceive *relocation* as the geographical transfer of either authoritative or allocative resources from one spatial location to another. Following the stimulus of Brexit for FSFs to relocate at least partially some activities from the UK to the EU, we examine some of the factors that may have shaped the relocation decisions of FSFs.

All in all, the de facto Brexit process has followed a contingent trajectory, thus exposing business and industry to uncertainty, particularly in terms of the costly preparations for appropriate organizational and locational response. Therefore, rather than focusing on an ever-outdated output of geographic relocation and Brexit, we examine the sets of financial services firms' relocation decisions, plans and actions during the initial stages of Brexit between 2016 and 2019. Reports documented a massive increase of relocation announcements of smaller and flexible FSFs after the political situation had become clearer by the end of 2019 (Hamre & Wright 2021). The political uncertainty had converted into a necessity for relocation.

Given the general inertia in implementing relocation and shareholders' pressure for accountable and appropriate responses on how to adjust to Brexit, the boards of directors of major banks took relocation decisions early on. It is therefore an empirical question which factors drive relocation decisions and lead financial firms to make similar locational choices. Especially banks announced multiple location decisions at different timepoints. We use each banks' set of location decisions to study the similarities of announced relocation decisions by accounting for the choice of destinations and the timing of announcement.

Because the process of intrafirm decision making is hard to observe directly, we focus on interlocking directorships and the composition of corporate boards to systematically examine the role of decision-makers and their organizational connectivity in relocation decisions. We consider two firms to be *directly* interlocked if they have members from both organizations in at least one of their boards. In addition, we consider two firms A and B as being *indirectly* interlocked if their members jointly serve on a board of a third organization. However, the crucial issue of social networks is that information and rumor spreads through the participation of intermediary persons. In other words, two firms in an interlocking directorate network might be connected even in cases in which they are not directly or indirectly interlocked. There are often network paths connecting two firms by crossing two or more other firms. Thus, we take a comprehensive network view by focusing on the connectivity in interlocking directorship networks.

Interorganizational interlocks and their networks have been studied extensively for the last decades, with a focus on the diffusion of innovations (Davis 1991; Davis & Greve 1997), on power issues of elites (Galaskiewicz et al. 1985; Mizruchi 1996) or on strategies to avoid competition (Burt et al. 1980). In geographical studies, scholars have found regional and national dimensions of interlocking directorships and cross-investments to avoid hostile takeovers from abroad (Gerlach 1992; Mould & Joel 2010; Windolf & Beyer 1996). Further, researchers discovered the potential of interlocking directorships to reduce uncertainties about foreign markets and regions, which in turn supports foreign direct investments and international expansion (Ang et al. 2018; Connelly et al. 2011). The international expansion of Forbes 500 and Fortune 1,000 companies to China, for instance, was found associated with board interlocks with those firms that (un)successfully opened sites in China (Connelly et al. 2011). In line with these insights, our analysis shows that the connectivity of financial firms in an international network of interlocking directorates is correlated with relocation decisions of FSFs.

In section 2 we discuss the context of our study and build on theoretical and empirical research to develop a set of hypotheses on the relation between competition, connectivity and relocation. We describe the methodology of our mixed method approach and our analytical proceedings in section 3, before continuing to present our analytical results in section 4. Finally, we draw conclusions in section 5.

2 Theory

2.1 The relation between competition, interlocking directorships, and relocation choice

Traditional models seek to explain the spatial distribution of firms by optimal location choice (Weber 1909). Especially, the literature on internationalization and offshoring discusses locational and organizational factors to explain relocation decisions (Ellram et al. 2013; Laamanen et al. 2012; Manning 2014). Many of these studies explain relocations as measures to reduce production and labor costs or to access new markets (Pisani & Ricart 2016). Further, some studies connect relocations with different phases of organizational evolution and growth. In the seed phase of firms, location choice is driven by private and social constraints of the entrepreneur (Stam 2007), a phenomenon which is also observed within the financial industries (Parwada 2008). In contrast, large firms often dispose of sufficient resources to systematically screen and evaluate locational alternatives, and frequently expose potential destinations to negotiations about subsidies before taking a final decision (Wins 1995). Although behavioral approaches (Pred 1967; Surdu et al. 2021) question the possibility of optimal choice due to bounded rationality and incomplete information, relocation decisions of large firms with enough resources to develop locational intelligence might be interpreted as partially rational and well-informed choices. This goes hand in hand with the fact that larger firms have typically larger sunk costs (Clark & Wrigley 1995; 1997) in specific locations. Thus, it requires consideration and calculation to make sure that the financial benefits of relocation compensate such sunk costs. We argue that in situations of uncertainty and time pressure (like during Brexit), not only small and medium sized companies but also large corporations find it hard to make well-informed optimal decisions.

Instead, social mechanisms of uncertainty reduction (Glückler & Armbrüster 2003 Hoffmann & Glückler 2022), social and ethic commitment (Jean et al. 2011; Li et al. 2019) or bandwagon effects (Belderbos et al. 2011) are likely to affect location decisions. Relational theory of internationalization in business services suggests that location decisions are social decisions, which depend on prior and existing structures of business relationships (Glückler 2006). In line with these observations some scholars have underlined the influence of social relationships among top managers on corporate decision making. González (2019) found indications for an inverted U-shaped relationship between attitudinal attributes of internationalization, and a firm's

number of transnational interlocking directorates. Other studies have demonstrated that interlocking directorates are conduits for the diffusion of organizational practices, strategies, and international market expansion plans (Connelly et al. 2011; Davis & Greve 1997; Shropshire 2010). Findings in international business and organization studies suggest that interlocking directorates play a significant role in the diffusion of organizational strategies and international market expansion plans (Connelly et al. 2011; Davis & Greve 1997). Interlocks operate as conduits of information transfer. Understanding location decisions as part of a firm's strategy, we build on a relational perspective to examine how inter-firm competition in the financial industry and the network of interlocking directorships affect sets of locational choice under the uncertain conditions of Brexit.

2.2 Competition and relocation choice

Given our focus on similarities in relocation decisions by banks it is an underlying question how competition between banks affects location choice. In the context of Brexit current research on relocations (Panitz & Glückler 2022) shows that a financial centers' specialization and thus localized specialized resources are crucial to explain relocation decisions. Further, it shows that no existing European financial center is large enough to offer sufficient resources to be the only alternative to the financial center London. The importance of localized resources on location decisions fits evolutionary approaches that show that it is not the co-presence of competitors and the resulting advantages that build the nucleus for horizontal clusters. Instead, historical coincidence and political decisions build locational opportunities and offer resources that are the initial points for cluster evolution fostering foreign direct investments (Grote 2007). We can easily deduce that concentrated relocations of competitors to specific locations increase the competition for rare, localized resources. Additionally, the assumption of perfect competition is often not fulfilled in financial markets and specifically not in banking (Berg & Kim 1994). In 2016, data on national concentration ratios of assets held by the five largest banks across the member states of the European Union show a range between 28 percent and 97 percent (European Central Bank 2020). Hence, mechanisms of locational competition do not work. Localized oligopolies and collusive strategies of regional market segmentation affect the competition in different national markets (Pita Barros 1999).

Theoretical models of Knickerbockers (1973) idea of follow the leaders' foreign direct investments in uncertain times as a strategy to reduce risks show a rather small

window of uncertainty and risk aversion that leads to follow the leader foreign direct investments. Assuming an actors risk neutrality a competitors previous foreign direct investment is expected to reduce the benefits of a firms plant relocation to the same location (Head et al. 2002).

The debate on horizontal clusters emphasizes that places house place-specific localized knowledge (Bathelt et al. 2004; Owen-Smith & Powell 2004) that attracts the location of firms to tap into idiosyncratic market knowledge and information (Håkanson 2005). Global cities are one type of place that has been shown to serve as hubs for the global coordination and exchange of knowledge (Beaverstock & Smith 1996; Sassen 2001). There are various examples of establishments and relocations of multinational firms that focus on knowledge intensive services to global cities (Belderbos et al. 2017; Goerzen et al. 2013). However, FSFs are unlikely to relocate their operations entirely from the UK to the European mainland due to Brexit. Instead, FSFs relocate only those functions that are needed to secure customer and market access (Panitz & Glückler 2022). The organizational functions that depend on the localized access to market and industry knowledge remain in London. Thus, there is no need to develop a new European financial center that takes over London's position as a global hub for financial knowledge and information exchange.

As a consequence, the ongoing process of relocation reflects banks' search for resources that enable them to continue their business with existing customers in existing European markets. Because the main European financial centers together are smaller than the financial center of London (measured by the number of employees) (Panitz & Glückler 2022), we recognize limits in potential resource provision. Reports on the lack of highly qualified professionals on the local labor markets, of international schools and of available office space in destinations such as Paris, Frankfurt or Dublin support this expectation (Keohane 2019; Martin 2017; Risser 2022). Hence, we expect banks who are immediate competitors to avoid further competition for rare, localized resources, by taking dissimilar relocation decisions.

H1: The higher the competition between two banks, the more likely are these banks to take dissimilar relocation decisions regarding the timing and destination.

2.3 Competition and the connectivity of board interlocks

The board of directors is the organizational unit of decision-making in publicly traded corporations. The compositions of these boards is usually seen as an expression of

organizational control and strategic positioning (Baysinger & Hoskisson 1990). Previous observations that some competitors had direct interlocks of the board directorships and that board meetings offer immediate opportunity to exchange and coordinate informally have fueled debates on the potential of board interlocks to further collusion and cooptation (Di Bartolomeo & Canofari 2015). To impede such collusive behavior, several countries introduced formal regulations to legally ban direct interlocks among competitors, e. g., US Antitrust law. In Europe, we observe different national regulations: Italy bans direct interlocks in the financial industry (Falce 2013), whereas Germany only limits the maximum number of board memberships per person (Deutsche Bundesbank 2014). Apart from differences in regulation, the enforcement of those regulations also differs across countries. In line with US regulations, direct interlocks are almost non-existent in the US financial industry (Baccini & Marroni 2016; Zajac 1988). Yet, in the Italian insurance industry, for instance, there is a large number of interlocks among competitors (Baccini & Marroni 2016). These national differences in patterns of interlocking directorships have been interpreted as different forms of industrial and economic governance and as indications for national varieties of capitalism (Dore et al. 1999). Generally, there seem to be low levels of 'explicit collusion' via direct interlocks (Buch-Hansen 2014), and the corporate elite and its interlocking directorship networks have become increasingly transnational (Heemskerk et al. 2016). Because regulators seek to withhold collusion by forbidding interlocking directorships in some industries it is that we conjecture that direct as well as indirect interlocks do/would facilitate effective information exchange among competitors. It is especially true for tacit arrangements that are not based on explicit exchange but on information spillovers spreading within a group of actors (Fonseca & Normann 2012).

Because it is almost impossible to directly observe the communication and interactions among board members in real life, we revert to the assumption that the potential for exchange and interaction is regularly realized among interlocked firms. In addition, we expand our view by arguing that connectivity in interlocking directorship networks among corporations is also an expression of competition.

A common observation is that industrial firms often invite representatives of financial service firms to join their boards in order to maintain close relationships with potential investors. From the perspective of financial service firms, placing representatives in a firm's board of directors offers insight in organizational behavior and performance and so enhances judgements on the proper use and impact of their investment (Hillman et al. 2000; Hillman & Dalziel 2003).

Moreover, because FSFs compete for the most promising investment opportunities, we infer that FSFs also compete for positions of their representatives in the boards of directors in the most promising or best performing firms. This observation resonates with a relational understanding of competition as suggested by White (2005). He argues that competition increases as firms are related to the same suppliers and customers, a topological situation of structural equivalence (Galaskiewicz & Zaheer 1999). This understanding corresponds with a narrow perspective of competition among direct competitors (Porter, 2008: p. xiv). As a consequence, we expect a positive relationship between competition and the creation of interlocking directorships between banks:

H2: The stronger the competition between two banks in the financial sector, the more strongly are these banks interconnected in the network of interlocking directorships.

In accordance with the above hypotheses that competing banks tend to take dissimilar relocation decisions (*H1*) and that connectivity is positively associated with competition (*H2*), we further argue that connectivity is negatively associated with similar relocation choice. This conjecture is supported by two aspects: First, the informal adjustments that corporations may organize by way of board interlocks facilitates information exchange and the diffusion of rumors among competitors (SIMONI & CAIAZZA 2012), so higher levels of mutual knowledge enable firms to take more informed decisions and choose dissimilar location decisions in order to avoid competition for limited local resources. Second, traditional companies tend to invite support specialists (Hillman et al. 2000) and people with social and financial capital (also from competing investors such as banks) to their board of directors to secure access to important resources (Hillman & Dalziel 2003). Thus, connectivity in interlocking directorship networks might be seen as an expression of direct and indirect competition.

H3: The higher the connectivity of interlocks between two banks in the same industry the more likely are these banks to make different relocation decisions.

3 Methodology

3.1 Data

We adopt a mixed-method approach for the collection and analysis of data on relocation plans and interlocking boards of directors. Our research is not constrained to quantitative

regressions, but the construction of the very model builds on substantive qualitative work. Therefore, we frame our procedure as a sequential mixed methods approach (Miles & Huberman 1994). In our analysis we draw on three distinct data sources: (i) public reports and publications by the media and by FSFs, (ii) data provided by BoardEx on the composition of boards of directors and on firm revenues, market capitalization as well as location, and (iii) primary qualitative research, including interviews with FSFs involved in relocation activities and participant observations and conversations at conferences and workshops dedicated to Brexit.

In a first step, we conducted a detailed media analysis covering media reports between June 2016 and November 2019. We searched articles for the occurrence of 171 keywords (e. g., Brexit, bank, relocations, subsidiary, etc.) and their combinations in the databases of *Reuters*, *Financial Times*, *Financial News*, *Frankfurter Allgemeine Zeitung*, *Delano*, *The Irish Times*, and *La Tribune*. We cover Anglophone media and other national media by using the respective translations of the keywords. We used these media reports to build a database of relocating UK-based FSFs. To validate these media reports, we additionally collected 395 accessible annual reports of 140 FSFs for the years 2016, 2017, and 2018 and 176 official press releases and news published on the websites of the FSFs.

By triangulating annual reports with official documents and press releases of the FSFs, we only study relocation announcements that have been confirmed by official firm publications. As we are not only interested in the location choice but also in the timing of the decisions, we face the problem that annual reports and press releases are often published with some time lag. Drawing on the three sources of media news, annual reports, and press releases as time references, we use the first date of corresponding relocation announcements across those data sources. As result, we constructed a matrix of FSFs, their destination choice, and the date of the first announcement of the subsequent relocation decision (Figure 1).

In a second step, we processed data from BoardEx, a professional provider of data about publicly traded organizations, on board compositions and board members of FSFs. We received our dataset on 15th April 2019. The database consists of over 29,000 organizations worldwide. Especially, organizations from the UK, North America and Europe are mostly represented in this dataset which fits the contextual requirements of our research. Additional analysis and data descriptions of this database underline the usefulness of this data (Ferreira & Kirchmaier 2013; Owen & Temesvary 2018; Shahgholian et al. 2015). Moreover, we drew on *Global Finance*, a monthly magazine with a circulation of 50,050

and readers in 163 countries (<https://www.gfmag.com/about-us/>, 31.08.2022)² to analyze their publications on the annually Best Bank awards in different categories. We used these awards to construct two measures of competition. Further, we used the annual reports of UBS to construct a third measure of competition.

In our third step, we adopted a qualitative research strategy to interview representatives of regulators and regional development organizations as well as higher management of financial organizations that had announced relocations. However, various requests went unanswered, showing the difficulties in getting access to employees in higher management positions. Consequently, we changed the research strategy and joined 14 financial industry events in London and Frankfurt. Here we attended over 60 presentations and panels dedicated to enabling expert discussions on the consequences of Brexit and possible relocations. Apart from the presentations, we conducted 15 recorded interviews and 6 unrecorded conversations with representatives of different organizations. This qualitative research helped develop a general understanding of Brexit-related challenges and issues as seen from within the financial industry. In the case of unrecorded interviews, we analyzed our interview protocols. In the case of recorded interviews, we transcribed and transferred the interviews to MAXQDA, an analytical software for qualitative research. Overall, our interview partners offered an overview on Brexit related uncertainties and strategies. Further, several interviewees commented on the relocation decisions of their companies and those of some competitors. Our qualitative works helped us to justify the assumption that the work of board of directors is a key source for locational decisions. However, we did not get insights into the internal decision processes within the boards of directors. This is understandable as such information is confidential. For the same reason we drew on BoardEX data on the boards of directors to capture the decision-making structures of relocating firms.

3.2 Measures

Competition. We built on the knowledge of experts to identify competing banks and constructed several variables of inter-bank competition. First, we used data on best bank awards by Global Finance. Global Finance awards each

year the best banks in different categories, such as sectoral winners for twelve distinct industries (e. g., Consumer, Financial institutes, Healthcare etc.) and regional winners for specific banking activities such as the best investment bank, the best equity bank, or the best debt bank. We constructed two variables (sectoral competition and regional competition) based on the sectoral and the regional awards in Western Europe. We argue that banks are competitors if they got awards in the same categories during the period between 2009 and 2019. Although Global Finance only awards a prize to one bank per year in each category, we observe that different banks had been awarded within a specific category over time. Due to multiple awards for the same banks, we used the Jaccard-coefficient to calculate the share of overlaps among the banks under study across the different categories over time. Moreover, we drew on the annual reports (2016–2018) of the bank UBS to develop a third measure of competition. The annual reports explicitly list all competitors for each segment of the business, and so map the landscape of FSFs that compete on similar business fields. We focus on the branch of investment banking to build a matrix of banks in which 1 indicates that two banks are competitors (accordingly, 0 = no competition). The UBS' assessment of the competition landscape is especially valuable for our analysis because, to our knowledge, there are no other assessments of competition in the field publicly available. Because UBS is an important market player in the European financial market, its assessment can be considered a reasonable and valid representation of the of the competitive landscape in the European financial market.

Interlocking directorships. Measures of board composition and connectivity of FSFs in the interlocking directorship network are outcomes of the BoardEx database, which includes information on board memberships of a firm's board members and senior managers. We constructed a network of interlocking directorships by selecting the relocating banks and the firms that they were connected with either directly or indirectly. Here we only report the analysis of interlocking directorship of banks for three reasons: (i) Non-bank FSFs had only a low variation in choosing different locations which could be easier explained by locational and industrial characteristics. Interlocking directorates had almost no significant effect on their locational choice. (ii) Not all non-bank FSFs are publicly traded companies. Thus, we had smaller coverage within the BoardEx database in comparison to banks. (iii) As we are interested in how network connectivity affects location choice, focusing on banks is helpful to isolate relational from sectoral effects.

We focus on the boards of the international holdings of all bank entities that announced relocations from the UK to the EU. Starting with 34 banks who had announced

2 The Global Finance has offices in New York, London and Milan. According to the journals description the typical readers *are* "Chairmen, Presidents, CEOs, CFOs, Treasurers and other senior financial officers responsible for making investment and strategic business decisions at multinational companies and financial institutions".

relocations, we constructed a network that includes 4,060 firms of which 729 are connected with two or more firms and so create indirect connections among the studied firms. In this way, connections through interlocking directorates with subsidiaries and external firms are considered in our analysis. Out of 34 banks covered in our analysis of confirmed relocation decisions between 2016 and 2019, 30 are part of the main component. We found only two cases of direct interlocks and 19 cases of indirect interlocks in which banks have been connected through the common presence of their board members in a board of a third company. A share of 50 percent of indirect interlocks with a path-length of two were found between banks from different countries. In addition, the banks are also connected with each other through various paths of longer distances. We found examples in which a bank A is connected to a bank B because board members of A are on the board of a firm C and board members of B are on the board of firm D while some board members of C are on the board of D (and vice versa). Counting such connections is not an easy task as some paths can be quite long. We used the maximum flow algorithm for binary networks to assess the connectivity. However, to be clear connectivity also includes direct and indirect interlocks. Such an analysis shows that, on average, each bank is connected to another bank by 57 independent paths.

We did not determine the quality of interlocking directorate relations between a bank and its subsidiaries or external firms. As we are interested in relational similarities and connectivity of the relocating banks, we measure the connectivity and a bank's ego-network composition within the network of 4,060 firms. In regards of ego network composition, we are interested in the origins of the firms that are directly connected to the banks (alters). Concretely, we calculated the Manhattan distance between all banks based on the origins of the directly interlocked firms. We use this variable to control for constraining effects due to the structure and composition of a bank's ego network (Buch-Hansen 2014; Buch-Hansen & Larsen 2021; Burt 1992).

Similarities of relocation decisions. We seek to explain both the location choice and the timing of the relocation decision. Therefore, we constructed a time-location matrix consisting of different relocating FSFs, the relocation destinations and the time point of the first announcement of each relocation decision (Figure 1). To assess the timing of the first decision, we focused on the date of the first relocation announcement and counted the time lapse (in days) since the Brexit referendum on 23rd June 2016. As our collection of media data ended on 1st November 2019, the maximum possible time lapse between a relocation announcement to a specific location and the Brexit referendum was 1,224 days. As a measure of organizational size, we use revenues and

market capitalization in USD according to the BoardEx database. To systematically capture the specializations of FSFs, we distinguish five subsectors of the financial industry: banking, fund and asset management, auxiliary financial services, insurance and supporting industries such as management consulting, accounting, and legal services. To construct the dependent variable that includes information on both different location choices and timing of the relocation decision, we calculate the Euclidean distance³ among the banks within the time-location matrix (Figure 2) and multiply it by -1 . To prepare the time-location matrix for this transformation it was necessary to choose a default value for *those cases* within the time-location matrix *in* which there were no relocation announcements. As we aimed to maximize the difference between an early relocation decision and the absence of such relocation announcements, we decided to double the maximum possible value within the time-location matrix of 1,224 days and used 2,228 days for those cases. The independent variables used in the regression models are described in Table 1.

We use these measures to construct similarity measures for an MRQAP-regression (Dekker et al. 2005). The MRQAP-regression has been developed for network contexts to study relationships among different networks in their matrix representations. By using bootstrapping and permutation, this procedure circumvents the requirements of traditional statistical models that assume that the independence of the studied observations. We chose the MRQAP-regression to model time-relocation similarities among banks instead of a sequential analysis that tries to explain the influence of a bank's earlier relocation decision on later decisions of other banks due to the quality of the underlying data. Concretely, using the timepoint of media report publications as proxies for the timepoint of relocation decisions contains the problem that both timepoints are distinct and the concrete sequence of decisions might be different. The timepoint of publication depends on various factors such as the journalists' and media's ability and will to discuss the relocation decisions of FSFs. Further, many FSFs might have kept relocation decisions secret for a while. Moreover, it is

³ In our case, the Euclidean distance calculates the difference between the two relocation vectors of each pair of banks. For a pair of two banks x and y the distance is calculated in the following way:

$$\sqrt{\sum_{i=1}^i (x_i - y_i)^2}$$

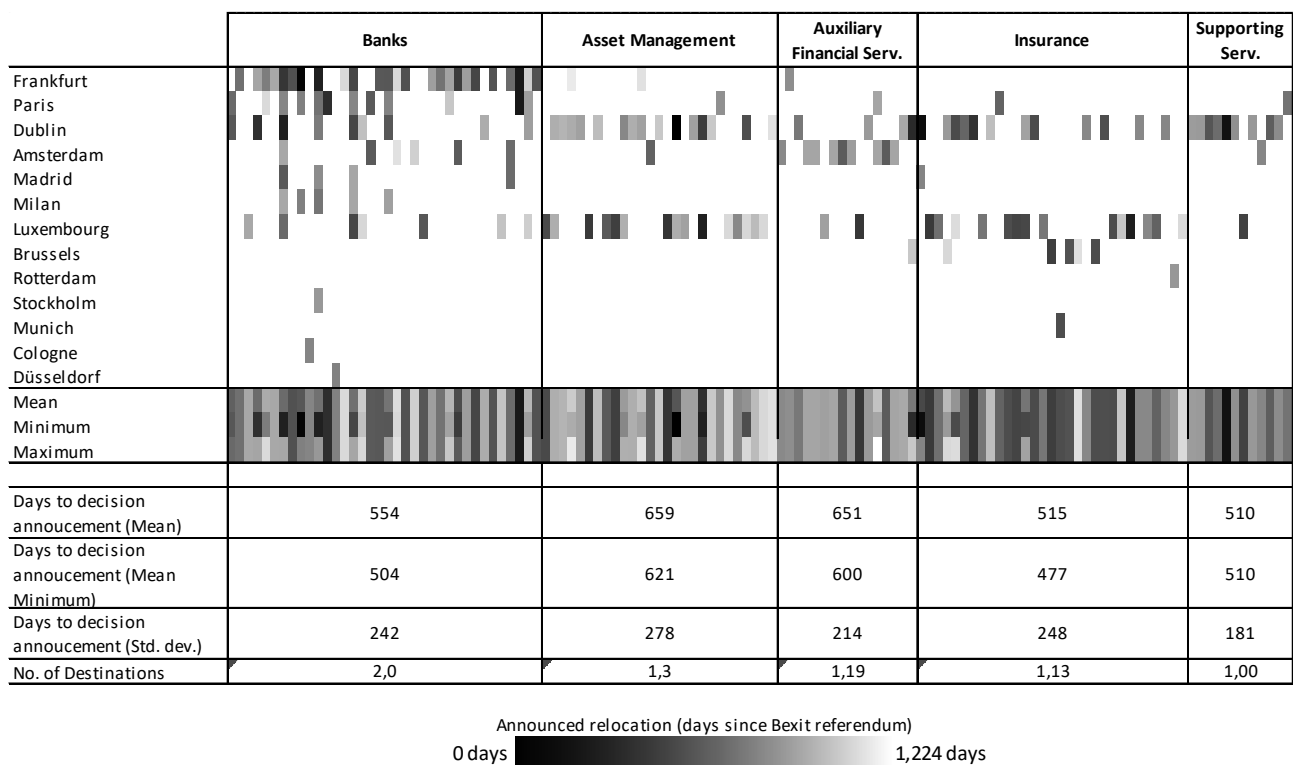
where: x_i equals the timepoint of relocation announcement of bank x to the location i ; and where y_i equals the timepoint of relocation announcement of bank y to the location i .

Table 1: Independent variables for bank-to-bank similarities

Variable	Measure	Description
Interlocks		
Connectivity	Maximum flow	The strength of a connection between two nodes is no stronger than the sum of all independent pathways and the weakest link in the chain of connections between those nodes.
Origins of alters	Manhattan distance	Different origins of connected firms (alters) are measured by the Manhattan distance of the composition of a bank's connected firms by focusing on differences of the national origins of the connected firm.
Organizational attributes		
Diff. Market capitalization	Absolute differences	Standardized absolute differences of the market capitalization in USD for each pair of banks.
Country of origin	Exact matches	Two banks receive a tie if they share the same country of origin.
Diff. board composition (member nationality)	Euclidean distance	The Euclidean distance among all pairs of banks based on the distribution of their board members' nationalities.
Competition		
Sectoral Competition (Global Finance)	Jaccard-coefficient	Measures the relative overlap of awards in the same sectoral categories between 2009 and 2019 of two banks.
Competition in Western Europe (Global Finance)	Jaccard-coefficient	Measures the relative overlap of awards in the same banking categories between 2009 and 2019 of two banks.
Competition (UBS)	Dummy (0/1)	Indicates bilateral competition between banks by using a Dummy of 0 = no competition and 1 = competition.

not easy to identify a specific timepoint of a decision. Often decision making in management is a process that involves various meetings and conversations leading to rising con-

victions for a specific action. Therefore, regressions based on locational and timepoint similarities appear more robust because they do not depend on a perfect sequence of reloca-

**Figure 1:** Relocation decisions differentiating by locational choice and timing

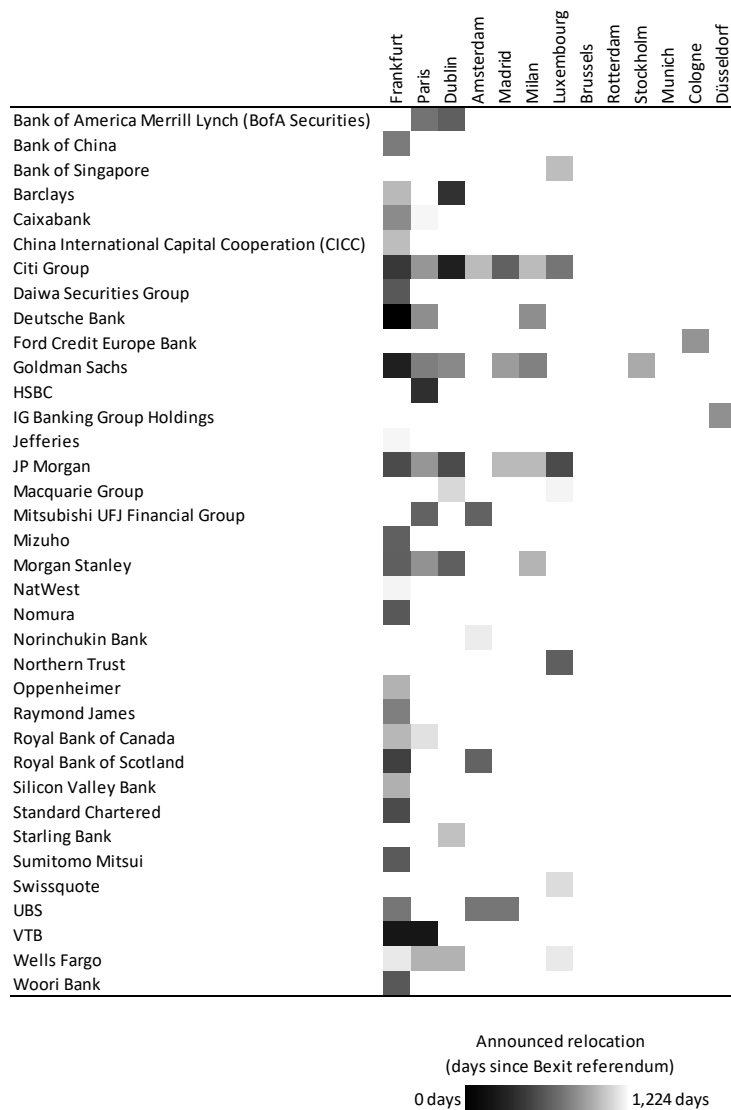


Figure 2: Relocation decisions of banks differentiating by locational choice and timing

tion decisions. Instead, the only condition is that relocation decisions that have been taken at similar points in time are also reported at similar times.

4 Results

4.1 Size, specialization, and relocation choice

Figure 1 reveals that specialization and size of FSFs both affect their relocation decisions. It shows that in the period between June 2016 and November 2019, asset management firms and insurance companies chose Dublin and Luxembourg, auxiliary financial services opted for Amsterdam, and supporting industries chose Dublin as their main destination according to their announcements. In contrast, banks

focused on Frankfurt but also on other destinations such as Paris and Dublin. Existing studies confirm the association between a financial center's specialization and the number of FSFs with such specialization announcing relocations to these centers (Panitz & Glückler 2022). These specialization effects are mainly driven by relocation strategies following the logic of least necessary relocations and relocations following existing specialization advantages. This in turn reproduces and partially deepens existing specializations of the main FCs in the EU (Panitz & Glückler 2022). In other words, we observe an increasing geographical fragmentation and specialization of financial activities across different FCs in the EU (Heneghan & Hall 2021; Van Kerckhoven & Odermatt 2021). Simultaneously, our qualitative research also offers support for these processes and revealed that the majority of FSFs did not close but rather sustain their sites and operations in UK and London.

Being the largest types of firms, banks and insurance companies announced their first relocations with an average lag of 504 days, and 477 respectively, after the Brexit referendum. In contrast, the smaller types of firms such as asset management firms and auxiliary financial service providers announced their first relocations about 100 days later than banks and insurers. A regression using the revenues to explain the timing of the first announcement is negative ($r = -.002$; $R^2 = .04$) and significant ($p < 0.05$). It fits tendencies reported earlier (Panitz & Glückler 2022) that the larger an FSF, the earlier the first announcement of a relocation decision. We also confirm previous observations of an association between size, specialization and the number of destinations chosen (Panitz & Glückler 2022). On average, banks announced relocations to two destinations, whereas asset management firms, auxiliary financial services, supporting services and insurance companies mostly chose a single destination⁴.

Thus, centripetal forces of existing geographical specialization seem to be driving relocation decisions in these industries. In contrast, banks announced relocations to multiple destinations and so spread their resources more broadly. Banks considered a broader set of location alternatives, which is an underlying requirement for a location decision process (see Figure 2).

In other financial industries, the options for location choice were limited, which raises doubts whether there had actually been much choice at all. The small revenue differences between insurance companies and banks underline that there are not just size but also industry effects. These results support our analytical strategy to study relocation decision trajectories of banks as they show a variability in their location choice probably considering various alternatives.

4.2 Competition, connectivity, and relocation decisions

Our aim in this paper is to assess the role of interlocking directorships and competition in relocation decisions. Table 2 reports correlations between competition, interlocking directorships and similar relocation decisions. The strong and significant correlations among the three independently constructed competition variables evidences the consistency as well as the validity of the measures in representing intra-industry competitive relations among FSFs. We find mixed evidence for hypothesis 1 (*H1*). Although the

direction of the correlations supports our conjecture that increasing competition affects dissimilar relocation decision, only one of the three competition variables (based on the annual reports of UBS) also produces significant correlation. In compliance with hypothesis 2 (*H2*), connectivity in interlocking directorships is significantly and positively correlated with competition, hence the more competitive the relation between FSFs the stronger they are connected in the network of interlocking directorships.

Table 2: QAP correlation matrix

	1	2	3	4	5
1 Sectoral Competition (Global Finance)	–	0.582***	0.722***	0.179*	–0.114
2 Competition in Western Europe (Global Finance)		–	0.770***	0.207*	–0.081
3 Competition (UBS)			–	0.325**	–0.133*
4 Connectivity				–	–0.230*
5 Similar relocation decisions					–

Permutations = 5000; Random Seed = 938; No. of observed relations = 1,122

In a next step, we ran a set of MRQAP regressions to further test our hypotheses. Table 3 reports the results of the models that seek to explain similar relocation decisions by the quality of the relationship between all pairs of banks regarding their competition, their similarity of their connectivity, and board composition.

In line with the reported correlations in Table 2, a view on the regression models in Table 3 reveals partial support for hypothesis 1 (*H1*). We found that competition according to the UBS annual report has a negative and significant effect on similar location decisions (M8). Other competition variables have no significant effect on similar location decisions. Nevertheless, the leading signs within the models point to negative correlations between competition and relocation decision (M6 and M7).

We found support for hypothesis 3 (*H3*) that connectivity (M1) in the interlocking directorship networks is negatively associated with the tendency to make similar relocation decisions.

Besides the hypothesized effects of connectivity and competition on dissimilar location decisions, we control for similarities of direct interlocks. As direct interlocks are legally permitted with non-competing firms (outside of the own sector), the variable origin of alters captures if two FSFs are dissimilar in that sense that they have direct relationships to organizations that have different national origins. Model M2 shows that such dissimilarities lead to

⁴ T-test banks vs. other FSFs: Difference in means = .821; $p < .001$.

distinct decision trajectories or in other words, similarities of the alters origins lead to similar decisions.

Additionally, Table 3 includes a series of organizational control variables such as the differences of FSFs' board compositions measured by board members nationality, the FSFs country of origin and the differences in FSFs size (market capitalization). Extant research on internationalization suggests that the diversity and composition of the nationalities of top management affects corporate internationalization decisions (Caligiuri et al. 2004; Nielsen & Nielsen 2010; Pisani et al. 2018). Further, the nationality of the main investors and the concentration of ownership have been found to play a role in preventing relocation to other countries (Birkinshaw et al. 2006). However, we did not find indications that the nationality of the FSFs and their board members affect relocation decisions (*M4*, *M5*) while *M3* suggests that size differences lead to distinct relocation decisions.

Model *M9* includes all individually significant variables and reveals that almost all individual effects lose their significance while the effect of connectivity remains stable and so lends support for hypothesis *H3*: The higher the connectivity between two firms in the same industry in the network of board interlocks the more likely are these firms to make different relocation decisions. We interpret this effect in the following way. We argue that in obtaining information on the locational behavior of competitors through network connections, banks choose to reduce locational rivalry and so opt for different locations. In our calculations, especially the banks with the highest interconnectivity between each other such as HSBC, Citi Group, HSBC, Deutsche Bank, or the Royal Bank of Scotland were involved in well-known collusion scandals as the Forex or the Libor scandal (Treanor 2015; Yun Chee & Ridley 2019). Acknowledging that regulators are aware of the potential of information exchange among competitors through interlocking directorships, FSFs might avoid choosing this practice of direct communication through interlocks for illegal collusion. There have been many legal alternatives such as public and non-public industry events or relocation announcements in the media to collect information about the competitor's relocation decisions in times of Brexit. Nevertheless, we see that connectivity in interlocking directorate networks is related to competition and connectivity as a common issue in financial services.

"Even if we no longer have a Deutschland AG now. There is always a platform for exchange. [...] Even with you, there will certainly be a circle of colleagues who have known each other for years. I think that's no different here. Because especially in the foreign banking sector we can also say that many times. There is already a regular exchange or a change between managers. That one has also worked there or here. It's also a network, somewhere. So yes,

somewhere you are a competitor, but for [here] I can say, somewhere it always amazes me who has already worked with whom."
(Representative of an industrial association, April 2018)

We interpret difference in location decisions among competitors as organizational behavior in search of reducing rivalry for limited localized resources. This problem was also highlighted in the media, e. g. regarding the limited office space and the number of international schools in Frankfurt and Dublin (Bisserbe & Kowsmann 2018; Martin 2017) even in advance of the Brexit referendum (Independent 2015). Especially banks chose multiple locations within the EU as a response to Brexit. Even within the boundaries of their own organization, banks did not seek for the agglomeration of all functions and competencies necessary for the EU business in a single location. According to media reports, for instance, JP Morgan Chase started buying and renting office spaces in Dublin, Frankfurt and Paris (Dugdale 2017; Morris & Pooler 2020; Reuters 2017) because of Brexit. In other words, it seems that they were aware of the limits of agglomeration benefits as well as the costs for building up a new full-service EU site. This fits the observation that the majority of banks relocated to destinations where they already had significant operations.

5 Conclusion

Building on a unique database of relocation announcements of FSFs from the UK to the EU in the course of Brexit, we analyzed the relation between inter-bank competition, the composition and connectivity of corporate boards of directors in the network of interlocking directorships and relocation decisions. Compared to previous studies on the internationalization of firms, our analysis has benefited from the historical opportunity of Brexit to observe a concentrated wave of multiple relocation decisions within the same industry in a short spell of time. Our findings resonate with earlier research that foresees fragmented geographies of specialized FCs in the post Brexit financial industries in Europe (Heneghan & Hall 2021; Van Kerckhoven & Odermatt 2021; Wójcik et al. 2019).

By focusing on banking, our results suggest that connectivity between banks regarding board interlocks is significantly associated with similar relocation decisions (similarity relocation decisions consider the destinations and timing of relocation announcements). This finding resonates with reports that have evidenced effects of interlocks on the internationalization and management decisions of large US American firms (Ang et al. 2018; Connelly et al. 2011;

Table 3: MRQAP regression.. Dependent variable: Similar relocation decisions (destination and timing)

	M1	M2	M3	M4	M5	M6	M7	M8	M9
Intercept	−2464.6***	−2055.0	−2467.0***	−2751.7***	−2572.0***	2694.208***	−2710.184***	−2690.994***	−1838.48***
Interlocks									
Connectivity	−40.68*								−29.68*
Origins of alters		−31.772**							−22.19*
Organizational attributes									
Diff. Market capitalization			−175.65*						−192.04
Country of origin				113.40					
Diff. board composition (member nationality)					−42.666				
Competition									
Sectoral Competition (Global Finance)						−1635.286			
Competition in Western Europe (Global Finance)							−998.121		
Competition (UBS)								−770.668*	−277.82
R ²	0.05	0.081	0.052	0.001	0.012	0.013	0.006	0.018	0.142
(adj. R ²)	(0.05)	(0.080)	(0.051)	(0.000)	(0.011)	(0.012)	(0.006)	(0.0169)	(0.139)
p	0.017	0.006	0.046	0.219	0.197	0.082	0.161	0.039	0.0035
Observations	1,122	1,122	930	1,122	870	1,122	1,122	1,122	930
Permutations	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Random Seed	767	35	749	683	895	544	140	665	966

Note: All coefficients are unstandardized

Davis 1991). The direction of this relationship, however, is contrary to earlier research: rather than increasing the similarity in location decision, our analysis suggests that higher connectivity between banks reduces the similarity of relocation decision. Acknowledging that connectivity is positively associated with bilateral competition, we interpret dissimilar relocation decisions as the outcome of a behavior that avoids competition for limited localized resources at the few destination alternatives of European banking centers (Panitz & Glückler 2022). Hence, we conjecture that connectivity serves as a variable that mediates the relation between competition and location decisions.

Rather than expecting further agglomeration among competitors, our analysis supports the argument that locally limited resources (human capital, office space) and different customer bases are drivers that run counter agglomeration and instead foster spatial segmentation between the European financial centers. However, because most banks have relocated only a small part of their workforce to new locations in the EU, most human capital has remained in London. Hence, banks still have access to infrastructure, networks, and the banking community in London. In

other words, London has not been replaced and remains resilient in its function for financial exchange (Kalaitzake 2022). Whereas the relocation of a few hundred or thousand employees has only a small impact on a global financial center such as London with more than 700 thousand employees in financial services, it has a much higher impact on the competition for localized resources in a smaller financial center such as Luxembourg (Panitz & Glückler 2022: 130).

This study faces some limitations. Our primary data on relocation decision comes from relocation announcements in the media that cannot guarantee an ideal reconstruction and thus a perfect sequence of the relocation decisions. Therefore, we could not use sequential event models that would allow to test if previous decisions of a competitor influence current decisions of a firm. Further, we focused on the relocations of banks. Banks are rather large FSFs that choose multiple relocation destinations. Other types of FSFs show distinct relocation structures with concentrated relocations to specific locations. In other words, we must acknowledge industrial contexts to understand relocation decisions of firms. Regarding the board interlocks, we

assume direct and indirect information exchanges among directors where we are unable to observe them directly. Finally, we could not control for other factors that potentially shape the social relations among board directors such as joint memberships in business associations, the usage of the same office rooms or former education at the same university or school.

Our results show that individually each neither of the remaining post-Brexit financial centers within the EU can offer enough resources to all relocating FSFs. Therefore, it is not surprising that some voices discuss the potential of collaborative relationships between the different financial centers in the EU forming a united digital or networked European financial center (Donnelly 2022; Wuermeling 2018).

As this work has focused on the role of interlocking directorates in relocation decisions, we encourage future research to include additional forms of relationships among decision makers in their analysis of corporate decision-making on location choice and relocation. Qualitative insights suggest that common socialization, e. g. similar education and employment experience, can create relationships that are used to coordinate actions between competitors and influence decision-making.

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7 Appendix

Table A1: MRQAP regression – dependent variable connectivity

	M1	M2	M3	M4
Intercept	5.271***	5.939***	5.443***	6.043***
Sectoral Competition (Global Finance)	0.295	4.328		
Competition in Western Europe (Global Finance)	15.811**	15.726**		
Competition (UBS)			9.795**	10.597**
Absolute difference of market capitalization (USD) std.	1.602		1.229	
Product of market capitalization (USD) – std.	1.388*		1.214*	
Abs. difference of revenues (USD) – std.		0.179		–0.052
Product of revenues (USD) – std.		0.048*		0.198
R ²	0.096	0.068	0.132	0.106
(adj. R ²)	(0.092)	(0.065)	(0.130)	(0.104)
p	0.005	0.007	0.002	0.002
Observations	930	1,122	1,122	1,122
Permutations	2,000	2,000	2,000	2,000
Random Seed	142	677	639	749