Ships and Relation-ships

Tie Formation in the Sector of Service Intermediaries in Shipping

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La tempête a béni mes éveils maritimes
Plus léger qu'un bouchon j'ai dansé sur les flots
— Arthur Rimbaud, Le bateau ivre

Longest way round is the shortest way home
— James Joyce, Ulysses

A journey has come to an end. There is a list of passengers and allied sailors, to whom I feel grateful and without whom, I definitely wouldn't be, more or less safe and sound, ashore now. A spoiler alert: souls sensitive to maritime metaphors better skip this part, the audacious others please bear with my *licencia poetica*.

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Agnieszka

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EXECUTIVE SUMMARY ENGLISH

The aim of the dissertation is to shed light on the complex determinants of tie formation. Extant research has linked similarity and dissimilarity (respectively homophily and heterophily) and different proximities types to the likelihood of tie formation in a linear way. However, there are significant differences in how ties form depending on 1) tie characteristics (formal vs informal), 2) group belonging (female vs. male), 3) types of proximities involved and their interplay, 4) temporal dynamics. Therefore, to fill gaps in the literature, this dissertation addresses the question on how the likelihood of tie formation is correlated with 1) the interplay of geographical and industry space proximities in formal inter-firm ties over time, 2) organizational and geographical proximity in case of formal employer-employee ties after organizational failure 3) gender homophily for females and males in case of informal employee-employee ties. I use the empirical setting of service intermediaries: shipbrokers and bunker traders, in the international shipping industry. My methodological approach includes mixed (qualitative and quantitative) methods and a quasi-natural experiment. The dissertation comprises three empirical studies that address the research questions outlined. The dissertation's main contribution lies in demonstrating the complexity of tie determinants. The first chapter explains the premises, gap, empirical setting, methods and contribution of this dissertation. The following chapter (Chapter 2) analyses the role and interplay of geographical proximity and buyers' types (such as competitors) for the tie formation in formal inter-firm transactions in shipbroking. I find that the effect of geographical proximity does not significantly correlate with tie formation between the focal shipbroker firm and the buyers, it however positively moderates the lower likelihood of dealing with competitors. This finding is explained with co-opetition (simultaneous pursuit of cooperation and competition) in local clusters of service firms. Chapter 3 studies the unexpected and exogenous organizational failure following a fraud and its effects on the status change of displaced employees transitioning into new employment. While there is no generalized stigma in the studied setting, employees organizationally and geographically proximate to the pivot of the failure are more prone to a status loss in guise of lower level jobs or jobs at lower status firms. The mechanisms that explains such a systematic pattern of status loss is blame. Similar to stigma by its spillover effects, it operates however less spread therefore, in contrast to stigma's "wide brush", the blame taints with a "pointed brush". Further, Chapter 4 analyses the differential effects of gender homophily for females and males on the likelihood of

co-mobility: while male dyads are more likely to be co-mobile, female dyads are less likely to be co-mobile. By further investigating possible underlying mechanisms, the chapter finds a strong support for labor market discrimination driving the results for female dyads.

DANSK SAMMENDRAG

Formålet med denne afhandling er at kaste lys på de komplekse faktorer der driver dannelsen af relationer. Eksisterende forskning har påvist at ligheder, forskelligheder og forskellige typer proksimitet påvirker sandsynligheden for dannelse af relationer. Der er imidlertid markante forskelle på hvordan relationer opstår. Dannelsen af relationer afhænger således af (1) relationens karakteristika (formelle eller uformelle relationer), (2) gruppe tilhørsforhold (kvinder eller mænd), (3) forskellige typer af proksimitet (geografisk eller industriel) og (4) tidsdynamikker. Denne afhandling udfylder et hul i den eksisterende forskning ved at undersøge; (1) betydningen af geografisk og industriel proksimitet for dannelsen af relationer mellem virksomheder over tid, (2) betydningen af organisatorisk og geografisk proksimitet for dannelsen af arbejdsgiver-arbejdstager relationer efter en virksomhedslukning og (3) betydningen af kønssammensætning for etablering af uformelle relationer mellem kolleger. Empirisk bygger afhandlingen på studier af skibsmæglere og brændstofsleverandører indenfor shippingindustrien. Metodisk benyttes en kombination af kvalitative og kvantitative studier samt et kvasi-naturligt eksperiment. Afhandlingen består af tre empiriske studier der undersøger de ovenstående forskningsspørgsmål. Afhandlingens hovedbidrag er at vise kompleksiteten ved relationsdannelser. I det første kapitel redegøres der for forudsætninger, huller i den eksisterende forskning, det empiriske grundlag, metode og afhandlingens hovedbidrag. I kapitel 2 analyseres betydningen og samspillet mellem geografisk proksimitet og industriel proksimitet for dannelse af formelle relationer mellem skibsmægler virksomheder. Dette studie viser, at geografisk proksimitet ikke påvirker dannelsen af relationer mellem den pågældende skibsmæglervirksomhed og dens kunder. Til gengæld viser studiet at geografisk proksimitet øger sandsynligheden for at danne relationer til konkurrerende skibsmæglere. Forklaringen på resultatet skal findes i co-opetition (hvor man samarbejder og konkurrerer på samme tid) i lokale klynger af service virksomheder. Kapitel 3 undersøger en uventet og udefrakommende virksomhedslukning som følge af svindel, med henblik på, hvordan denne begivenhed påvirker medarbejdernes status når de skifter til andre jobs. I studiet kan der ikke påvises en generel stigmatisering af virksomhedens ex-medarbejdere. Til gengæld viser det sig, at de medarbejdere der har tæt geografisk og organisatorisk tilknytning til det datterselskab hvor svindlen blev foretaget har større risiko for tab af status i form af degradering eller ansættelse i virksomheder med lavere status. Dette mønster skal forklares via en skylds-mekanisme. Denne mekanisme fungerer grundlæggende på samme måde som stigmatisering. Men i modsætning til

stigmatiserings-mekanismen som rammer bredt, er skyld-mekanismen kendetegnet ved at ramme meget præcist. I kapitel 4 analyseres det hvordan kønssammensætning påvirker sandsynligheden for co-mobilitet. Studiet påviser at to mænd har større sandsynlighed for at være co-mobile end to kvinder. Yderligere studier af de underliggende mekanismer peger på, at årsagen til dette skal findes i diskrimination af kvinder på arbejdsmarkedet.

CONTENT

CHAPTER 1:INTRODUCTION

1. Theory and gap

Social ties that firm or individuals form respectively with other firms or individuals are direct antecedent of performance (Blyler & Coff, 2003; Leana & Pil, 2014; Moran, 2005). Such ties alleviate the issue of scarce resources and allow firms and individuals to access and exchange a variety of resources. While scholars have dedicated a significant amount of attention to study the link between social ties and performance, the determinants of social ties remain understudied. I propose that it is crucial to expand our knowledge on the determinants of ties, in order to understand whether and under which circumstances a tie is likely to be created at all. With this purpose, I shift the focus to the determinants of ties and processes underlying the tie formation.

Network theory has pointed to two general mechanisms of tie formation: assortative and proximity mechanisms (Rivera, Soderstrom, & Uzzi, 2010). These two types of mechanisms have subsequently received a lot of scholarly attention within network theory and economic geography literatures respectively. First, assortative mechanisms based on similarity or dissimilarity (so-called homophily and heterophily) are prominent in network theory (Dahlander & McFarland, 2013; Kossinets & Watts, 2009; McPherson & Smith-Lovin, 1987; McPherson, Smith-Lovin, & Cook, 2001). Similarity between firms or individuals is shown to increase the likelihood of tie formation because, among other things, of the shared codes and norms. It triggers an ease of connecting to others and improves the flow of resources. On the other hand, heterophily drives the likelihood of tie formation because some degree of dissimilarity helps overcoming resource constraints and exploit the underlying complementarities (Rivera et al, 2010).

The notion of proximity mechanisms posits that geographical proximity, or co-location increases the likelihood of tie formation. In the presence of co-location, individuals or firms are likely to form ties because of random encounters (Blau, 1977). Economic geographers have further expanded the studies of proximity mechanisms and have used instead of a binary measure of similarity, dissimilarity, or shared geographical location the degree to which firms or individuals share a set of characteristics. They have also expanded the proximity framework by adding different types of proximity along with the social proximity, based on existing former ties, or institutional proximity, present in case of a shared institutional environment (Boschma,

2005). They have linked such different types of proximities to outcomes such as formation of ties in collaborations (Balland, 2012; Ter Wal, 2009, 2013).

However, the extant network and economic geography literatures have focused primarily on establishing a linear relation between homophily, or degree of proximity, and tie formation. It is precisely such a linear relation between homophily or proximities and tie formation that has recently been subject to a debate.

First, the type of relation between a determinant such as homophily or proximity and the likelihood of tie formation hinges on type of ties formed. As such, the drivers of ties may differ depending whether or not such ties are formal or informal. Even though the extant literature has studied informal individual ties (Dahl & Pedersen, 2004), formal individual-firm ties (Bidwell & Briscoe, 2010; Somaya, Williamson, & Lorinkova, 2008), formal inter-firm relations (Dyer, 2002; J. Dyer & Singh, 1998; Li, Poppo, & Zhou, 2010; Mudambi & Helper, 1998), a thorough analysis of tie determinants as a function of formal and informal ties is missing.

Second, depending on the type of homophily or proximity, the relation to tie formation is not always clear-cut. For instance, homophily may operate differently based on group belonging, such as gender (Brands & Kilduff, 2014; Faggian, Mccann, & Sheppard, 2007). There are indeed significant differences between women and man in the ways they build their respective professional and friendship networks (Becker-Blease & Sohl, 2007; Ibarra, 1992).

Moreover, different types of proximities often relate to each other. The co-existence of two types of proximities finds its illustration for example in the “neighborhood effect” (Malmberg & Maskell, 2006). The effect stipulates that neighbors (individual or firms) are more likely to form ties to each other by the sole fact of being in a convenient, proximate location. The question of how proximities relate to each other, and whether they display a complementing or substituting effect has been brought to the research agenda (Boschma, 2005). Scholars have subsequently voiced the need and started empirical studies to disentangle the interrelations between various types of proximity and how such interplay affects the tie formation (Hansen, 2014; Huber, 2012; Torre & Rallet, 2005).

Finally, ties are not equally likely to be formed at different moments in time. Ter Wal (2013) has convincingly demonstrated that industry change affects the types of ties that are being formed. Consequently, the role of tie determinants is likely to change as well over time.

To sum up, the research agenda has moved beyond linking homophily and proximities to the likelihood of tie formation linearly and, instead, has shifted to a fine-grained understanding of i) determinants of formal and informal ties, ii) the contingencies and different effects of homophily based on a particular group-dependence, iii) interrelations between proximities, and iv) temporal dynamics of tie determinants. Consequently, this dissertation takes up the task to study complex determinants of tie formation. I particularly aim at answering scholars' call and disentangle the interrelations between various types of proximity, elucidate the differential effects of gender homophily, temporal dynamics and contingencies of these in formal inter-firm and individual-firm ties and informal individual ties.

2. Empirical setting and industry selection

In order to study the complex determinants of tie formation, I empirically turn to the shipping industry, which is the oldest truly international industry. This industry enables international trade by providing transportation service for goods. The owners or operators of ships are the main actors in the industry (Stopford, 2009). However, in order to provide a timely and high-quality service, they rely on a wide range of third parties. These parties, among which shipping intermediaries, are crucial in the maritime supply chain (Schramm, 2012). Numbers of such shipping intermediaries are continuously growing (Panayides Gray, 1997; Sornn-Friese & Hansen, 2012), which reflects their importance for the whole industry. Among different types of shipping intermediaries, shipbrokers and bunker traders are prominent.

Shipbrokers are matchmakers who match suppliers in possession of a capacity on a ship, such as ship owners or operators, with buyers such as other ship operators or buyers external to the industry and active in a variety of industries from grain to minerals' production.

Bunker traders are market makers: they buy on their own account the fuel for ships, or bunker, from suppliers and find a relevant buyer.

Figure 1 a and Figure 1b below provide a visual illustration of the position of, respectively, shipbrokers and bunker traders in the value chain along with other relevant counterparties.

******* Insert Figure 1a and Figure 1b about here *******

There are four reasons why I have chosen the shipbroking and bunker trading industries as empirical context for my study.

First, shipping, along with shipbrokers and bunker traders, is globally distributed: parties cluster in hubs where the shipping activity is the most intensive. This provides an interesting heterogeneity to study geographical proximity as a determinant of tie formation. Firms in the shipping industry are, moreover, heavily internationalized. This characteristic allows me to study the variation in the likelihood of tie formation based on individual affiliation to different organizational subsidiaries in specific locations worldwide. Third, both settings entail an important heterogeneity of actors. In shipbroking, relations are being formed between a shipbroker firm, ship owners and operators, cargo owners and other shipbrokers. This particularity of intermediation allows me to carry out an in-depth study of various types of proximities between firms from different industries (shipbroker-cargo owner) as well as the effect of competition (shipbroker-shipbroker) and how these affect the likelihood of tie formation. Last but not least, in both empirical settings, firms rely strongly on social ties, both formal and informal. This characteristic allows me to use the variation in these two types of ties created over time as the dependent variable.

3. Methods

In my study of complex determinants of tie formation, I use two types of data commonly used in network theory and economic geography: inter-firm exchange, such as inter-firm transactions (Bidwell & Fernandez-Mateo, 2010; Elfenbein & Zenger, 2014), and employees mobility and co-mobility (Corredoira & Rosenkopf, 2010; Groysberg, Lee, & Nanda, 2008; Marx & Timmermans, 2017; Mawdsley & Somaya, 2015; Rosenkopf & Almeida, 2003; Somaya et al., 2008). The remainder of this section provides the explanation and characteristics of the methods used along with their advantages. It then proceeds on the description of the data sets used.

I use two different data sets leveraged in order to study formation of ties. Both data sets originate from single firms and are used either for purely quantitative or mixed methods case studies. Aiming at understanding what drives the formation of ties requires fine-grained, longitudinal data. I therefore deliberately sacrificed the breadth of the study (such as offered by cross-sectional studies) aiming at exploiting the depth of the information, strategy outlined by Bidwell & Fernandez-Mateo (2010). Such approach is also very much in line with methods used in network studies (Marsden, 1990) and is dictated by pragmatic reasons outlined below.

Scholars have voiced the need to employ case studies since many decade now (Berends, van Burg, & van Raaij, 2011; Capaldo, 2007). They have highlighted that case studies allow for in-depth observation of temporal dynamics (Dyer, 2002; Lorenzoni & Lipparini, 1999). My dissertation complies with such call on integrating the time dimension, typically absent in cross-sectional studies. Moreover, one-firm studies alleviate some issues linked with potential biases. One of such biases is the one related to *"respondents (being) unable to give useful data on the exact timing of interactions"* (Marsden, 1990). Another one, a strong-tie bias arises due to self-reporting of mostly strong ties, systematically omitting weak ties. Last one is the bias linked to attributing micro-motivations of individuals to macro-organizations, also called "cross-level fallacy" (Rousseau, 1985).

The first data set includes a detailed list of transactions between employees of a shipbroker firm and different buyers, through 3 years of the firm's activity, ending before a hostile takeover of the firm.

The other data set includes in-depth micro-level information on individual career trajectories of front desk employees from a major bunker trading firm that went bankrupt overnight following a fraud. I use this data set to study employees' mobility and ties they form to new employers. Based on the individual data, I also compute a dyadic data set and use it to study employees' joint moves to new employment (co-mobility). I use the specific context of organizational failure as a quasi-natural experiment. This offers me a rare opportunity of causally linking the change in the dependent variable to the very effect of the organizational failure. Even though I cannot entirely rule out that the subsequent (employee-employer or employee-employee) matching process of tie formation is endogenous, I use the exogenous shock of organizational failure as an identification strategy aiming to alleviate the issue of endogeneity in tie formation.

On the top of the quantitative data, I also use inputs from interviews conducted with the shipbroker firm and their representatives and other interviewees from other shipbroker firms and the industry association (a total of 9 interviews). Moreover, I have conducted 19 qualitative, semi-structured interviews with former front office, trading employees and three with competing firms from the bunker trading industry. The mentioned qualitative data serve me as input for testing specific mechanisms.

4. Structure of the dissertation

Including this introductory chapter, my dissertation consists of four chapters in which I study the complex determinants of tie formation at firm and individual level. The following three chapters consist of individual essays, the first of which is single-authored, the following one is a joint work with Associate Professor Kristina Vaarst Andersen (University of Southern Denmark) and Professor Mark Lorenzen (Copenhagen Business School) and the last one is co-authored with Professor Ram Mudambi (Temple University, Fox School of Business). The remainder of this section provides a summary of the three chapters.

Chapter two: Ships and relationships: geographical proximity, competition and relations in the shipping industry.

This chapter unveils the role and interplay of different types of buyers and geographical proximity on the likelihood of formal inter-firm ties. It uses transactional data from a focal shipbroker firm. While geographical proximity is not a prerequisite for the focal shipbroker to form relations with his buyers, its role unfolds in conjunction with particular type of buyers. While the likelihood of tie formation decreases in case of deals with another shipbroker (competitor), such likelihood is positively moderated in case of local competition. I explain such positive moderating effect of geographical proximity on the likelihood of the tie formation with the dynamics of co-opetition (Bengtsson & Kock, 2000; Dagnino & Padula, 2002). Indeed, a simultaneous pursuit of competition and cooperation is at play in local clusters and for competing service firms such as the case firm. I outline further industry specificities that affect the role and interplay of proximities in this context, such as, specialization, personal relations, but also the very role of service intermediaries to connect parties from different industries.

Chapter three: The broad vs. the pointed brush: Status change, stigma and blame following fast organizational failure.

This chapter uses fine-grained micro data on individual career trajectories to study how employees form formal ties to new employers, in the shadow of an organizational failure with. Contrarily to the extant literature (Jansson, 2016; Semadeni, Cannella, Fraser, & Lee, 2008; Singh, Corner, & Pavlovich, 2015; Sutton & Callahan, 1987), a general stigmatization that imposes a status loss on employees from a failed organization is absent in the context of this study. Stigmatization have been, so far, observed in cases of failure gradual in the decline and aftermath phases (D'Aveni, 1989). We demonstrate that, in case of a fast organizational failure,

on average, displaced employees are not discriminated against by future employers and are likely to find similar of even better jobs. We explain this finding with the speed of failure that, in case of a sudden decline and aftermath, does not allow audiences, such as potential employers, for labelling the displaced employees and stigmatizing them. We find that the characteristics of ties formed by employees, or the extent of status change, depends nonetheless on whether they have been organizationally or geographically close to the pivot of organizational failure. We explain this negative effect and subsequently induced status loss for such particular, narrow group of employees with the mechanism of blame. Blame is similar to stigma as it spills over. However, unlike stigma, the reach of the spill overs is limited and therefore such blame paints with a "pointed", instead of "a broad brush" (Pontikes, Negro, & Rao, 2010).

Chapter four: Gender and co-mobility.

This chapter investigates the effects of gender and gender homophily, on employees' propensity to jointly move into new employment, or co-mobility. The main finding of this chapter pertains to the differential effects of gender homophily. We find that such homophily affects women and men in different ways: while male dyads are, on average, more likely to be co-mobile, the trend is reversed for women. We further test possible underlying mechanisms and explain this finding with a general labor market discrimination of women (Bigelow, Lundmark, McLean Parks, & Wuebker, 2014; Brooks, Huang, Kearney, & Murray, 2014; Hoisl & Mariani, 2017). We also find a partial evidence of same-sex discrimination known as the Queen Bee effect (Derks, Van Laar, Ellemers, & de Groot, 2011; Derks et al., 2011; Mavin, 2008; Staines, Tavris, & Jayaratne, 1974).

Table 1 provides an overview of the three chapters along with their main characteristics.

******* Insert Table 1 about here *******

Figure 2 provides an overview of how the three following chapters complement each other.

******* Insert Figure 2 about here *******

5. Contributions

The main contribution of this dissertation lies in unveiling the complex relations between the determinants of tie formation. More precisely, I study (i) how formal inter-firm relations are

a function of different dimensions and interplay of proximities, (ii) how displaced employees form formal ties to new employers in the wake of an organizational failure and how employees' subsequent status change is a function of proximity to the pivot of such failure, (iii) how employees' co-mobility is a function of gender and how gender homophily operates differently for women and men.

I make these contributions to the extant research through answering three separate research questions corresponding to each of the following chapters:

- How do different types of buyers, including competitors and their respective interplay with geographical proximity affect the likelihood of tie formation?
- How does a fast organizational failure affect the status change (tie to a new employer) in case of displaced employees? How is the status change affected in the specific case of individuals in organizational and geographical proximity to the pivot of organizational failure?
- How does gender homophily affect the likelihood of co-mobility for women and man?

Table 2 below provides a summary of this thesis' contribution according to the specific gaps in the network and economic geography literature.

******* Insert Table 2 about here *******

I methodically link various types or proximities or homophily to the likelihood of tie formation. Extant literature has found that in context of formal ties, such as alliances of inter-firm transactions, proximities reduce transaction costs (Storper & Venables, 2004) and enable relational transacting (Williamson, 1979) decreasing the risk of partners' opportunistic behavior. I therefore use various types of proximity (such as geographical proximity), different types of buyers (proximity in the industry space) or organizational and geographical proximity while studying formal inter-firm or individual-firm ties. In contrast, homophily has been studied in informal, individual ties (Rivera et al., 2010) and, I accordingly the gender homophily as determinant of employees' co-mobility, an instance of informal tie formation.

The dissertation has some practical implications in fields such as strategic choice of buyers (analyzed in the Chapter 2) or policy implication in the context of labor market discrimination of women (demonstrated in the Chapter 4).

6. Conclusion and avenues for future research

This dissertation has unveiled that the determinants of ties are complex, often interrelated or simply displaying opposite trends, such as it is the case of gender homophily between women and men.

These determinants are context and industry specific: as illustrated in the Chapter 2, the structure of the value chain and the international character of the industry may affect the ways in which the proximities (buyer type and geographical proximity) interact. Similarly, the Chapter 4 has demonstrated that stigma is absent in case of a fast organizational failure, but that the blame mechanism will affect the individuals geographically and organizationally proximate to the pivot of the organizational failure. While studying similar specificities may limit the external validity of particular studies, it entails some benefits. Studying industry specificities extend the range of known mechanisms that underlie tie formation. In this dissertation I have uncovered mechanisms such as co-opetition in a cluster, market discrimination and blame that all affect the likelihood of tie formation. Further research could further expand the range of the mechanisms by studying tie formation in other contexts and industries, complying with a call of integrating the context in the studies of social capital and ties (Leana & Pil, 2014). Some obvious examples of industries that still remain understudied are low-tech industries (Mattes, 2012).

Furthermore, this thesis mainly treats a tie as a binary outcome. Only the second chapter accounts for ties characteristics by studying the extent of status loss. An interesting avenue for future research could, therefore, include unveiling the determinants of tie based on its content, partly in line with the trend of studying multiplex ties (Rogan, 2014).

One of the contributions of this thesis is to study the temporal dynamics of tie formation. I have analyzed the likelihood of tie formation over time with use of traditional econometrical methods such as panel data and modelling of a binary outcome variable. While these, somehow related to gravity models, are appropriate and accepted methods, there are also other, more sophisticated methods allowing to study temporal dynamics of network emergence and change (Broekel, Balland, Burger, & van Oort, 2014). Future research could tackle research questions related to tie formation with use of methods such as stochastic-actor modelling frameworks.

Finally, another avenue for future research could include the use of multi, comparative case studies to improve the generalizability of the studies.

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Figure 1a **Shipbroker in the industry value chain**

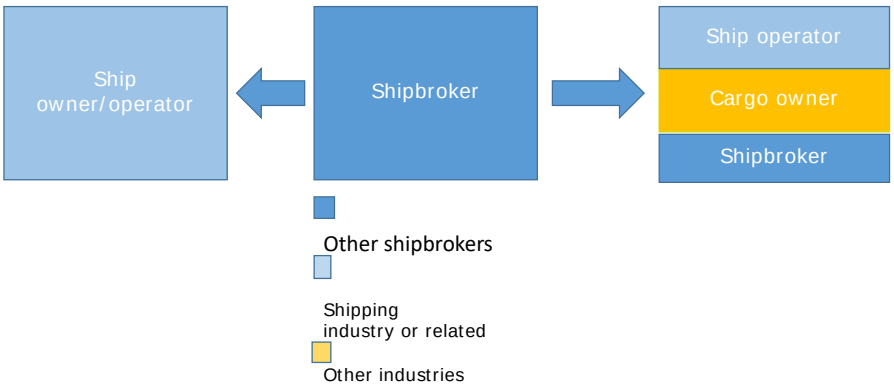

Figure 1b **Bunker trader in the industry value chain**

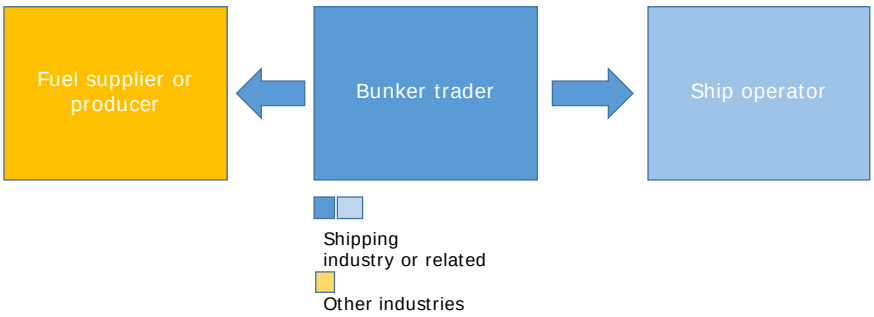

Table 1 Summary of Chapters in the dissertation

Chapter	Dependent Variable	Independent Variable	Level of analysis	Data	Method
2	Likelihood of an inter-firm deal between the focal shipbroker and a buyer	Competitor, shipping firm, external buyer (geographical proximity as moderator)	Inter-firm	486 realized and unrealized deals between 2013-2015, qualitative interviews	Quantitative case study, Logistic regression with fixed effects and multi way clustering (poisson analysis in robustness check)
3	Characteristics of ties formed between displaced employees and new employer after organizational failure (extent of status change)	Ordinal variable denoting the degree of proximity to the pivot of organizational failure (location and organizational subunit: organizational and geographical proximity)	Individual-firm	Quantitative data on career trajectories of 207 former OW Bunker employees, qualitative interviews with 19 former trading employees from OW Bunker and 3 potential and *de facto* employers	Ordinary Least Square regression, Ordered Logit, multinomial Logit
4	Likelihood of co-mobility between former OW Bunker employees transitioning to a common employer	Gender and gender homophily	Individual	Dyadic data set with 17.020 realized and non-realized job moves effectuated by 207 former OW Bunker employees	Logit with error clustered at dyad or multi way clustering (different variants of the data set used in robustness checks)

Figure 2 **Interrelations between different Chapters of the dissertation**

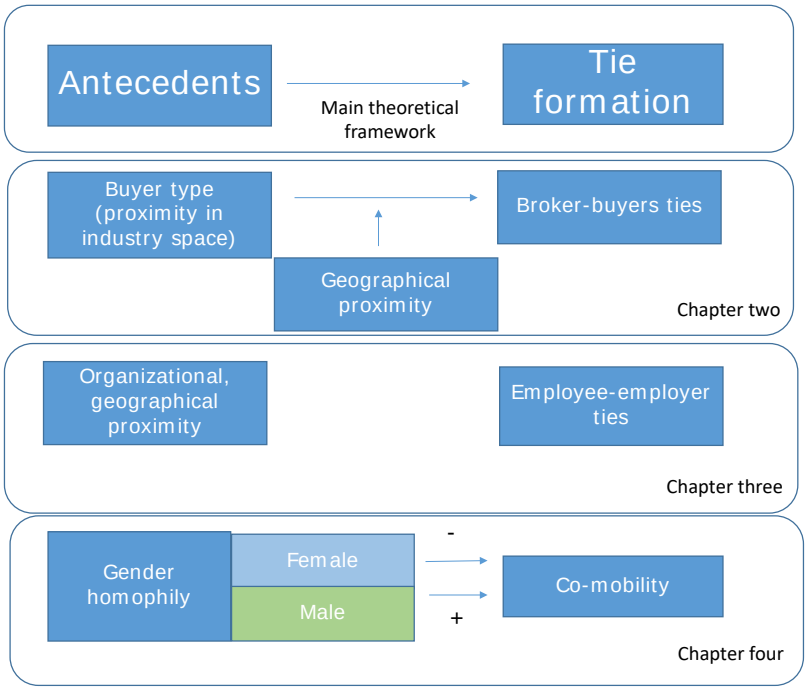

Table 2 Summary of the thesis' contribution

Element of contribution/gap in the extant literature	**Implementation**	**Chapter of the dissertation**
Different type of ties such as formal and informal	Study of respectively inter-firm relations and individual-employers ties in guise of formal ties Study of co-mobility of employee-employee tie	Chapter 2, Chapter 3 Chapter 4
Interrelations of proximities (Boschma, 2005; Hansen, 2014; Huber, 2012; Torre & Rallet, 2005)	Shipbroker-buyer relations as a function of the interplay of proximities (buyer type and geographical proximity)	Chapter 2
Differential effects of homophily (Ibarra, 1993; Kleinbaum, Stuart, & Tushman, 2013)	Co-mobility as a function of gender homophily for men and women	Chapter 4
Effects of proximities on tie formation – temporal dynamics (Ter Wal, 2009)	Study of broker-buyer relations with transactional panel data	Chapter 2

CHAPTER 2: SHIPS AND RELATIONSHIPS: COMPETITION, GEOGRAPHICAL PROXIMITY AND RELATIONS IN THE SHIPPING INDUSTRY

ABSTRACT

Extant literature has demonstrated persistent positive effects of geographic and cognitive proximity (or proximity in the industry space) on the propensity to form relationships. Recently, scholars have started analyzing the interplay of such proximities and its effects on the likelihood of relationship formation. The extant research hasn't however addressed possible industry specificities and how these may affect the role of geographical proximity and its interplay with others proximity types. In this study I fill in this gap by studying the role of geographical proximity, different buyers' types, with a focus on competitors, and their interplay in the context of relationships. I use international shipping industry where shipbrokers deal with other shipbrokers, but also ship owners, operators and external buyers as the setting of my study. Based on qualitative interviews and a quantitative analysis, I find a boundary condition of the positive effect of geographical proximity and the proximity in the industry space. In my setting, the geographical proximity is not a prerequisite for partners to form relationships. Shipbrokers are also on average more likely to form new deals with buyers external to the industry, as compared to the shipping parties or competitors. However, geographical proximity positively moderates the likelihood of dealing with competitors, which is comparatively more likely locally. I explain this finding with the mechanism of co-opetition, that posits that competitors co-opete, or simultaneously cooperate and compete, especially within local clusters.

1. Introduction

Scholars have distinguished between geographical, cognitive, organizational, institutional, social and (Boschma 2005). Along with such distinctions, theoretical and empirical studies have sought to uncover how these proximities alone and also how the interplay of these various types of proximities affect organizational outcomes (Hansen, 2014; Huber, 2012; Torre & Rallet, 2005) and formation and persistence of inter-firm relations (Balland, 2012; Balland, De Vaan, & Boschma, 2013; Bercovitz & Feldman, 2011; Broekel, 2015; Dahlander & McFarland, 2013; Rivera, Soderstrom, & Uzzi, 2010). The overall finding of these studies is that the geographical proximity correlates positively with the likelihood of forming relations. The cognitive proximity displays a similar trend and both these proximity types are found to be substitutes (Hansen, 2014). Nonetheless, this extant literature has remained silent upon particular industry specificities and how these may affect the studied effect and interplay of proximities on the formation of relations.

I aim at filling in this gap and, for this purpose, study the international shipping industry, and more specifically shipbrokers, which are a specific kind of service intermediaries within this industry. I first use nine qualitative interviews with different industry representatives and representatives of industry related association and a regulatory body to shed light on relevant industry characteristics.

The qualitative interviews unveil the heterogeneity of buyers and the importance of buyers external to the industry (cargo owners) and frequent dealing with other shipbrokers (competitors) within shipbroking. The interviews also advance an insignificant role of geographical proximity, which is not a *sine equa non* condition for forming relationships with buyers.

I further use longitudinal data to study the role and interplay of geographical proximity and proximity in the industry space (buyer's types). The data consists of deals closed between one shipbroking firm and their buyers. The quantitative analysis provides a further evidence that challenges the extant literature. First, geographical proximity does not significantly correlate with the likelihood of relations between the focal shipbroker and buyers. Second, the proximity in industry space (such as between direct competitors) correlates negatively with the likelihood of relations. The role of geographical proximity is however activated and salient in conjunction with the other type of proximity. Indeed, dealing with a local competitor, as compared with any

competitor elsewhere in the world, becomes more likely. I explain all findings with industry specificities. Its international character, industry structure ("discontinuous" and qualitative differences between shipbrokers and shipping parties in Europe, America and Asia), but also the prominence of personal relations, that rely of "temporal geographical proximity"(Torre & Rallet, 2005) invalidate the role of geographical proximity. Moreover, the fact the shipbrokers' role is precisely to span the boundaries of the industry (such as by connecting to cargo owners) underlies the finding on a negative effect of proximity in the industry space on the likelihood of relations. Finally, the moderating effect of geographical proximity on the proximity in the industry space is explained with co-opetition within local cluster and exclusive and semi-exclusive characters of shipbroker's relations to some buyers.

My findings extend the understanding of the role and interplay of proximities by including industry specificities, so far overlooked by scholars. My findings offer also specific managerial implications for strategic partner selection. Beyond targeting buyers outside their own industry, dealing with local, as opposed to global, competitors increases the focal ship-broker's propensity to form relations.

2. Theoretical development: Proximities and relationships

a. Geographical or spatial proximity

Various studies have investigated how geographical proximity matters for organizations. Such studies first unveiled that co-location fosters knowledge spillovers (Jaffe, 1989). As a result, the performance of co-located actors is likely to be affected in positive way. Scholars have further emphasized the role of geographical proximity in generating alternative dimensions of proximity, such as social proximity, through a "neighborhood effect"(Caniëls, Kronenberg, & Werker, 2014; Malmberg & Maskell, 2006; Maskell & Malmberg, 1999). Accordingly, the co-located firms become socially proximate simply because of their convenient geographical location. Analogously, geographical proximity, through the effect of random encounters, is also regarded as an antecedent of tie formation and, to a lesser extent, tie persistence in the network theory (Dahlander & McFarland, 2013; Rivera et al., 2010). Consistent with this careful stance and the skepticism of the network studies on social ties, general criticism on the predominance of geographical, or spatial, proximity has recently been voiced. Accordingly, scholars have documented the existence of globally spread knowledge networks (Bercovitz & Feldman, 2011), where ties and exchange of knowledge and learning happen in absence of co-location. Existing relations may be sustained and new ones formed thanks to mechanisns such as temporary co-

location (Torre & Rallet, 2005) or mobility. As a result, scholars have turned their attention to alternative, non-geographical dimensions of proximity, such as cognitive or social proximity (Boschma, 2005), along with their links to organizational outcomes and tie formation and persistence.

b. Cognitive proximity and industry space

Cognitive proximity relates primarily to parties' areas of expertise. At the individual level it is traditionally associated with education levels that enable partners' efficient learning (Boschma, 2005; Werker, Ooms, & Caniëls, 2014). It is generally regarded as positive and correlating with higher likelihood of knowledge transfer and tie formation. Nevertheless, Dahlander and McFarland (2013) have demonstrated that too high a degree of knowledge overlap may actually be detrimental for either the propensity to form ties or for individual performance. Cognitive proximity, at firm level, may stem from a particular industry affiliation. Reflecting the findings of the effects of knowledge overlap at the individual level, Rivera et al. (2010) have asserted that formal and informal inter-firm relations, such as alliances, benefit from a limited overlap in expertise. Concepts similar to cognitive proximity have been also formulated at the industry level. Neffke and Henning (2013, 2008) have proposed the notion of a scale of industries based on firms' technological relatedness, often measured as the number of common products in firm portfolios or the mobility of employees.[1] Such a scale, also called "industry space" (Neffke, Henning, & Boschma, 2011), emphasizes a minimum extent of diversity between industries, firms, and individuals. It highlights the role of complementarity and interdependence (Gulati & Gargiulo, 1999) between different industries and organizations, which access complementary capabilities or resources from their partners. The interdependence arises between firms from various "niches" and determines the likelihood of inter-firm relations (Nohria & Garcia-Pont, 1991). Two firms with a limited resource overlap, and thus high interdependence, will be more likely to connect in order to overcome scarcity. Along these lines, recent investigations of non-spatial dimensions of proximity, such as cognitive proximity, unveiled the "proximity paradox" (Boschma & Frenken, 2010; Broekel & Boschma, 2012). The "proximity paradox" posits that the general positive effects of proximity on performance may be inverted once a certain threshold is exceeded. In particular, the cognitive dimension of proximity has been shown to be the source of such a paradox (Huber 2012). Similar effects may be present in clusters, where firms from the same or related industry are co-located (Marshall, 1920; Porter,

[1] Similarly, Messeni (2011) and Orlando (2004) referred to technological proximity to denote various industry affiliations (based on 4-digit industry classification).

1998). On the one hand, such firms have access to knowledge sharing and external scale economies; on the other, they risk a "lock-in" effect in the case of too much knowledge overlap.

c. Interrelationship of proximities

The cognitive proximity does not operate independently. It may interrelate with others, non-spatial proximities, such as social proximity. An interplay exists however, more importantly, in relation to the spatial proximity. There is a growing interest among scholars in studying such interplay of various types of proximities, theoretically (Torre and Rallet 2005) and empirically with a particular focus on the cognitive proximity and geographical proximity (Hansen, 2014; Heringa, Hessels, & Zouwen, 2016; Huber, 2012). As an example, in the latter, empirical studies, scholars have found the existence of a substituting effect between geographical and both: cognitive and social proximity (Hansen, 2014) and have pointed to potential complementing effects of some proximities types (such as social and geographical proximities). Accordingly, the low likelihood of forming ties in absence of geographical proximity, is moderated if parties are either cognitively similar or socially proximate. The empirical evidence in this particular field remains still scarce, especially outside of traditionally studied high-tech, or knowledge-intensive industries. Indeed, scholars have overlooked the role that industry specificities may play in affecting the role and interplay of different types of proximities on the likelihood of tie formation. In the present study, I aim to fill this gap and contribute to the literature on the role and interplay of proximities in international shipping industry. I accordingly study the role and interplay of geographical proximity, types of buyers', with a focus on competition, in the context of relations.

3. Methods

The purpose of this paper is to understand the role and interplay of different types of proximities on the likelihood of tie formation within a particular industry setting. For this purpose I have undertaken a qualitative work that allows me to unveil specific, understudied industry characteristics. Subsequently, I have turned to a quantitative case study of a single ship-broking firm and studied the theoretical aspect of interest.

a. Research setting

My research uses the empirical context of the international shipping industry and shipbroking, a specific kind of service intermediaries in this industry. In today's economies, where between 11.8 and 16.5% of GDP spending is dedicated to logistics (World Bank Group

2005), transport intermediaries,[2] as a subset of service intermediaries, are of particular importance to the economy and its effective functioning.

This paper examines a particular kind of transportation and service intermediary: the shipbroker (Gorton, Ihre, Hillenius, & Sandevärn, 2009) active in the shipping industry. Shipbrokers match vessels with cargoes: they bring together carriers (either ship owners or operators) and charterers (either ship operators or cargo owners) in specific cargo voyages. Such match making improves the market efficiency by regulating the transaction price, speed and decreasing information asymmetry (Pettersen Strandenes, 2000). It is common that a shipbroker is involved in a deal with another shipbroker in order to benefit from the competitor's exclusive relation to a shipping party or a cargo owner. I hereafter refer to the carriers as *sellers* and to the charterers as *buyers.*

Figure 1 illustrates the triad a shipbroker work in along with along with buyers' and sellers' heterogeneity.

******* Insert Figure 1 about here *******

Shipbrokers can be categorized by the types of operations they are involved in and the markets they usually specialize in, such as sales and purchase, chartering (spot transactions), and scrapping of ships. They usually also specialize in a cargo segment, such as dry cargo (bulk), tanker, gas, or container shipping. Of these, the dry cargo market is the most complex, comprising a huge variety of vessel sizes (Handysize, Handymax, Panamax, Capesize) and cargoes (grains, fertilizers, raw materials). A dry bulk shipbroker will typically specialize in one vessel size (such as Panamax) and specific geographic area covered, such as Europe, including the Black Sea, and Asia/America. Shipbrokers match buyers and sellers and sign contracts based on charter parties standardized by an international regulatory body, the Baltic and International Maritime Council (BIMCO).The most represented type of shipbrokers is a medium size firm, reaching up to 10 employees and domiciliated in one or two countries.

Shipbrokers operate in a highly competitive shipping market where access to information, availability, and speed are key success factors. Inquiries are often publicly disseminated among competitors through mailing lists. Upon receiving an inquiry, the shipbroker prepares an estimate, includes its own commission (customarily 1.25% of the total value) and forwards it to a potentially interested counterparty. This part of the shipbroker's activity is called fixture operations. Once estimate approved, the broker company is supposed to

[2] Examples of transportation intermediaries are logistic agents, freight forwarders, non-vessel-operating common carriers (NVOCCs), export trading companies, and insurance firms (World Bank Group 2005).

follow and stay in contact with both brokered parties until the deal is complete (post-fixture operations). In medium shipbroking companies, the same individual broker typically performs fixture and post-fixture activities. Finally, payment of the broker's commission is conditional on the positive outcome of the deal.

b. Industry and case selection

I chose to focus on shipbroking for several reasons. First, shipping is a truly international industry. Shipbrokers monitor and interface with partners worldwide across different time zone and locations. It is therefore interesting to study the role of geographical proximity in a similar context. Second, the shipping industry in general, and shipbroking in particular, involves an important heterogeneity of sellers and buyers. As mentioned, shipping parties such as ship owners or operators are involved, but so are buyers external to the industry such as cargo owners. Furthermore, shipbrokers also work with competitors. For this reason, shipping and shipbroking is a good setting to study buyers' heterogeneity and the industry space including competition. Finally, the industry is heavily reliant on relations so that parties are likely to form new deals with each other on regular basis. While the propensity to form relations and relations' intensity is high among partners, there is still a variation in the outcome. Such variation allows me to explore the likelihood of tie formation as a function of a particular type of proximity and the interrelationship of proximities. The case company I have selected is represents a typical medium size shipbroking firm employing less than 10 agents in a single office.[3]

c. Data collection

With the aim of understanding the industry characteristics and the role and interplay of different types of proximities, I have first undertaken a series of qualitative interviews. I provide the summary of these interviews in Table 1 below.

******* Insert Table 1 about here *******

I have sampled three types of interviewees. First, I have included representatives of shipbrokers of various sizes and segments (two from the subsequently studied case firm and four out of competitors) in various hierarchical levels such as broker and CEO. I have complemented this selection with one interviews with a shipbroker's buyer. Finally, I have added two other representatives: one of an industry association, the Danish Shipbroker Association and another from BIMCO, an industry regulatory body. The interviews lasted between 60 and 90 minutes.

[3] The classification of shipbroking firm is done based on an industry source: http://virtualshipbroker.blogspot.dk/p/study.html. Given the scarcity of relevant academic sources on the topic, I hereby frequently refer to the source as to "industry written source".

Most of the interviews have been transcribed. Some of them occurred in spontaneous way as I collaborated with the representatives of the case company over time, including an observational, day long presence in a shipbroker's front desk. Therefore, not all information has been systematically transcribed.

In order to further study the role and interplay of proximities within the particular setting, I have accessed quantitative data from a case firm. The quantitative data include information on 184 deals (or transactions) conducted by a medium-sized case shipbroking company (hereafter referred to as "Shipbroker"). In order to study the role and interplay of proximities, I carry the quantitative analysis at dyadic level, where a dyad denotes a deal between the Shipbroker employee and a buyer. The 184 deals have been concluded by 7 individual brokers (hereby referred to as agents) employed by Shipbroker and its 52 buyers, within 81 unique agent–buyer dyads. The data are unaffected by survival bias because all buyers included in the dataset were still in the market at the time of the analysis. Information for each deal includes i) the type of charter party, ii) the individual broker in charge, iii) the buyer name, iv) the amount of the deal, and v) the date. I have computed the variables related to geographical proximity and buyer's type in the industry space, with a particular focus on competitors, based on a search by buyer's name in the Orbis database. To avoid mistakes and biases, I verified the industry affiliation and geographical location of buyers with Shipbroker's CEO (P) and a broker (D).

The Shipbroker has been operating in the heart of the maritime industry in Copenhagen, Denmark, since 2009. Information on deals was entered into the data set, daily, by each of the brokers in charge. The deals have been reporter over eight trimesters, from mid-2013 until mid-2015. The historical data on the periods preceding the reporting period are not available; thus, the sample used in this study suffers from a left-truncation issue. As P explained it, the need for a precise reporting has emerged only after the start-up phase of their activities was over and the company began hiring employees. The deals that form the basis of this study represent the mature period of activities of the case company. The period after mid-2015 has been marked by a hostile takeover of the company by a foreign investor and therefore additional data was not available after that period.

I have computed a panel for all realized and not-realized deals within dyads and trimesters (hereby referred to as periods). This means that for each dyad I have complemented the existing deals in given periods with non-realized deals in all other periods by assigning a zero value to a missing dyad–period observation. This has left me with a total of 567

observations (81 × 7). A dyad–period observation may include one or more deals (multiple deals often occur within the same period). For the main analysis, I have decided to omit the first observation period for each dyad as a "pre-sample", which results in 486 usable observations (567 − 81). This approach has allowed me to compute lags and control for deal profitability (amount of the deal) within a particular dyad, based on past deals. It also helps alleviating the issue of left-side truncation.

d. Description of variables

i. Dependent variables

I use two dependent variables. The first is used for the main quantitative analysis, and the other one for a robustness check. The dependent variable *deal/relation* is a binary one denoting a realized deal between the agent and a buyer (Heringa et al. 2016). It is possible that there are multiple occurrences of the same dyads in one given period of time, I decide to reduce the variation. The *deal/relation* variable takes the value 1 for any number of deals between a dyad within a period greater than 1, and 0 otherwise. I further explore the existing information on multiple deals within the same period and compute *intensity of relations.* It is a count variable denoting the number of deals within a dyad in a given period. Both variables are used in the panel analysis with 486 observations, within, respectively, logit and poisson modelling frameworks.

ii. Independent variables

Km is a continuous variable denoting the shortest distance, in kilometers, between Shipbroker and his buyers (Heringa et al. 2016). As an alternative, travel time, as suggested by the same authors, could be used. However, the complexity of travels, contingent on a mix of means of transport, time and season, may affect this measure and invalidate it.

I compute two variables that captures the heterogeneity of shipbrokers' buyers based on industry categorization using NACE classifications. The first one is *shipping party* which takes the value of 1 if a deal was closed with a ship owner or operator (both are buyers from the shipping transportation sector such as those in category 5020). *Competitor* takes the value of 1 if a deal was closed with another shipbroker (the same 4-digit NACE code). Alternatively, I compute an ordinal variable where C*ompetitor* takes the value of 2, *Shipping party* takes the value of 1 (the baseline being external buyers lumping together buyers from categories other than transportation, regardless of their activities). The results remain unchanged regardless of the form of this independent variable.

The same or a similar categorization approach has been used in the extant literature

using respectively either 3-digit or 4-digit SIC classification (Neffke and Henning 2013) to distinguish the proximity of firms in the "industry space".

iii. Controls

The variable *number of preceding deals* captures the number of deals between partners in the preceding periods. This operationalization is based on Boschma's (2005) framework and is frequently used in similar studies as the likelihood to form relations is positively affected by a former experience.

Lag of performance is a measure of profitability of past deals within a dyad. It is computed as the average amount of deals in the past period. This measure strongly correlates with the fixture (charter) type in the original data set. As the type of fixture is missing for periods with a non-reported deal, the variable is not usable in the panel analysis. The lag of performance is therefore the sole performance related control available.

There is a possible endogeneity issue in this study. It can arise from unobserved individual characteristics correlated with the error term, leading to a bias (Mizruchi and Marquis 2005). For instance, agent skills or abilities could easily drive the probability of closing a deal with a buyer. Similarly, a given period of year, such as high summer, could affect the likelihood of dealing with a particular buyer (for instance grain trader). One way to address this issue is to find a suitable instrumental variable, which is often difficult. Instead, I use agent and period dummies, or fixed effects, to limit endogeneity.

4. Findings

The two following subsections below provide i) some evidence towards the importance of relations in shipping in general (A), ii) elucidate the particularities of relations as a function of geographical proximity (B) and iii) account for the heterogeneity of buyers involved and highlights association between buyers' types and the geographical location (B).

a. Geographical proximity and relations in shipbroking

The shipping and shipbroking is reliant on international, but still personal relations. First, numerous industry players mention the far-reaching character of their relationships as well as trust in the logos or slogans of their firms: "The shipbroker the world trusts"; "Bringing our connections and experience to an international client base"; or "Providing network access with high commitment". Industry-related literature further supports this view:

“Agents (shipbrokers) inhabited the first circle of the shipping world [. . .]: they were men of status [. . .], hubs of their own far-reaching networks. They were the key maritime node, the point where shipping and all other sectors converged to produce out of many parts and pieces, or multiple networks, a truly global system. (Miller, 2012, p.164-165)”.

Second, the service provided by shipbrokers to the buyers is restricted to a narrow niche and a particular set of potential counterparties, specializing as outlined, in particular market, segment, vessel type and potentially also geography. D, a Shipbroker’s agent has corroborated the importance of the industry specialization and linked it to personal characters of relations: “Personal relations happen more frequently, I would say, in a business that is as specialized as shipping: [. . .] you will be employed at one brokering firm, and then talk to a lot of ship and cargo owners. Then you change your job, or others do, and you talk to people on the other side of the table. This means that over time everybody, everywhere, gets intertwined in some way, and that the approach we have to do business with someone is very personal”.

The mentioned job mobility is an important aspect in the shipping industry. The scenario of job hopping, from shipbroking to a shipping firm, happens often locally. The quoted broker D is yet one illustration of the phenomenon: after the hostile takeover of the Shipbroker, he found a new job at “the other side of the table”, also in Copenhagen. Other examples of the same phenomenon exist also in other qualitative evidence. The BIMCO representative have emphasized another important mechanism of how the industry specialization affect the likelihood of relations built internationally. It is namely the knowledge that shipbrokers accumulate in their specific niche and their role as a convenient source of information for counterparties “In a truly global industry you need somebody who you can just call and they know what's going on in the solid part of shipping right now and if you manage to call them on the situation in Arabic or whatever. One-stop shop you can say (…), very narrow focus.”

In general, the shipping industry is described as a “small world”, where distance matters little and the personal relations are likely to be formed regardless of the geographic location of the counterparty. Outside of fixture and post-fixture operations, the relation between a shipbroker and a buyer entails personal phone calls, meetings and dinners, and shared passions like golfing or sailing. I further explore the interrelationship of geographical proximity along with the heterogeneity of buyers and their geographical location below.

b. Geographical proximity, heterogeneous buyers, and relations in shipbroking

There is a substantial heterogeneity among the shipbrokers’ buyers, involving shipping

parties (owners and operators), shipbrokers and cargo owners. According to the qualitative interviews, the different types of buyers correlate with various degree of geographical proximity and with the way they form relations with shipbrokers. The remainder of the section unfolds the interplay of geographical proximity and buyers' types by distinguishing between shipping parties, competitors and external buyers.

Europe has been historically the nest of the international shipping industry with shipping nations such as Norway, Greece, Germany, the Netherlands, Portugal, Spain or Denmark. The main shipping and shipbroking hubs locate therefore in proximity to the major ports of these countries. Traditionally, shipbrokers have strong relations to other shipping parties from their own cluster and within Europe, which is also true for the shipbrokers in Copenhagen. The Virtual Shipbroker, a written industry source corroborates the importance of relations to shipping counterparties: "one common mistake it to think that one (shipbroker) does not need to invest time and money in creating direct relationships to ship owners and operators". Given a persistent overcapacity in the supply of ships, according to the interviewee's estimation even up to 90% of all deals involve a broker matching a party in possession of the capacity (either a whole ship or a spot available on a ship) with another party in search of same. As such, the business cycle strongly positively moderates the shipbroker relation to the shipping parties. As D put it: "We know about everything that happens in Copenhagen. We somehow know that the big shipping parties, squeezed out by the market now, rely on us". Building or sustaining relations is therefore relatively easy with other shipping parties in times of oversupply. Events such as yearly dinners and shipping conferences additionally stimulate such relationship-building and maintenance. In Copenhagen alone, the Danish Shipbrokers Association (DSA) organizes dinners attended by all shipping players every three years. Moreover, many yearly networking events, or "get-togethers", take place elsewhere in Europe and serve as platforms for communication and bonding for the whole shipping industry.

Some shipbrokers do not only have strong relations with other shipping parties but even benefit from becoming their exclusive representatives. P, the Shipbroker's CEO, provided some evidence in favor of such phenomenon saying "(it happens that) we have this one person that is always giving (the lead) to us". Furthermore, there is an even more common practice in shipbroking, to be "on the panel" with a shipping party. A shipbroker "on the panel" is shortlisted by a shipping party and receives a lead along with few other selected shipbrokers. Shipbroker's competitor estimated the panel to include "some other four or five brokers, and this is as close as it gets."

The strong relations between brokers and shipping parties are, to an important extent, a function of geographical proximity as they cluster in the same shipping hubs such as Copenhagen. The qualitative evidence mentions other occurrences of exclusive or semi-exclusive relations of the focal shipbrokers to other shipping parties, these still however remaining present in Europe, in Norway of Greece.

Shipbrokers' relations to their competitors are a direct consequence of the industry specialization and the exclusivity and semi-exclusivity described above. F, a representative of Shipbroker's competitor, advanced the importance of dealing with other competitors "We do business with other brokers a lot." The exclusivity or semi-exclusivity triggers a common scenario, in which a shipbroker bringing in a deal, faces a restricted access to the final counterparty. In order to close the deal, the focal shipbroker simply needs to go through competitor, who represents the final buyer. F further corroborated: "So, (if we have a competitor), if that competitor is exclusive on something, or on the panel of something, or we are at the panel, we need to go by the broker, so we need to treat him as well."

It is plausible that two shipbrokers work together within the same local cluster and in Europe. The main reason for such behavior is historical. Indeed, in Northern America and Asia, the shipbrokers integrate vertically into either shipping firms or cargo owners. As they therefore miss on the networking opportunities offered by the shipping industry, they relations with shipbrokers is less tight.

Shipbrokers traditionally excelled in working primarily with shipping parties. The ongoing crisis in the shipping industry forced shipbrokers to rethink their strategies. While one strategy could be to target other shipping parties worldwide, the oversupply of ships is likely to equally affect the industry regardless of geographic location. Consequently, shipbrokers consider diversification of their service as a viable option. While it may be difficult for a shipbroker to work on both fronts: with shipping parties and external buyers such as cargo owners, there is an evidence of external buyers being considered as shipbrokers' strategic targets[4]. The cargo owners in bulk shipping originate from various industries, ranging from raw agricultural materials to fertilizers. They tend to cluster in foreign, as compared to the focal Shipbroker, geographical locations where the production of the cargo is a comparative advantage. The written industry source pointed to some of such locations and their importance in shaping the trade routes: "major bulk trade routes involve coal from Australia to Japan, coal

[4] A bachelor thesis "Shipbroker's jagt på personlige relationer" ("Hunt for personal relations") dedicated to this topic has been shared with me thanks to the courtesy of one of Shipbroker's agents.

from South Africa to Europe, iron ore from Brazil to North America, grains from Black Sea to the Middle East." The diversification of shipbrokers' activities requires an intensive international market research and business development. Shipbrokers therefore focus and target strategically related industrial events worldwide, such as the Grain Fair in Ukraine, a prominent grain producer. According to D, the Shipbroker's employee:" This is a new part of our job. We need to go out there and look for new clients. We need to learn about industries worldwide and set up the right strategies".

Based on the qualitative interviews, Table 2 presents the interplay of geographical proximity and buyer heterogeneity and role of the respective relationships.

******* Insert Table 2 about here *******

c. Descriptive statistics

In order to further explore the interplay of geographical proximity, buyers' types and relations, I turn to the quantitative transactional data.

The original data set with 184 deals includes a significant number of transactions characterized by geographical proximity with buyers: 25% of observations are characterized by a high level of geographical proximity (at most 25 km). The median of geographical proximity lies at 562 km, and the third quartile observations take the value of 1,396 km. The last percentile of observations is characterized by more than 10,000 km of distance.

Transactions with competitors represent only 25 instances, as compared to 107 shipping parties and 52 external buyers.

In the panel including 486 dyad–period observations, there are only 120 are observations with a reported deal. This is the result of simplifying and conflating any number of deals within a period. The number of reported deals increases over time, but remains relatively stable, within the range of 16- 26 deals over period, as demonstrated in Table 3.

******* Insert Table 3 about here *******

Table 4 further complements the information on the relations dynamics and splits the frequencies of reported deals by the type of buyer.

******* Insert Table 4 about here *******

258 (or 43 by period), out of all 486 observations, are related to shipping parties. The mean of reported deal for this type of buyer is 0.24. The number of reported deals for this buyer type ranges between 7 and 15 and increases over time, which does not reflect the oversupply

crisis.

A total of 96 observations, or 16 by period, are related to other shipbrokers in a panel. The frequency of reported deals is lowest among all type of buyers and displays a mean of 0.16. Indeed, an important majority of deals concluded with competitors is a one-shot (80 against 16). The dynamics of this trend are very consistent, the number of deals closed with competitors within period ranges between 2 and 4. The largest number of deals closed occurred in the first period, which may suggest the changing industry trend to diversify and, instead of relying on the shipping parties or other shipbrokers, to turn towards the external buyers.

External buyers account for a total of 132 instances, or 22 by period. The frequency of reported deals increase over time and picks in the Period 3, then decreases. The mean of reported deals is 0.25.

The observations with a reported deal have a lower mean for *km* (1,871) than the observations with non-reported deal (mean for *km* of 2,104), suggesting a positive effect of geographical proximity, not accounting for the type of buyer.

Interestingly, any of the 96 instances of deals with competitors are not preceded by any reported deal. This suggests that the observations dropped in the "pre-sample" are first and only occurrences of other deals to competitors, which only corroborates the trend of one-shot pattern of dealing with competitors. This pattern stands in contrast to the deals with shipping parties, where trust results from a larger range of deals in the past periods. The majority, 200 observations do not report any preceding deals, 53 of them have been preceded by 2 or 3 deals and the remainder of 5 by four or more.

The mean of *km* for the 96 observations related to competitors is 1.608km, the lowest of all types of buyers. The same statistic is of 1,875 km for the shipping parties and 2,699 for the external cargo owners conflated in the baseline. The latter confirms that external buyers are usually located in remote geographical locations and that the shipping parties and shipbrokers cluster locally, if not in Denmark exclusively, then in Europe.

According to the correlation matrix presented in Table 5 below, the variable capturing the Shipbroker's competitors is negatively correlated with the dependent variable, contrarily to the shipping parties (for which the coefficient is however insignificant).

The variable measuring the geographical distance (*km*) displays the expected negative sign but lacks significance. Such trend further corroborates the insignificant role of the geographical proximity in the setting studied. Furthermore, the signs of the controls related to the performance and number of preceding deals display the expected positive correlation with the

dependent variable and are significant.

******* Insert Table 5 about here ******

The descriptive statistics corroborate several trends outlined by the qualitative interviews. First, the geographical proximity is not, *per se*, correlated with the propensity to form relations. Moreover, the relations with competitors are bounded locally. However existent, they are relatively less frequent than others. Second, the cargo owners are remote (possibly extra continental). The focal Shipbroker's relations to these buyers the most frequent, which provide some evidence of the strategic targeting of this type of buyers. Third, the shipping parties recruit mostly from a territory confined to Europe and the focal Shipbroker's relations to these are frequent. The descriptive statistics also reflect the existence of the oversupply crisis, as the number of deals with the external buyers increases.

d. Analysis

In order to investigate the relation between the buyers' type, such as competitors, geographical proximity and the likelihood of relations, I further perform a logistic regression with the binary dependent variables and the dummies denoting the competitors and shipping parties and the measure of geographical distance. Table 6 and 7 provide, respectively, an overview of the logistic regression and the marginal effects of distance for competitors and non-competitors. For the purpose of the regression analysis the variable *km* has been divided by 1000.

The first six models in the table 6 are specifications with error clustered at dyad, model seven includes error clustered at buyer. I am aware of the possibility that the omitted variable bias may affect the coefficients in the estimation. Following the suggestion in Broekel, Balland, Burger, & van Oort (2014), I include agent and time fixed effects in order to alleviate a possible omitted variable bias. All models from 1-7 include such fixed effects.

The last model includes an attempt to alleviate another issue arising because of the particular structure of the dyadic data. Indeed as the same agent (or buyer) are parts of different dyads the correlation of the error terms among observations is plausible. This may result in a bias pertaining to the coefficient. As such, the availability of one buyer will affect the likelihood of an agent to form relations with another buyer. I therefore follow Broekel et al (2014) suggestion and use multi way clustering in the model 8. Following the state of the art (Kleinbaum, Stuart, & Tushman, 2013), the last model does not include the formerly used fixed effects. I present models with different type of error cluster and with or without fixed effects as alternatives, but I use the last model as preferred one.

The model 1 includes the controls only, the signs of *km* and *number of preceding deals* are respectively negative and insignificant and positive and significant. The dummy *shipping party* introduce in the second model displays a positive sign, which, however is insignificant. The dummy *competitor* introduced in the next model displays the opposite sign and its coefficient is significant. The next two models, 4 and 5, demonstrate the respective interaction product of *shipping party* and *competitor* with *km*. Both of the coefficient display a negative sign, suggesting an increased likelihood of dealing with parties in geographical proximity. Model 6 and 7 include both interactions and the results remain unchanged.

The variable *km* is insignificant in the first model suggesting that regardless of buyer's type, it does not affect the likelihood of relations. In the next two models (2-3), the baseline changes as variables dedicated to different buyers' types are introduced. The trend remain stable for the coefficient of *km* as well, regardless of the baseline. The findings of the logistic regression corroborate the insignificant role of geographical proximity, or distance. Model 3 and 5 demonstrate that, as compared to an external buyer, dealing with a competitor is less likely. A similar negative trend is present for the shipping parties as outlined in the model 2 and 6, it is not significant. Model 6, 7 and 8 demonstrate the effects of geographical proximity on dealing with competitors and shipping parties. While dealing with a competitor is generally less likely than with any other external buyer, such likelihood is positively moderated in case if the competitor is local as corroborated by the model 7 and 8. A similar effect is strongly present in case of the shipping parties as corroborated in the model 8.Table 7 demonstrates that the effect of geographical distance is stronger for a competitor as compared to a non-competitor. The probability of a deal/transaction falls with distance at about twice the rate in the case of competitors.

******* Insert Table 6 about here *******

******* Insert Table 7 about here *******

I run a robustness check, included in the Appendix 1, with the use of a different dependent variable. The poisson regression with the use of *intensity of relations* yields highly consistent results indicating an insignificant role of geographical proximity and a moderating effect of this variable on *competitor*.

Given that a shipbroker works with both: buyers and suppliers, I also address the supply side in my analysis. While I lack a perfect information on the seller credentials, I dispose of the information on the ship supplied within a deal. This serves as a proxy for a seller even though the same ship may be in hands of different sellers over time. I include the dummy on the ship

type along with the agent dummy in another check, which yields consistent and highly significant results.

5. Discussion, limitations and conclusion

Table 8 present the main findings and contributions of this paper.

******* Insert Table 8 about here *******

My findings confirm the insignificant role of geographical proximity in the industry studied. Geographical proximity *per se* is no prerequisite for tie formation a truly international setting. The qualitative evidence has provided some insights into how the high degree of specialization, such as segment, cargo type or vessel size, affect the shipbroker-buyer relations, making them more likely to be highly personal. Geographical proximity is not a *sine equa non condition* for such personal relations. There is a high extent of "temporary geographical proximity" (Torre & Rallet, 2005) achieved through face-to-face meetings, lunches, extra work activities and, that may substitute for geographical proximity.

Moreover, geographical space is less "linear" in the industry. The differences in the industry structure, such as between competitors in Europe, Asia and America outlined in the Findings section, make this space discontinuous. The Appendix 2 includes an additional analysis where, I accordingly compute an ordinal geographical proximity (taking the value of zero for American and Asian buyers, the value of one for European buyers and two for Danish buyers). In such a test, replicating the preferred model 8 from the main analysis, the closest geographical proximity is actually significantly and negatively correlated with the likelihood of a new deal. This is fully in line with the negative effect of proximity on collaboration found by Ben Letaifa and Rabeau (2013).

The relations to external buyers are, *ceteris paribus*, more likely than relations to competitors or shipping parties. This effect indicates that distance in the industry space fosters the likelihood of tie formation. I link such effect to the degree of specialization. Shipbrokers, which are highly specialized, seek opportunities in international markets and with buyers external to the industry. Such finding is in line with Smith's (1776) argument on the size of the market that positively correlates with the degree of specialization. Furthermore, the studied effects of competition vs. external markets in the setting of shipbrokers' relations illustrate Burt's (2009) theory on the social structure of competition. In my setting, indeed the shipbrokers exploit their position as a "structural hole" (or intermediary) and connect the external buyers to sellers.

Generally, in relation to other proximity types, geographical proximity acts as a facilitator *in praesentia*, but is not an inhibitor *in absentia.* The role of geographical proximity unfolds solely when interrelated with other types of proximity. In my study, I extend the knowledge on the interplay of geographical proximity with, so far understudied, competition. My findings indicate that there is an overlap between the proximity in the industry space (or cognitive proximity), such as being a competitor, and the geographical proximity[5]. Such overlap effect stands in contrast with the findings of the extant literature (Hansen, 2014).On average, the propensity to form relations with competitors is lower as compared to the external buyers. However, such propensity depend on competitors' geographic location and is positively moderated if the competitor is local. This finding is in line with the literature on coopetition, or the simultaneous pursuit of collaboration and competition (Bengtsson & Kock, 2000; Dagnino & Padula, 2002; Gnyawali & Park, 2011). This literature has advanced that cooperation and competition are not mutually exclusive and materialize among competitors within a local cluster. While cluster research has focused primarily (Marshall,1920; Porter 1998) on the benefits of co-location driven by competition and enabled by cooperation, scholars have recently advanced the need to distinguish between the exact effects of these two elements within clusters (Newlands, 2003). Empirical studies have highlighted the vital role of cooperation with competitors, especially for sustaining service industries, such as in the London cluster (Keeble & Nachum, 2002), but also ports (Song, 2003) and logistics providers forming global and dynamic networks (Song & Lee, 2012). What may also drive the co-opetition in the setting studied are specificities of intermediaries relations their buyers. As shipbrokers may benefit from exclusive or semi- exclusive relations to some buyers (such as the one called gatekeeper in Gould & Fernandez, 1989), this sometimes forces them to cooperate with competitors.

My study offers some strategic managerial implications. The propensity to form and sustain relations is higher when the shipbroker seeks opportunities with external buyers and in international markets. Shipbroker's relations with competitors, being less likely on average, are more likely to materialize locally.

The implications of this study should be taken with some caution, since the data analyzed cover a period of crisis in the shipping industry. Future research could investigate whether the findings hold in times of under-supply of ships, when shipbrokers' contacts to the

[5] The last model indicates that both the geographical proximity and competition (proximity in the industry space) negatively affect the likelihood of relationships. The interaction products displays a similar negative sign, which suggests an overlap effects of both proximity dimensions.

shipping parties are fully leveraged. Also, researchers could further investigate whether, or to what extent, local coopetition is stimulated by a business cycle characterized by oversupply of ships.

The method using a firm case and industry-specific data and analyzing industry specificities, outside of traditional knowledge-intensive industries, addresses gaps that scholars have pointed to in previous studies (Balland et al., 2013; Bidwell & Fernandez-Mateo, 2010; Hansen, 2014). Nevertheless, my study has some limitations. The endogeneity of tie formation is one, and I addressed my attempts to limit it with the different fixed effects used in the analysis. Truncation of the data is another issue. It was impossible to complete my data set with additional, archival information on deals. Due to the truncation issue, the value of social proximity takes the value 0 for all first instances of relationship within a dyad. This leads to underestimating the role of social proximity between parties, unobserved beforehand. I attempt to address this issue by creating a pre-sample. Nevertheless, it is still possible that brokers and buyers collaborated in the period outside the reporting period included in my dataset. Thus, the coefficients produced by my analysis should be regarded as conservative. Finally, due to the particular single-case design, the generalizability of my study may be limited. Nevertheless, the Shipbroker' characteristics comply with what is described as typical for the industry, suggesting that my findings should extend, at least, to similar firms within the industry. The described mechanisms may also be present in other industries of service intermediaries based on specialization, competition and local coopetition.

My study offers some avenues for future research in terms of both empirical setting and data used. First, the effects of various types of proximities could be investigated with more complete firm data and in other industries, especially those outside the traditionally researched industries. Since the outlined industry characteristics, such as specialization and competition, are important, my study also calls for a more thorough consideration of these in future studies. As the link between the degree of specialization and personal relation cannot be claimed causal, I suggest that future research elucidates it more thoroughly. Finally, the time or business-cycle effects within the industry studied may affect the findings through the positive role of highlighting strategic opportunity-seeking. A similar study could therefore also investigate the interplay of proximities in the same industry during a different stage of the business cycle.

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Figure 1 Shipbroker as a match maker and heterogeneity of buyers and sellers

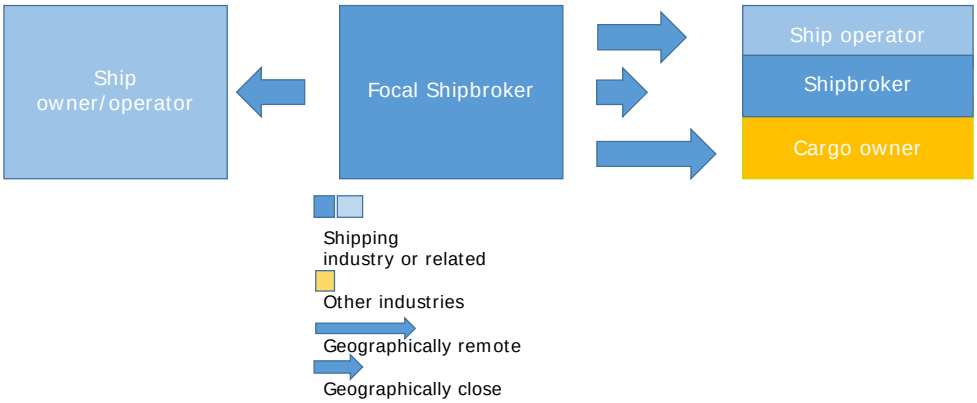

Table 1 Summary of the qualitative interviews

Organization	Identifier	Size	Segment	International presence	Function	Case firm
Shipbroker 1	P	Medium	Dry bulk	No	CEO	Yes
Shipbroker 1	D	Medium	Dry bulk	No	Broker	Yes
Shipbroker 2	F	Medium	Dry bulk	No	Manager	No
Shipbroker 2	DE	Medium	Dry bulk	No	Broker	No
Shipbroker 3	K	Large	Container/Dry bulk	Yes	Director	No
Shipbroker 3	R	Large	Container/Dry Bulk	Yes	Head of Research	No
Ship Operator	B	Large	Dry Bulk	Yes	CEO	No
Danish Shipbroker Association	J	-	-	-	Director	No
Baltic and International Maritime Council	S	-	-	-	Chief Shipping Analyst	No

Table 2 Interplay of geographical proximity, buyers' heterogeneity and relations (perspective of the focal Shipbroker)

	Shipping party (ship owner or operator)	Importance of relationship
Shipping party (ship owner or operator)	Local (Copenhagen and Denmark) or Europe	Traditionally important, affected by the business cycle
	America/Asia/other	Not of prime importance
Competitor (another shipbroker)	Local (Copenhagen and Denmark) or Europe	Important due to exclusivity and semi-exclusivity
	America/Asia/other	Not of prime importance
External buyer (cargo owner)	Americas/Asia/Africa	Recent strategic target

Table 3 **Reported deals by period**

Reported Deal	Period 1	Period 2	Period 3	Period 4	Period 5	Period 6
No	65	64	59	58	63	57
Yes	16	17	22	23	18	24

Table 4 **Reported deals by period and buyer type**

	Competitors		Shipping parties		External buyers	
	Reported deal: zero	Reported deal: one	Reported deal: zero	Reported deal: one	Reported deal: zero	Reported deal: one
Period 1	12	4	36	7	17	5
Period 2	14	2	33	10	17	5
Period 3	13	3	34	9	12	10
Period 4	14	2	29	14	15	7
Period 5	14	2	31	12	18	4
Period 6	13	3	28	15	16	6
Total	96		258		132	
Grand total	486					

Table 5 **Descriptive statistics and correlation matrix**

Variable	Mean	SD	Count	1.	2.	3.	4.	5.	6.	7.
1.deal/relations	.24	.43	486	1						
2.intensity of deals	.34	.71	486	0.85***	1					
3.competitor	.19	.39	486	-0.09*	-0.08	1				
4.shipping party	.53	.49	486	0.03	0.04	-0.5***	1			
5.km	2046.7	2996.3	486	-0.03	-0.04	-0.07	-0.06	1		
6.lag of performance	1558.0	375.8	486	0.13**	0.20***	-0.05	-0.01	-0.05	1	
7. number of preceding deals	.31	.69	486	0.21***	0.27***	-0.07	0.04	-0.05	0.7***	1

Table 6 **Logit analysis: DV- deal/transaction** [1]

	M1	M2	M3	M4	M5	M6	M7	M8
Km (/1000)	**-0.04**	**-0.03**	**-0.04**	**-0.03**	**-0.02**	**0.00**	**0.00**	**0.03**
	(-1.25)	**(-1.22)**	**(-1.62)**	**(-1.25)**	**(-0.55)**	**(0.17)**	**(0.17)**	**(0.75)**
Number of preceding deals	0.70***	0.69***	0.69***	0.68***	0.69***	0.68***	0.68***	0.704***
	(4.09)	(3.89)	(3.89)	(3.88)	(3.91)	(3.90)	(4.13)	(5.25)
Lag of performance	-0.02	-0.01	-0.02	-0.02	-0.02	-0.02	-0.03	-0.02***
	(-0.57)	(-0.53)	(-0.63)	(-0.62)	(-0.68)	(-0.69)	(-0.80)	(-5.15)
Competitor			**-0.738*** **	**-0.54**	**-0.70** **	**-0.41**	**-0.41**	**-0.345**
			(-2.67)	**(-1.54)**	**(-2.51)**	**(-1.10)**	**(-1.13)**	**(-0.79)**
Competitor # km				**-0.01**		**-0.01**	**-0.02***	**-0.02***
				(-1.28)		**(-1.63)**	**(-1.68)**	**(-1.99)**
Shipping party		**0.06**	**-0.24**	**-0.22**	**-0.12**	**-0.03**	**-0.03**	**-0.04**
		(0.30)	**(-1.01)**	**(-0.95)**	**(-0.46)**	**(-0.12)**	**(-0.12)**	**(-0.13)**
Shipping party # km					**-0.00**	**-0.00**	**-0.00**	**-0.08*** **
					(-0.77)	**(-1.21)**	**(-1.23)**	**(-2.27)**
Constant	-1.84***	-1.87***	-1.73***	-1.74***	-1.79***	-1.83***	-1.83***	-1.83***
	(-6.80)	(-6.50)	(-5.34)	(-5.40)	(-5.64)	(-5.81)	(-5.81)	(-5.45)
Period dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Employee dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Error cluster	Dyad	Dyad	Dyad	Dyad	Dyad	Dyad	Buyer	Multi way clustering
N	486	486	486	486	486	486	486	486

[1] The lines **in bold** pertain to main findings.

Table 7 Marginal effects of distance in km for competitors and non-competitors

	The marginal effect of km on the probability of a deal/transaction	**Standard error**	**Z value**	**P>z**
Competitor=0	-.0000116	7.24e-06	-1.60	0.109
Competitor=1	-.0000227	.0000123	-1.85	0.064

Table 8 Findings and contributions of the paper

Variable of interest	**Correlation/effect with/on the tie formation in the extant literature**	**Findings in this paper and relation to the extant literature**	**Industry specificities/contribution**
Geographical proximity	**Positive**	**Insignificant (or negative): challenging extension of the extant literature**	The geographical proximity is not a necessity in a truly international industry. The specific industry structure (along with qualitative differences between parties in Europe/Asia/America) fosters relations among European parties in shipping, but also more geographically remote cargo owners. The personal character of relations entailing phone calls, travels and meetings assures "temporal geographical proximity".
Proximity in the industry space (cognitive proximity)	**Positive but with a tipping point**	**Negative**: relations to external parties are the most likely of all buyers' types: **challenging extension of the extant literature**.	Service intermediaries work in a triad and their goal is to span industry boundaries. Relations to external buyers are strategically
Geographical proximity and industry space (cognitive proximity)	**Substitute for geographical proximity**	**An overlap effect:** relations to competitors (most proximate in the industry space) are less likely on average but this is positively moderated by the geographical proximity (while geographically proximate relations are also less likely): **expanding the extant literature**	Service intermediaries may have an exclusive or semi-exclusive relation with their partners, which enforces cooperation between competitors, especially locally (in clusters but also in Europe).

APPENDIX 1

Table Poisson analysis: DV- intensity of deal/transaction, geographical proximity ordinal variable, error clustered at dyad [6]

	M1	**M2**	**M3**	**M4**	**M5**	**M6**	**M7**
Km/1000	-0.0382 (-1.39)	-0.0371 (-1.34)	-0.0446* (-1.67)	-0.0335 (-1.27)	-0.0330 (-0.94)	-0.00636 (-0.17)	-0.00636 (-0.17)
Number of preceding deals	0.425*** (6.16)	0.419*** (5.60)	0.413*** (5.94)	0.410*** (5.93)	0.414*** (5.93)	0.412*** (5.96)	0.412*** (5.96)
Lag of performance	0.00897 (0.35)	0.0100 (0.38)	0.00829 (0.30)	0.00872 (0.32)	0.00765 (0.28)	0.00729 (0.27)	0.00729 (0.27)
Shipping		0.0870 (0.42)	-0.108 (-0.44)	-0.0912 (-0.37)	-0.0650 (-0.22)	0.0134 (0.04)	0.0134 (0.04)
Competitor			-0.507 (-1.64)	-0.267 (-0.71)	-0.494 (-1.58)	-0.196 (-0.49)	-0.196 (-0.49)
Competitor # km				-0.226 (-1.58)		-0.250* (-1.73)	-0.250* (-1.73)
Shipping= # km					-0.0218 (-0.39)	-0.0484 (-0.86)	-0.0484 (-0.86)
Constant	-2.070*** (-8.62)	-2.113*** (-9.20)	-2.014*** (-8.29)	-2.020*** (-8.36)	-2.035*** (-8.39)	-2.071*** (-8.38)	-2.071*** (-8.38)
Period dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Employee dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	486	486	486	486	486	486	486

t statistics in parentheses * p < 0.10, ** p < 0.05, *** p < 0.01

[6] Multi way clustering is not available in Stata 15.0 programing for a poisson analysis. This explains the model 8 missing in this Appendix.

APPENDIX 2

Table Logit analysis: DV- deal/transaction, geographical proximity ordinal variable[7]

Competitor * geographical proximity	0.714*** (2.93)
Shipping * geographical proximity	0.639*** (3.74)
Competitor	-1.322*** (-4.01)
Shipping	-0.756* (-1.78)
Geographical proximity	-0.468*** (-3.60)
Number of preceding deals	0.717*** (5.02)
Lag of performance	-0.0287 (.)
Constant	-1.974*** (-3.81)
Period dummy	Yes
Multi way clustering	
N	486

t statistics in parentheses * p < 0.10, ** p < 0.05, *** p < 0.01

[7] The ordinal variable denoting geographical proximity had to be entered as a continuous one in Stata 15.0 "cgmlogit" command.

CHAPTER 3: THE BROAD VS. THE POINTED BRUSH: STATUS CHANGE, STIGMA AND BLAME FOLLOWING FAST ORGANIZATIONAL FAILURE

With Kristina Vaarst Andersen and Mark Lorenzen.

ABSTRACT

Organizations fail, at times in spectacular ways, any failure uproots the careers of the displaced employees and especially dramatic failures intensively covered by media. This paper explores labor market mechanisms of intra-professional status change following fast organizational failure. We undertake a case study of a collapsed high-profile bunker oil company, selected on account of its failure's scale, speed, and organizational and geographical heterogeneity. Using unique hand-collected qualitative and quantitative data, we examine the careers of the organization's displaced employees. At odds with extant theory on stigma, our analysis shows, that organizational failure does not necessarily lead to stigmatization. Our work reveals that this may be due to the fast decline and aftermath after bankruptcy of this particular organization, allowing insufficient time for a stigmatization mechanism to materialize. We find that displaced employees most prone to status loss are those having worked organizationally and geographically proximately to the locus of the organization's failure. We suggest that in lieu of general stigmatization, status change is driven by a mechanism of blaming, i.e. perceived culpability of those displaced employees with comparatively strong association to organizational failure. Comparing the new theoretical notion of blame with the extant notion of stigma, we suggest that while both compensate for imperfect information, stigma entails weaker association to failure and hence 'taints with a broad brush' compared to blame's "pointed brush".

1. Introduction

When organizations fail, many stakeholders follow the failure with keen interest in whether and how it may affect them. Organizational failure and exit has been studied from many angles (Amburgey et al., 1993; Mellahi and Wilkinson, 2004), and one stream of research focuses on its potential adverse effects on the intra-professional status of displaced employees. Because professional status impacts negotiation power when displaced employees search for new jobs, status change influences careers. Status change after organizational failure has been studied in diverse organizational contexts such as banks (Cannella, Fraser, & Lee, 1995), law firms (Rider & Negro, 2015), filmmaking (Pontikes, Negro, & Rao, 2010) and energy (Jensen, 2006). This research has suggested that an influential mechanism of intra-professional status loss is that potential employers stigmatize displaced employees on account of their 'mere association' (Goffman, 1963) to a failed organization (Cannella et al., 1995; Rider & Negro, 2015; Semadeni, Cannella, Fraser, & Lee, 2008; Sutton & Callahan, 1987).

Extant research on intra-professional status change following organizational failure has addressed failures with declines and aftermaths sufficiently prolonged for mechanisms of stigmatization to play out. The resulting theorizing has not addressed status change following fast organizational failure. Mechanisms of stigmatization require time to emerge, and hence this explanation of employees' status change falls short in cases where organizational failures play out too fast for stakeholders to reach cohesion on a shared perspective on the failed organization. Globalization, automation, and digitalization have added to the dynamic landscape of the rise and fall or organizations. To explore how mechanisms of status change may be influenced by the nature of organizational failure, we integrate literature on status change and stigma with literature on organizational decline. We investigate two phases of organizational failure, decline and aftermath, and suggest that if they play out fast, it is unlikely that stigmatization will be a dominant mechanism driving status change. In the decline phase, employees may react to organizational failure, and this constitutes a signal to future potential employers, which impacts stigmatization. Such signaling, however, is conditioned by how much time employees have to react before they are displaced. In the aftermath phase, stigmatization happens as industry stakeholders 'de-individuate' displaced employees and build disapproval, and such social processes need time for interaction, exchange of information, and construction of shared perceptions (Devers, Dewett, Mishina, & Belsito, 2009; Goffman, 1963).

To explore alternatives to the notion that organizational failures lead to status loss and negative career outcomes, we undertook an in-depth study of a sudden and fast organizational failure, the unexpected and fast failure of the market leading bunker oil trading company OW Bunker. OW Bunker experienced bankruptcy after only four months of decline, which went largely unnoticed by industry and employees. The majority of employees found new work within a month of. Using a mixed-methods study design, we combine interviews with hand-collected employment data and provide a detailed narrative of this case of organizational failure. We tease out how the nature of the failure itself, as well as industry contingencies, influence mechanisms of status change of displaced employees. We find that status change for OW Bunker employees was not driven by stigmatization. Instead we propose a new mechanism as explanations of the observed outcomes. We label this new mechanism blaming, i.e. perceived culpability of those displaced employees with comparatively strong association to organizational failure. Comparing blame to the extant theoretical notion of stigma, we suggest that while both compensate for imperfect information, stigma entails weaker association to failure and hence 'taints with a broad brush' compared to blame's 'pointed brush'. We discuss boundary conditions for blaming as a dominant status change mechanism following organizational failure. We argue that while it was the speed of OW Bunker's failure that inhibited stigmatization, it was the failure's organizational and geographical heterogeneity that facilitated blaming. Furthermore, we discuss the role of the nature of social capital in the bunker oil industry in propagating blame.

2. Organizational failure, displacement and status change

We integrate literature on status change with literature on organizational decline, in order to build a conceptual point of departure for our empirical case study. We first summarize literature on status change and stigma following organizational failure. Subsequently, we investigate the nature of organizational failure, arguing that fast organizational decline and short aftermath do not facilitate stigmatization. We point to the need for undertaking new empirical work in order to build theory on the status change mechanisms operating following fast organizational failure.

The ultimate organizational failure is the declaration of bankruptcy, an organization's involuntary and non-strategic exit (Headd, 2003). One particular issue related to organizational failure has been subject to recent research attention: How it impacts the status and careers of displaced employees. An organization's exit is followed by intra-professional labor market

matching between displaced employees searching for new employment in the same industry and potential new employers taking advantage of the opportunity to recruit available industry processionals (D. Phillips, 2001). When displaced employees search for a new job, they may experience intra-professional status change in the guise of obtaining a new job at a different salary, at a different hierarchical level, in a different-status firm or geographical location (or, in the extreme case, not obtaining new employment in the industry at all). Extant research unanimously finds that displaced employees suffer intra-professional status loss following an organizational failure. A negative effect of organizational failure on executives' careers was found by Semadeni et al (2008) across industries. Sutton and Callahan (1987) found a "spoiled organizational image" and strong negative effect on career opportunities following organizational failure of four computer firms. Cannella et al. (1995) compared the careers of managers from existing and failed Texan banks, and found that managers from the latter suffered status loss. Rider and Negro (2015) found evidence of diminishing cumulative career advantages for partners in a failing law firm. Finally, Singh et al. (2015) contributed to this research stream by showing that former entrepreneurs from failed ventures lost status not only with creditors, banks and potential new employers, but even with their families.

Intra-professional status change is the result of bargaining during the job application process. The lower the relative bargaining power of job applicants, the more likely is their loss of status (Phillips & Sorensen, 2003). Bargaining power of displaced employees is influenced by two factors. First, it may be low simply because the first-best employment option has failed, leaving this particular category of job applicants with fewer alternatives to pursue (Rider & Negro, 2015). Second, which we focus on in our analysis, bargaining power is influenced by how potential new employers evaluate displaced employees' probable future performance (Beckman & Phillips, 2005; Blau & Duncan, 1967; Phillips, 2001). Such an evaluation may take its cues from signals specific to the individual, or to a group to which s/he belongs. We shall deal with these two types of signals in turn.

a. Individual Signals and Human Capital

When employers evaluate job applicants' probable future performance the most important criterion is each applicant's individual human capital. However, information on human capital is often imperfect, and potential employers therefore take advantage of available signals (Bidwell, 2011). One such signal is education. Formal educational background signals an applicant's skills and may, dependent of the educational institution, increase the employers'

perception of the applicant's status (Rider and Negro, 2015). Another important signal is tenure at the previous employer and experience with working as a manager. It is inherently difficult to assess applicants' past performance. Aspects such as an applicant's contribution to successful projects or centrality in networks (Washington & Zajac, 2005) is difficult to acquire reliable information on and assess. Instead, potential employers may use the applicant's tenure in his or her previous position and/or experience with working as a manager in the former job as signals of past performance. Finally, if an applicant's prior employment was with a failed organization, new employers may use the applicant's observable behavior in connection with the failure as a signal. An important determinant of future performance will be the job applicant's sagacity in the guise of perceptiveness, moral, and good judgment. This is particularly difficult to evaluate for a potential employer, but an early voluntary resignation from an organization that failed later may be taken as a strong signal of sagacity (Semadeni et al., 2008). Conversely, employees who remain with a failing organization and end up displaced may be evaluated to lack good judgment and/or the ability to succeed in securing an outside option before it was too late (Jensen, 2006).

b. Group Specific Signals and Stigma

The very fact that an employee has worked in a failed organization may cause status loss (Amankwah-Amoah, 2016; Rider & Negro, 2015). Failure, especially if it receives widespread attention, leads to status loss for an organization (Jensen, 2006), and such status loss has been shown to spill over to their employees (Amankwah-Amoah, 2016, Rider & Negro, 2015). When there is a risk that hiring displaced employees will lower the status of new employers, potential employers are prone to 'de-individuating' such job applicants and evaluate them as a group: Those affiliated with a failed organization are perceived as potentially 'contagious' (Devers et al., 2009). The dominant perspective is, that the group-specific signal of having worked in a failed organization lowers employees' bargaining power.

Extant literature on stigma has analyzed this mechanism in detail and describes a two-stage process from an organization's failure to the potential stigmatization and status loss of its displaced employees. The process is enacted by industry stakeholders in the guise of professionals, employers, investors, and industry observers (Bitektine, 2011; Devers et al., 2009; Washington & Zajac, 2005) – what Goffman (1963) calls the industry's "audience". First, after the failure of on organization, industry stakeholders form individual perceptions on the organization and its failure, including whether it may have deviated from generally accepted norms. Second, when stakeholders exchange perceptions on the failed organization, they

"compare their emergent perceptions and triangulate on a common perception" (Ashforth & Humphrey, 1997, p.54) Over time, such shared perceptions may converge into an institutionalized disapproval of the failed organization, stigmatizing the entire group of its displaced employees. This “virtual social identity” of displaced employees may very well deviate from their “actual social identity”(Goffman, 1963). Nevertheless, the stigma impacts their bargaining power when applying for a new job: Potential employers are likely to de-individuate them on the basis on how other stakeholders in the industry are likely to perceive them (Devers et al., 2009).

Individual signals of human capital may moderate the effect of stigma. Education is likely to counterbalance it. Rider and Negro (2015) found that a prestigious educational background (attending an Ivy League law school) of displaced employees counterbalanced their status loss. Conversely, working as a manager may increase stigmatization: Not only are managers formally accountable for organizational failure, they are also, given their access to information and influence in decision-making, likely to be particularly strongly stigmatized by industry stakeholders (Sutton & Callahan, 1987; Jensen, 2006; Semadeni et al., 2008). In their study of Texan bank managers, Cannella et al. (1995) found that status loss after organizational failure increases with managerial rank. On the other hand, status loss is reduced when the reason for the organizational failure is arguably beyond managerial control. An employee’s resignation before the organizational failure comes to the public’s awareness may also lessen the effect of stigma. Semadeni et al. (2008) found that that the timing of resignation from failed organizations moderated the negative status effect for displaced employees: the closer to the actual bankruptcy employees resigned, the more their subsequent careers suffered.

Stigmatization is a social process that requires industry stakeholders to interact and exchange opinions. The process of converging upon shared perceptions of a particular failed organization is also subject to political negotiation. The majority of stakeholders in an industry often have shared interest in appearing less flawed themselves by stigmatizing particular others (Link & Phelan, 2017; Zanna & Olson, 1994). However, some stakeholders often have particular interest in influencing who attracts a stigma. This is the case, for example, when public authorities gain legitimacy through responding to public health risks by shutting down businesses perceived as associated with spreading an infection (Hudson & Okhuysen, 2009), or when a company gains status by publicly denouncing a competitor (Jensen, 2006). Conversely,

some stakeholders may have special interest in "normalizing" an organization that others see it as flawed, because stigma would potentially rub off onto that stakeholder (Goffman, 1963).

As outlined above, extant research has studied status change after dramatically different cases of organizational failure. However, scant attention has been paid to how the nature of organizational failure may influence the mechanisms of status change and stigma. In the following, we develop theory of how fast organizational failure change the mechanisms related to employee status change.

3. Fast organizational failure

The public record of an organization's failure is the declaration of bankruptcy. Before and after the date on which the organization cease to exist as a separate legal unit, there are distinct phases of, respectively, decline and aftermath (Baum & Mezias, 1992; Hambrick & Aveni, 1988; Rider & Negro, 2015; Sheppard, 1994, 1995; Thornhill & Amit, 2003). We investigate these two phases below, with particular attention to how their speed may affect status change and stigma.

a. The Phases of Organizational Failure

Decline. Organizational decline can be attributed to misalignment between the organization and its environment (Mellahi, 2005; Sheppard & Chowdhury, 2005). The speed of the decline and whether it ultimately results in bankruptcy depends on changes in the external environment in combination with endogenous factors and the ability to respond in an appropriate manner (Amankwah-Amoah, 2016; D'Aveni, 1989a, 1989b, 1990; Sheppard & Chowdhury, 2005). Given a sudden extreme misalignment between an organization and its environment, managers may not be able to adjust at all (Sheppard & Chowdhury, 2005). However, even under gradual decline, materializing as a downward spiral, managers may fail to appropriately adjust organizational strategy, given a lack of resources or myopic behavior (Weitzel & Jonsson, 1989). For some employees, gradual decline provides the impetus for resigning. As mentioned, having done this early in the decline phase may be a strong signal of sagacity later.

Aftermath. The aftermath after bankruptcy is characterized by the industry's adjustment to the exit of the organization (Amankwah-Amoah, 2016). Early in the aftermath is an immediate response by stakeholders in direct contact with the failed organization to salvage as

much as possible: Suppliers and customers attempt to recoup deliveries and payments, and competitors attempt to conquer market shares and secure valuable resources abandoned by the bankrupt organization. One such valuable resource is the employees displaced by the organizational failure. Since many such employees also start looking for new jobs immediately following bankruptcy, the early aftermath is a time of job "reshuffling" and labor market matching. The bargaining position of displaced employees during this process may be impacted by stigma, arising from industry stakeholders attempting to adjust and reach a cohesive understanding of the failure during the aftermath (Amankwah-Amoah, 2016). Perceptions and stigmas may continue to change later in the aftermath especially if there are protracted legal procedures and new information emerge about the organization and its decline.

b. Fast Failure

Extant research has focused on organizational failures with slow declines and aftermaths. For example, in the organizations studied by Rider & Negro (2015) and Semadeni (2009), employees exited both before and after bankruptcy, and continued to find jobs during a long aftermath. The studies by Jensen (2006) and Sutton & Callahan (1987) also illustrate long aftermaths during which gossip and media attention fed stigmatization of organizations and their displaced employees. Many failures, however, happen fast (D'Aveni, 1989a, 1989b). In the following, we shall investigate how speed of failure impacts status change, pointing out that fast declines and aftermaths do not facilitate the mechanism of stigmatization.

Fast decline. The speed of organizational decline determines the availability and effectiveness of some of the individual signals influencing status change for displaced employees. On the one hand, managers of a failed organization who did not adjust strategy in time may be seen by potential employers as responsible for the failure. On the other hand, employees who resigned well ahead of bankruptcy may be viewed by potential employers as particularly sagacious. These individual signals hinge upon decline being gradual, so that capable managers and sagacious employees will have the time to respond, adapt, or resign (Mellahi, 2005; Sheppard & Chowdhury, 2005; Weitzel & Jonsson, 1989). Given unexpected events, particularly exogenous, decline may be so sudden that there is insufficient time for managers to avert bankruptcy. Consequently, having worked as a manager will be a less valuable signal for potential employers to evaluate probable future performance of displaced employees. A sudden decline also makes it difficult for employees to resign well ahead of

bankruptcy, and even sagacious employees will be displaced. Given fast decline, there will be no early resignations signaling to future potential employers.

Fast aftermath. The speed of the aftermath after bankruptcy determines whether stigmatization is possible, because this mechanism hinges upon industry stakeholders forming shared perception of a failed organization. If job "reshuffling" and matching between displaced employees and potential employers happens before industry stakeholders have had sufficient time to interact and exchange information, stigma is unlikely to arise and drive the status change of displaced employees. The speed of job "reshuffling" and matching depends on the level of competition on the labor market. High competition, i.e. a scarcity of industry professionals, will not only enhance the bargaining power of job seekers in general, it is also likely to move potential employers to swiftly hire employees displaced by organizational failure (Marx, 2011; Marx, Strumsky, & Fleming, 2009). In order to take advantage of the rare availability of hiring industry professionals after an organization's failure, employers will seek to pre-empt competitors (Amankwah-Amoah, 2016). This may happen before any shared perceptions and stigma of these employees have formed across the industry.

In sum, for fast organizational failures status change of displaced employees is unlikely to be in the guise of stigma, which is the dominant mechanism addressed by extant research. In the rest of the paper, we use the conspicuous empirical case of the bankruptcy of OW Bunker to develop alternative explanations to the prevalent notion of stigmatization as the dominating mechanism driving intra professional status change after organizational failure.

4. Methods

We study the sudden and spectacular failure of the oil reselling company OW Bunker. OW Bunker was founded in 1980, and prior to its failure, it was a market leader in the bunker trading industry. Holding well over 10% of the global market for bunker oil trade at the end of 2013, the firm had 622 employees (of whom about 205 were in reselling as trainees, traders or trade managers) spread across 29 offices worldwide (including all of the high-status trade hubs) and owned 30 operating supply ships. In March 2014, OW Bunker finalized the second most successful IPO in recent Danish stock exchange history, but only six months later, in November, the firm filed for bankruptcy.

The failure of OW Bunker happened fast: To the public, employers and most of its investors, the company's decline was unknown until two days before the declaration of bankruptcy. Due to the fast and unexpected character of its failure, the case OW Bunker can be seen as a useful quasi-natural experiment for studying status change mechanisms in the vein of the study by Rider and Negro (2015): The treatment, i.e., failure, is not administered by us as researchers, but we are able to identify heterogeneity in individual outcomes.

To understand this sudden failure and the intra professional status dynamics experienced by the displaced employees, we must first turn to the context of bunker oil trading. The bunker oil industry employs approximately 4,500 people worldwide and deals with reselling of marine fuel oil in large quantities (bunker). The industry is very competitive and firms undertake significant risk. Bunker oil firms are service intermediaries between fuel suppliers and operators or owners of ships in the global shipping industry and typically have two core activities. One core activity is *trading*, acting as middle man between sellers and buyers of bunker oil. This is a high-volume undertaking demanding significant capital, but involving modest risk: Trading happens fast, so margins are low but well known in advance. Another core activity is *physical supply*: Firms proactively buy large stocks of oil for resale. This activity has higher margins, but because it ties capital in large quantities of bunker oil for long periods of time, it is subject to oil price fluctuations and hence entails high risk. In addition to these two core activities, some bunker oil companies with financial credibility speculate in providing *credit* to resellers of oil with less financial support. This is a high-risk activity whereby the organization acts as bank to other organizations. Credit sleeve deals, where one company provides credit to another on the basis of that company's future sales, is particularly risky, because the profitability of the deal both hinges on the credit taking organizations ability to repay, and at the same time speculates in future oil prices. Repayment of such credit hinges upon the credit taker's reselling the oil at an expected price, and if oil prices drop below this level, both companies in the deal lose money. Even if such auxiliary practices are not uncommon in the bunker oil industry, they are rarely flagged publicly, but organizations undertake this activity in the hope of increasing profit margins in a highly competitive industry.

Because oil is a highly standardized commodity, the competitiveness of bunker oil firms depends on quality and speed of the service they provide. The product is standard and margins are low, the only way for bunker oil firms to generate above market profits is to employ the best traders. Knowledge and social relations of traders are significant strategic assets. Successful

traders hold knowledge of the financial dynamics of global interest rates and oil prices is required. They also have an extensive local knowledge of suppliers and buyers along with their requirements on product quality, price or delivery terms. Traders capitalize on, and build trust through, their personal relations to suppliers, buyers and banks.

Apart from credit capacity in guise of credit lines at partnering banks, the most strategic assets for any bunker oil trading form is its employees, and in particular its traders and trading managers, undertaking the core activities of trading and physical supply, as well as auxiliary activities related to credit. Because of the industry specificity of their knowledge as well as social relations, traders and managers who seek alternative employment are likely to do so within the bunker oil industry, and consequently, their employers implement harsh non-compete clauses in their work contracts.

Finally, bunker oil operations and job markets are truly global. Market leading bunker oil firms have subsidiaries in the world's important shipping hubs. For market leading firms, presence in the top-tier hubs of Singapore, Hamburg, Dubai, Antwerp and Texas is necessary. These distinctions between hubs vs. backwater geographical locations and market leaders vs. minor employers provides opportunity to study intra professional status change beyond vertical movements up and down organizational hierarchies.

a. Data

In order to build a rich narrative of the nature and mechanisms of status change of displaced employees of OW Bunker and how these relate to the nature of the firm's failure as well as industry context, we use a mixed-methods study design combining interviews with hand-collected employment data.

Interviews. To understand the perspectives of displaced employees and industry participants on the bankruptcy of OW Bunker, we undertook interviews between February and June 2015, shortly after the bankruptcy. Our focus in these interviews were to explore perspectives on the bankruptcy and experiences with the labor market dynamics. To this end, we used a semi-structure protocol, which focused on 1) The nature of OW Bunker's failure and its contingencies, and 2) Displaced employees' and potential new employers' perception of whether and how the particularities of OW Bunker's failure impacted displaced employees' careers. We sampled interviewees amongst displaced OW employees with the aim of gathering the experiences of as diverse a set of displaced employees as possible in terms of gender,

nationality, position in OW Bunker, geographical location and career experience prior to employment at OW Bunker. Particular attention was paid to ensuring interviews with both displaced employees who found new employment within the industry and employees who either left the industry or had not secured new employment yet. The variation in the sample of our interviewees (displaced employees of OW Bunker) is presented in Table 1 below.

******* Insert Table 1 about here *******

In addition to these 19 interviews with displaced OW Bunker employees, we undertook three interviews with executives in bunker oil trading firms. We used a snowballing strategy in order to identify these C-level executives all in position to influence the decision of whether to hire displaced OW Bunker employees or not. In these interviews, we focused particularly on their understanding of the industry and the bankruptcy of OW Bunker and their arguments for whether or not to hire displaced OW Bunker employees. We promised confidentiality to all interviewees, and recorded and transcribed interviews (undertaken in English, French and Polish). 22 interviews were with a single interviewee, in one interview two former OW Bunker employees participated. Interviews lasted from 10 to 90 minutes, with an average duration of 30 minutes.

Quantitative Data. While the perspectives and experiences of displaced employees and employers are crucial to understanding the mechanisms of intra professional status change following a fast failure, we need quantitative data to assess the extent and direction of the change. To that end, we hand-collected quantitative data on the career trajectories of 207 displaced employees directly involved in trading at OW Bunker. Based on the IPO we assessed that at the time of the bankruptcy, there were a maximum of 230 employees at OW Bunker in trading related positions. To identify these employees we undertook a series of steps: First, we identified all OW Bunker subsidiaries and through these entities, we identified all employees within each subsidiary by name. We used company websites (e.g., http://www.dynamicoiltrading.com/contact-singapore.php) for this identification process. Second, we used industry media releases, industrial reports and qualitative interviews with displaced traders and trade managers to complement and verify the population of employees in trading related positions. If a name that was not on the original list was mentioned in the written material or in an interview, we investigated further, and if that person was indeed an employee at OW Bunker at the time of the bankruptcy, we added the name to the list. The outcome of this iterative process was a list of all displaced OW Bunker employees and their subsidiary

affiliation at the time of organizational failure. Third, we then collected detailed personal information on the education, professional experience and employment location of every displaced employee on this complete list. Our primary source of data collection in this phase was the LinkedIn networking platform. Thanks to its widespread use among professionals in the industry, we managed to retrieve detailed self-reported information on most displaced OW Bunker employees' backgrounds and careers. Due to incomplete information, we excluded 8 observations from the final data set. Furthermore, 9 displaced employees did not have LinkedIn accounts. We gathered complete information on 4 of these through other sources. In total, we excluded 13 displaced employees from the data set due to incomplete information. The result of the data-collection process is a dataset consisting of observations on 207 individuals. Of these, 5 are junior trainees, 108 traders (52%), 25 senior traders (12%) and 69 trade managers (33%). To enhance the quality of our data, we obtained documents written for the IPO and internal records listing employees in total and by occupational category (reselling, administration, seagoing personnel and operators). We compared our data to these sources and found only minor variations which are likely to be caused by turnover in the period passing between the IPO and the bankruptcy. The IPO and the internal records were drafted 6 to 12 months before the bankruptcy therefore, we needed to ensure that the distribution across categories remained consistent at the time of the failure. We presented selected interviewees with the displaced employees' distribution across categories in our data, and they assessed it as correct. Based on these verification processes, we regard the data as representative of the population of all trading employees at OW Bunker at the time of the failure.

Secondary data. We use media coverage, industry analyses, the IPO and OW Bunker press releases, as well as summaries of court proceedings to understand the causes of the failure. The IPO and OW Bunker press releases were analyzed in full. The media coverage was, however, so extensive and of such varying quality that we limited our analysis to the coverage by the Danish Broadcasting (DR), and leading industry periodicals: Shipping Watch, Trade Wings, Ship and Bunker.

Analysis Strategy. In the analysis of the quantitative data, we implement a pretest–posttest design to assess the nature of intra professional status change experienced by displaced OW Bunker employees after the organizational failure. The ideal setup for quasi-natural experiments would be based on a differences-in-differences framework with a control group. In our case, the whole bunker oil industry is treated by the bankruptcy of the market leading OW

Bunker. It is likely that the sudden supply of job seekers on the market immediately after the failure of OW Bunker will impact the propensity of employees of competing firms to change jobs in the study period. Consequently, we cannot identify a suitable control group. However, the widespread use of non-compete clauses in traders' contracts creates substantial friction in the labor market and allows us to expect turnover within the industry to be relatively low. According to our best knowledge, local regulations, except in the State of California, support non-compete clauses. The long average career duration at OW Bunker (65 months) corroborates the generally low turnover rates. Since the failure of OW Bunker was sudden and largely unexpected, we advance that subsequent moves and changes in employees' careers are a direct result of the collapse.

In the analysis of the qualitative data, we can unfortunately not rely on a pretest- posttest design. The bankruptcy of OW bunker was as much of a surprise to us as to the industry in general and to the employees. We therefore resort to analysis of the recollecting of the job seeking process by the former OW Bunker employees. Our analysis focus on both objective observables, i.e. number of offers received and duration from declaration of bankruptcy to first offer/offer acceptance, and on interviewees' interpretation of employers' motivation for making these offers. Our strategy requires us to clearly distinguish between these two types of information: While interviewees are unlikely to remember number of offers and their timing incorrectly, their interpretation of the motives behind these offers may be biased. We therefore exert extra caution only to rely on interviewees' interpretations of the motives behind the offers, when these motives are corroborated across multiple interviews. We first analyze the decline phases to illustrate the suddenness of the bankruptcy, and the reception of the news by employees and industry. To understand this phase, we predominantly rely on the perspectives presented in the interviews and media coverage. Second, we analyze the aftermath of the bankruptcy based on interviewees' recollection and descriptive statistics. And third, we rely on the perspectives presented in the interviews and econometric analysis of the quantitative data to analyze status change of the displaced OW Bunker employees.

5. Findings

Our analysis revealed that even though the decline of OW Bunker had been underway for some months it came as a surprise to all stakeholders as well as the public in general when the exposure of the organization became known just two days prior to the bankruptcy. The primary causes for the crisis were high risk practices which were widespread, though not widely

announced, in the industry. In the aftermath phase, displaced employees experienced massive interest from potential employers, and quickly found employment elsewhere. This was in part due to the perceived quality of OW Bunker and OW Bunker employees, partly due to non-compete clauses made null and void by the bankruptcy, and partly due to the strong social capital in the industry. Our theorizing suggests that under such conditions, audiences (in this case potential employers and other relevant stakeholders) do not have time to reach the necessary coherence to stigmatize. Hence, we need to explore the prevalence of other mechanisms guiding employee status change. Our analysis corroborates this notion.

a. The Decline of OW Bunker

In 2012 OW Bunker established its second subsidiary in Singapore, as an independent firm called Dynamic Oil Trading (DOT). In 2014 a subsidiary of the same name was also created in Dubai. The Singaporean subsidiary DOT was dealing with the most competitive local market, and was highly involved in profitable, high-risk credit-related activities. While constituting a highly profitable revenue stream auxiliary to OW Bunker's trade and physical supply activities elsewhere, DOT was not flagged as a part of OW Bunker to industry observers, and its status was opaque even to OW Bunker employees. *John*, a displaced OW Bunker manager explained: "We have always been told that Dynamic Oil trading was a star inside OW Bunker. We didn't know that it was owned by OW Bunker, we thought it was a sister company. We were told that they had and average earning of $20 or $15 per ton, where the average earning of OW Bunker was $8.5".

"Of cause when you know that the average earning of the two biggest in the world – World Fuels and OW Bunker – was around $8.50 per ton, then there is fraud or some kind of hanky-panky involved. It was used internally to push the traders to earn more, earn more because if Dynamic Oil trading can do it, you can do it".

DOT's profits were registered as a part of OW Bunkers Risk Management portfolio, and consequently, after 2012, this rapidly became an important profit center inside OW Bunker. *John* provided a good description of the situation:

"They [Risk Management] are supposed to just be blank, but they actually earned $20 million. That means it is such a big part of the success of OW that it was demanded that this $20 million was earned your after year".

OW Bunker entered 2014 with strong results from DOT and the Risk Management division. This exceptional performance was leveraged for boosting the success of OW Bunker's IPO that same year. On March 28th 2014, the company successfully finalized its IPO with 780 million USD regarded by experts as one of the most successful in the recent history of the Danish stock exchange and largely commented on by local and global media. However, the first periodic report after the IPO brought in unexpected tensions. *John* elaborated:

"I think the pressure from the IPO came in the sense that they [the shareholders] were demanding the same earnings from the company as the year before. When you have earned $20 million on something that is not created to earn money, but to secure money and provide safety - then there is an issue".

It became difficult to sustain the exceptional level of results, as the large-scale credit deals in the Risk Management division and undertaken largely by DOT required increasing financial resources. In an attempt to secure extra credit, OW Bunker executives requested their long-time partnering bank to increase the extent of credit lines. The partner refused. As result, mid 2014, OW Bunker decided to end the cooperation with that bank and instead started working with a consortium of 13 banks with limited experience in the bunker oil industry, more willing to provide the wanted credit. With credit lines smoothened up, DOT was able to secure a deal in August 2014 of 700 million DKK in Singapore with Tanker Oil Marine Services (TOMS), a long-time reselling partner of DOT. Later referred to as "Far East Deal", this was a credit sleeve deal, based on the expectation the then stagnant oil prices would go up and that TOMS (the sleeve provider) would be able to resell oil at a high price, repaying the credit to DOT and securing significant profits for both parties. Unfortunately, instead of rising, the oil prices plummeted, making it impossible for the partner to resell the product at a profit.

This created a fast cascading decline with TOMS, DOT, and consequently OW Bunker. At the end of August, declining oil prices made TOMS unable to meet its contractual requirements and, in consequence, OW Bunker took security in the firm. In October, OW Bunker issued a public notice that its Risk Management division had incurred a 150 million DKK loss and publicly informed about a downgrade in the expected performance in the reporting period. Following the statement, on October 7th, creditors started to opt out from the banking consortium and the stock prices fell. The loss kept on growing and reached 719 million DKK. Nevertheless, in the beginning of November, OW Bunker had managed to reestablish

confidence among the remaining banks in the consortium and a positive feedback of financial institutions towards OW Bunker refinancing. Only a few days later, however, OW Bunker's headquarters received a message from DOT Singapore that TOMS had gone bankrupt and triggered a range of margin calls among investors. Hence, the "Far East Deal" had incurred an additional loss of 737 million DKK. The same day, due to a continued drop in oil prices, the total loss reached 1.5 billion DKK. OW Bunker halted all its trading activities and issued a management notice to employees and a press release. This announcement surprised the employees. Trader *Adrian* said: "During a business lunch I got the email that all trading activities had to be stopped. I told the business partner, that he would have to pay for lunch, because I had the feeling that my credit card would not work anymore".

Upon the cease of trading activities, some of employees never came back to the office, some still came in in the following week. This period was described by *Anne*, another trader: "There was no more coffee, no more anything, we were just happy there was toilet paper. Then our credit cards were rejected. We could not use the company credit card anymore. So we're not doing anything. We are just happy that they didn't lock all our mobile phones down".

On November 7th, OW Bunker filed for bankruptcy. Industry stakeholders were surprised, as the extent of the decline was not communicated publicly before the press release. The bankruptcy also came as a shock to the employees of the firm, mostly unaware of how serious the threat, looming from the end of August, was to the organization over the past month. Trader *Igor* remembered this moment: "So basically, when the company went belly up it was obviously, for all of us, a massive, massive, massive surprise, it was a shock". *Keith*, a manager, corroborated*:* "You could see that nobody had the emergency planned. Nobody could foresee this because it had been a very successful company, a very structured company."

b. The Aftermath of OW Bunker's Bankruptcy

Job "reshuffling" and labor market matching. As of today, the late aftermath is still ongoing along with legal battles with suppliers and customers of OW Bunker. In 2014, OW Bunker's collapse on November 7th 2014 kicked off an intensive period of displaced OW Bunker employees finding new jobs. The collapse of such a big industry player created a rare situation in the bunker oil industry: The sudden availability of hundreds of highly skilled industry professionals with experience from a market leading firm, free of non-compete clauses. As a result, potential employers scrambled in to hire displaced OW Bunker employees. As

Adrian put it: “We were free [of non-compete clauses]. The market obviously knew that so we were approached by, I think at least six companies within the first week”. *Anne* corroborated: “A lot of competitors within shipping and trading were contacting all of us. They wanted to hire us … it was customers and competitors. Generally, in the shipping industry all people know each other”.

The process was very fast. As manager *Jeff* described it: “You could feel that there were some companies that were really interested in hiring us, and then there were companies that really needed to hire us. So this company that really needed to hire us was extremely aggressive. They gave me a contract for the ten people, including myself, which was valid for two hours”.

Another one corroborated: “So Friday evening, on the 7th the announcement of the bankruptcy was out, and on Saturday around 10 o’clock in the morning I was sitting in the garden of my current employer agreeing on the terms. So in less than 24 hours I had a job”.

Figure 1 below illustrates the speed of job reshuffling during the aftermath of OW Bunker’s failure. More than 25% of all displaced employees remaining in the industry was already in their new job after a month after OW collapse, 73% after 1 month. Full employment was reached within 9 months period after the collapse.

******* Insert Figure 1 about here *******

Hiring strategies employed by potential employers. In the early aftermath of OW Bunker’s failure, employers used various strategies in order to hire displaced employees. Some attempted to bulk hire entire functional teams of displaced employees and then, after a trial period, only keep the best ones -what the industry called a “warehousing strategy”. Manager *David*, who negotiated a contract for a team, explained: “I first realized that I was pretty sure I could get a job on my own, but I also knew the bunker industry and I knew the value of OW, which was quite high in the sense that we [our team] were number one and we were beating everyone every day”.

Nevertheless, some of employees hired as team were eventually to let go upon a trial period. *Mick*, a senior executive from OW Bunker competitor, involved in hiring some displaced OW Bunker employees, summed up the second wave of transitions in the labor market as follows: “And we can also speak from competition that some contracts have been terminated or changed the by own free will and stuff and like that so it’s you know yeah”.

This preemptive and active employers' strategy required a fast decision making as well as substantive financial resources.

Another hiring strategy leveraged upon personal relations between potential employer and displaced employees, enabling one of them to reach out to the other. For example, trader *Brian* explained*:* "I am now at [company A], who I contacted myself, because I had a friend who was already working here". Trader *Adrian* shared a story of how his girlfriend, having worked in the same profession in a different country, resigned from her work to join him in his working location in the immediate period preceding OW Bunker collapse. Immediately upon the announcement of the bankruptcy, her former boss, a competitor known personally by the trader in question, reached out to them. The trader related their conversation: "He said: "My friend, I think you are going to be out of a job by the end of the week." I said "I think so too. So would you be interested in hiring me?" He said "Yes. I have your girlfriend's old job and I have a job on the risk management team if you want it. "Then I said "Why don't you just open up an office here in [location]? You don't have one yet and your strongest competitor has vanished and maybe we can do the same trick for you".

Trader *Anne* summed up her potential use of personal relations in order to get a job within the industry: "I can go out and call 200 people and know they will remember me … lot of competitors within shipping and trading were contacting all of us. They wanted to hire us".

Furthermore, indirect relations or referrals by a third party were used as a strategy for employers and employees in labor market matching. As *Anne* put it: "Negative people come in every day and fail to perform. When we know that they are not going to run the extra mile, when should another company then hire this person, when they know that they are lazy?".

Finally, a grapevine strategy was commonly used by employers in decisions whether they should hire a displaced OW Bunker employee based on employees' reputation and other information. Trader *Adrian* mentioned such effect in the context of the job search and employers attitude towards displaced OW Bunker employees: "No one forgot the reputation we had before we went bust".

Manager *Jeff* corroborated*:* "Everybody I speak to in the bunker industry and shipping industry can vouch for the employees. It is like a quality stamp. OW Bunker employees were actually of a high standard and they are still regarded as very highly skilled people".

Such effect of reputation was not only present in the immediate period after the bankruptcy. Its effects are long lasting and convey a potential for a differential performance of displaced OW Bunker employees in their new jobs. As trader *Eva* put it: "I can still use it today when I speak to clients or speak to new clients, sometimes I use the phrase "I used to work with OW", because OW had a really good name and still has it, even though this happened to OW. If you present yourself to a client and say "I used to work at OW", then something opens up".

The above hiring strategies are different ways of evaluating the probable potential of job seekers displaced by OW Bunker's failure. Whereas warehousing relies on actually testing out job seekers to obtain information about them, relying on personal relations, or on grapevine information, operate under imperfect information. Below, we analyze status change arising from the sum of the hiring strategies of potential employers, and investigate which mechanisms drives this status change.

c. Status Change of Displaced OW Bunker Employees

Some displaced OW Bunker employees chose to remain passive, given the substantial the amount of offers from potential employers during the very first days after the bankruptcy. *Mary*, a trader explained: "None of us really approached the market. We all kind of were approached by competitors almost immediately. As a team we had an offer from [company B], then another from [company C], so we were not nervous about where to go. We were more overwhelmed that we were getting approached by so many companies and it was exciting. So okay, I knew this [the bankruptcy] was happening behind us in OW, but it is nice to know that we have this support from competitors".

Others actively searched for jobs for themselves or others: from arranging contracts for whole teams to move to referring a colleague. The outcome of the job "reshuffling" and labor market matching was fast. Speaking for a whole office of displaced OW employees, trader *Adrian* explained: "We found a new employer and within four weeks we had a new job basically and started in the same office. We made a deal with the curator to buy the interior and we [OW] were sitting in brand new office space, so we could just start up there again, plug and play".

Trader *Anne* corroborated that a trend of finding a new job for displaced OW Bunker employees was general: "80% of all of my colleagues are having a job, I know for sure. Maybe even 90%, but I know for sure 80% is having a job".

Henrik, a CEO of the biggest OW Bunker competitor, explained the motivation behind hiring displaced OW Bunker employees: "It is not just that hiring those employees will add from day one to the profit, but it is a good investment because OW and OW employees always have had a good reputation" and elaborated further "Yeah, I think definitely the companies that could take immediate benefit of the OW situation is or are companies that have the financial power to do so and that can be taking on people (or) whole teams".

Mick, a senior manager from a different competitor, stated regretted missed opportunities for hiring displaced OW Bunker employees*:* "We should have been more aggressive or more yeah or more aggressive in that case but [company name] is trying to always you know recruit the process to get the right calculations".

Ron, a senior executive from a competitor who didn't hire any displaced OW employees elaborated on a potential immediate gain of buyers coming along with traders: "But, others did, so they went with it, but you know".

The result of such evaluations by potential employers of the probable future performance of displaced OW Bunker employees was that the latter in general obtained high-status jobs within the industry. Trader *Brian* saw it thus: "Most of the OW ex-employees went for similar level or similar type positions".

Some displaced employees even benefitted from a status increase in the guise of promotions or pay increases. Manager *David* exemplified this trend while talking about the hiring dynamics in his former team: "And to be honest, they got tremendous, tremendous pay increases, all of these seven people. So that was very positive and very good for them". *John*, another manager, put it more bluntly: "For many, it was a step up".

The descriptive statistics confirm that most of the traders and managers remaining in the industry did either get into jobs at a similar hierarchical level of even experienced a promotion. The majority found new employment at the same hierarchical level as they had held at OW Bunker, approximately 20% were promoted, while only approximately 11% were demoted. However, the hierarchical dimension is a noisy proxy for status change. Consequently, we further assess the extent of status change by combining hierarchical status change (demotion, status quo, demotion) with the status level of the new employer, proxied by its standardized number of offices worldwide and the standardized number of time the employer appears in general and industry press releases prior to November 2014. We deliberately attribute weight to

the various components of such scale measure so that the hierarchical dimension primes. The scale variable is called *status change* and takes values between zero and one, where values closer to zero denote a severe status loss. Table 2 shows the full extent of status change all OW bunker trade related employees upon leaving OW bunker with the use of the scale variable.

******* Insert Table 2 about here *******

Table 2 demonstrates that displaced OW traders land at slightly better jobs overall, as compared to the displaced OW Bunker trade managers even though the standard deviation from the mean is also higher as compared to the managers. The difference in means is significant at 0.005 level. The descriptive statistics on both: hierarchical dimension of the move and the latter along with new employers' characteristics capturing the extent of status change are largely in line with interviewees' perception that themselves and their former colleagues were very attractive to industry stakeholders and that they all have landed good jobs in the aftermath of OW Bunker collapse.

However, some displaced OW Bunker employees did not do equally well. Trader *Anne* indicated: "There are a few people here and there lagging behind, having a tough time finding a new job". Trader *Jeff* provided an indication on which employees would be at risk of status loss after OW Bunker's failure: "The top management, which played a role in both cases and then a few employees who maybe crossed the line of what is right and wrong. So out of a company (…) maybe a handful of them caused the bankruptcy. The rest of the people they were skilled in whatever they were doing in the company".

Trader *Anne* pointed out that the displaced employees who had been most closely associated with the organizational failure were most likely to suffer status loss: "Then all the people that have been in the media with their name, they are not able to find a job".

The most prominent signal in the media as to the locus of OW Bunker's failure was the firm's own press release on November 5:

> FRAUD IN SINGAPORE SUBSIDIARY: ADDITIONAL SIGNIFICANT RISK MANAGEMENT LOSS. The senior management of OW Bunker has today been informed about a fraud committed by senior employees in the Singapore-based subsidiary Dynamic Oil Trading (DOT) … The above events affects OW Bunker's operations and credit facilities.

DOT, and particularly DOT Singapore, was singled out as a distinct locus of OW Bunker's failure. We take advantage of this organizational and geographical heterogeneity of OW Bunker in analyzing the distribution of status loss and test for the status effects of a displaced employee having worked proximately to failure, i.e. employment in DOT in general, and DOT Singapore in particular. Adhering to extant theory on stigma, we also test for the effects of tenure, and for working as a manager. Table 3 demonstrates the extent of status loss with the use of the variable combining the characteristics of vertical move and new employers for all employees that correspond to the indication of possibly vulnerable displaced OW Bunker employees: displaced DOT employees and managers. This table complements the statistics provided in Table 2 including also the frequencies of displaced employees becoming unemployed so expanding the analysis of intra-professional status change.

******* Insert Table 3 about here *******

Table 3 demonstrates that the mean of *status change* of displaced DOT employees is significantly lower than the overall number and also lower than the one of managers. The Chi-Square test of association demonstrates that the frequencies of demotion experienced by displaced DOT employees are higher than the expected ones. Logically, the trend is inversed for the pattern of promotions of these employees. Hence, displaced DOT employees and manager experienced status losses. In order to confirm these findings in a more robust way, we further used the quantitative data and run a series of regression analysis. We first used the three-level ordinal variable (0-demotion, 1-status quo, 2-promotion) and run a multilogit analysis including a dummy for management and an ordinal variable for DOT (0- not related, 1- DOT in Dubai or employee in Singapore, 2-DOT in Singapore) as independent variables along with a set of controls related to experience, education, nationality. The findings are displayed in Table 4.

******* Insert Table 4 about here *******

The findings were largely consistent and significant. Interestingly, the measure capturing the tenure at OW Bunker, even though it is positive, thus suggesting some positive effects and increased likelihood of a status gain, remains insignificant in the full model. Furthermore, we replaced the rough measure of the hierarchical move with the scale of combined characteristics of the latter and new employer and run a linear regression analysis. The results presented in Table 5 below corroborated a strong negative correlation between being a manager and a part of DOT Singapore and the likelihood of a status gain.

******* Insert Table 5 about here *******

In order to exclude that our results are driven by a selection of employees into jobs in the industry, or other individuals leaving the industry (alternatively becoming unemployed), we additionally run a Heckman selection model that largely confirms that our findings are not biased.

6. Discussion

One fundamental finding in our empirical study aligns with extant theory on intra-professional status change after organizational failure: An individual signal, in the guise of working as a manager, matters for status change for displaced OW Bunker employees. According to theory, being a manager is a signal of accountability for failure, and consequently, potential future employers evaluate the probable future performance of displaced OW Bunker managers as comparatively low, resulting in career disadvantages and status loss.

We also find that group-specific signals matter. However, at odds with extant theory, these signals do not drive stigma: There was no general status loss for all displaced employees as a result of their association with a failed organization. Instead, status loss was confined to employees having worked proximately to the DOT subsidiary inside OW Bunker. In the following, we shall theorize the nature of this status change, propose a mechanism, and discuss its possible boundary conditions.

a. Blaming as a Mechanism of Status Change

On the one hand, all DOT employees experienced status loss -- not merely the manager who was formally accountable and directly culpable for the high-risk sleeve deal that triggered the failure of OW Bunker. On the other hand, this status loss was largely confined to DOT. The majority of displaced OW Bunker employees elsewhere experienced no status loss, and some were even able to leverage labor scarcity and their momentary lack of non-compete clauses in bargaining for new jobs with higher status than they held in OW Bunker.

This is a status change mechanism that relies on group-specific signals, but unlike stigmatization, which would have applied across all displaced OW Bunker employees, it targeted a group which was smaller and more specifically defined than by general employment in a failed organization. DOT, and particularly DOT Singapore, represents those OW Bunker employees who might have shared the values and culture leading to organizational failure

because they worked organizationally and geographically proximate to the high-risk credit sleeve activities. Displaced DOT employees were evaluated by potential employers in a similar way as those in higher managerial positions who failed to implement sufficient risk management procedures: As more culpable for the organizational failure than other OW Bunker employees. We will call this status change mechanism *blaming*.

Compared to stigmatization, blaming during the aftermath of OW Bunker's failure was less of a social process. During job matching, potential employers needed to act fast and had imperfect information, but they were well aware of OW Bunker's failure's locus in DOT Singapore. This information was propagated by OW Bunker's own press releases and widely disseminated during the failure aftermath. Taking the cues from the same information about the highly localized nature of OW Bunker's failure, the individual evaluations of potential employers aligned, even without the social process of industry stakeholders interacting and exchanging information.

Blaming, as we identify it in the case of OB Bunker, is different from the status loss mechanism of scapegoating (Boeker, 1992; Brown, 1982; Khanna & Poulsen, 1995; Rowe, Cannella, Rankin, & Gorman, 2005) in two important ways. First, as conceptualized in extant research, scapegoats are typically found only among top management. Second, scapegoats suffer status loss regardless of their perceived culpability, i.e., they are unjustly blamed. In the case of blame of displaced OW Bunker employees, potential employers harbored justified beliefs that those who were blamed were also culpable, since they worked organizationally and geographically proximate to organizational failure.

b. The Broad vs. The Pointed Brush

Stigma, as conceptualized in extant research, typically applies to all displaced employees of failed organizations. Employment in a failed organization is a comparatively *weak association* to organizational failure, but it aligns with the broader research on stigma, which points to stigmatization of actors on account of their "mere association" to a group which has been deemed deviant (Goffman, 1963). For example, Pontikes, Negro, & Rao's (2010) study of 1950s Hollywood argues that the McCarthy committee as well as industry professionals stigmatized film actors not on the basis of their known communist beliefs, but on the basis of their one-off collaboration with other actors who were identified as communist by the McCarthy hearings. Extant research illustrates such stigmatization by weak association across a range of

industries (Hudson & Okhuysen, 2009; Jonsson, Greve, & Fujiwara-Greve, 2009; Piazza & Perretti, 2015; Yu, Sengul, & Lester, 2008). In the case of organizational failure, de-individuating by weak association stigmatizes the entire group of displaced employees of the failed organization. In other words, stigma taints *by a broad brush* (Pontikes et al., 2010).

By contrast, blame, as described above, while also a de-individuating mechanism based on group-specific signals, relies on comparatively *strong association* to organizational failure. In the case of OW Bunker, those who were blamed constituted a particular subset of the organization with organizational and geographical proximity to the locus of failure. Hence, blame taints *by a pointed brush*, affecting exclusively those incriminated by some evidence, leading potential employers to perceive them to be personally culpable for the failure.

c. Boundary Conditions

We will use the characteristics of our studied case in order to propose boundary conditions, all related to information, for when a mechanism of blame will be dominant in driving status change following organizational failure. The first two conditions relate to the speed of OW Bunker's failure: The fundamental fact that OW Bunker's failure was fast, in both the decline and aftermath phases, inhibited stigmatization and propagated blaming.

Speed of decline inhibits stigmatization. The speed of the decline did not allow employees to resign and signal sagacity before OW Bunker's exit. Thus, the only individual signals available to potential employers was employees' education and whether they worked as managers. As mentioned, compared to early resignation as signal of sagacity, education and working as manager constitute imperfect signals of displaced employees' probable future performance. Thus, to some extent, the speed of the decline undermined the rationale for stigmatization of all displaced OW employees: This group contained both employees with poor judgment, as well as those who would have had sagacity to resign from OW Bunker had there been time to do so before its bankruptcy. By contrast, extant studies by Canella et al. (1995) of Texas bankers, and by Rider and Negro (2015) of law firm partners, addressed slow organizational failures. Given slow organizational decline, bankers and lawyers in the studied firms had access to early warning signals and opportunity to resign the afflicted organizations before bankruptcy. Employees who did not were evaluated by industry stakeholders as exhibiting poor judgment or even personally culpable (Semandeni et al., 2008). This provided cues for stigmatization: It was rational to stigmatize all displaced employees by their relatively

weak association with failure, constituted by their having been employed in these organizations at the time of their bankruptcy.

Speed of aftermath inhibits stigmatization. OW Bunker's collapse caused a rare situation in the bunker oil industry: Hundreds of traders and managers were available for hire unbound by non-compete clauses. Because of the resulting scramble for displaced employees, potential new employers needed to make evaluations and potential hires of displaced employees fast, with no time for industry stakeholders to interact and compare their perceptions of OW Bunker's failure. Consequently, the social process of stigmatization was inhibited by lack of time. The fast aftermath of the OW Bunker failure constitutes a very different case than, for example, Pontikes, Negro, & Rao's (2010) study of Hollywood and Jensen's (2006) study of Enron, where there was sufficient time for industry stakeholders to build shared perceptions and hence for stigmatization mechanisms.

The third condition relates to the organizational and geographical heterogeneity of OW Bunker's organizational failure.

Localization of failure facilitates blaming. Basically, OW Bunker was a market leader brought down by just one of its subsidiaries, DOT Singapore. Thus, responsibility and knowledge related to failure was unevenly distributed: It had a distinct locus in DOT Singapore, and information about this localization of failure was publicly available. It was this observable organizational and geographical heterogeneity of OW Bunker's failure that made it possible for potential employees to blame a specific subset of displaced OW Bunker employees. The mechanism of blaming did not hinge upon social processes of industry stakeholders interacting and exchanging information. Instead, blame took its cues from information, available to any potential employer, about a particular group's strong association to organizational failure. Again, by contrast, extant research into intra-professional status change following organizational failure has addressed cases where failure has no particular locus, making it difficult to distinguish any particular blameworthy subgroups in the organization.

The fourth and fifth conditions relate to the nature of social capital in the bunker oil industry.

Structural social capital inhibits stigmatization. The bunker oil industry is characterized by abundant and long-standing social relations across firms and markets. Social relations help to create trust and align interests vertically and horizontally: among professionals

and employers, and between them. This had three effects following OW Bunker's collapse. First, since experienced professionals is a scarce resource in the bunker oil trading industry, at the time of OW Bunker's collapse potential employers had a shared interest in retaining as many displaced OW Bunker employees as possible in the industry, rather than stigmatizing them and potentially squeezing them out. Second, since industry stakeholders consist of peers who need each other for future collaboration, they have low interest in stigmatizing potential new partners. Third, since all bunker oil companies rely on external investors, potential employers also shared an interest in playing down the risks inherent to the industry, made apparent by the OW Bunker collapse. Rather than stigmatizing one of the largest and best-known companies in the industry, industry stakeholders had an interest in confining blame to only a few employees associated with the special case of DOT. That social relations in the bunker oil industry wards off stigmatization aligns with social capital theory: A rich stock of structural social capital, in the guise of abundant and strong social relations (Nahapiet & Ghoshal, 1998), propagates trust and a feeling of mutual dependency (Gulati, 1995; Gulati & Gargiulo, 1999; Sorenson & Waguespack, 2006). One reason that our findings contrast with extant studies of banking (Canella et al. 1995) and law (Rider and Negro, 2015) may be that these industries hold lower levels of structural social capital.

Cognitive social capital inhibits stigmatization. In addition, stigmatization is warded off by the fact that the bunker oil industry is small and specialized and industry stakeholders homogenous, in three important ways. First, since professionals move around between functions, many of those potentially hiring displaced OW Bunker employees had worked in the same functions (mostly, as traders) previously themselves. This created a shared understanding among potential employers of the plights of OW Bunker employees, limiting their proneness to stigmatize them. Second, the bunker oil industry is not very influenced by external stakeholders: While there are external investors, their interests lie with managing investment portfolios, not with processes of individual hires within the industry. Following OW Bunker's failure, investors focused on limiting their losses, and cared little about stigmatization. Third, the media hardly influenced potential employers during the early aftermath after OW Bunker's collapse. Due to the speed of the decline of OW Bunker, the business press had limited time to report on proceedings before displaced OW Bunker employees were on the job market. Most media coverage served to limit stigmatization, not propagate it, since it gravitated towards a focus on the positive stories of displaced employees finding new employment, serving to

normalize them in the eyes of the industry audience. That homogeneity of the bunker oil industry inhibits stigmatization also aligns with social capital theory. Cognitive social capital, in the guise of shared knowledge among industry stakeholders (Nahapiet & Ghoshal, 1998), can normalize otherwise stigmatizing associations as stakeholders learn and develop understanding about the motives of others otherwise at risk of being stigmatized (Goffman, 1963). For example, if potential employers share training background and experience with displaced employees of a failed organization, the former are more likely to understand and sympathize with the latter during their search for a new job. We might speculate whether the contrast of our findings with the study of Hollywood by Pontikes et al. (2010) is due to this industry setting, while rich in structural social capital (Sorenson and Waguespack, 2006), had a low stock of cognitive social capital. Hollywood had a heterogeneous audience of industry stakeholders: a huge number of specialized functions and professions, and numerous and highly influential external stakeholders, such as investors, the press and cinemagoers, and in the 1950s, also the McCarthy commission. Extant research has pointed to the role of the press for propagating stigmatization in contexts other than filmed entertainment, such as auditing and the case of Arthur Andersen's association with the organizational failure of Enron (Jensen, 2006). In the case of Hollywood, a low stock of cognitive capital might have raised the scope for stigmatization: Career disadvantages befell not only actors having strong association with communist colleagues, but also those having weak association with agreed-upon deviants (i.e., "with a broad brush")(Pontikes et al., 2010).

Table 6 below provides a synthesis of our literature review and the theoretical argument derived from our empirical findings.

******* Insert Table 6 about here *******

7. Limitations and Further Research

In the paper, we have explored mechanisms leading to intra-professional status change following organizational failure. In a broad sense, we contribute to literature on how social biases affect strategic decisions such as hiring. More specifically, we have added to a focused but established literature on status and stigma, by theorizing the cases where stigmatization is less likely to drive status change, where a mechanism of what we call blaming is likely to be dominant. Blame, we suggest, hinges upon comparatively strong association to failure and taints with a comparatively "pointed brush". We also added to the literature by proposing that blame is

likely to dominate over stigma given certain characteristics of organizational failure (high speed and organizational and geographical heterogeneity), as well as industry context (rich stock of structural and cognitive social capital).

There are several limitations to our study. Related to our data collection and study design, possible biases may arise from the use of self-reported data. First, to avoid association with failure, displaced employees may under-report or omit mentioning their OW Bunker employment completely or partly on the internet platform. Such bias is unlikely to cause major issues in our case: the final data set includes individuals with as little OW Bunker employment as one month, and this for any given types of position at the company. Second, employees suddenly losing their job may avoid reporting their displacement hoping to improve their bargaining position during job search. However, the public attention to the spectacular bankruptcy of OW Bunker rendered such a strategy impossible in our case. In our data, numerous employees even highlighted their ongoing job search by stating it openly on their LinkedIn profile.

The OW Bunker case lends itself well to future research into issues related to status change following organizational failure, such as inter-professional status change (of OW Bunker employees moving into different industries); the effects and antecedents of co-mobility (teams of displaced OW employees finding new jobs with the same employer analyzed in Chapter 4); and the antecedents and effects of geographical patterns of mobility (OW employees being an internationally diverse and highly mobile group).

Most fundamentally, because ours is an in-depth study of one particular failed organization in one particular industry, we can propose and discuss, but not test, the boundary conditions for the mechanisms that lead to stigma vs. blame. In future research, there are two fundamental ways in which our results might be tested. First, undertaking a study of status change after organizational failure with a control as well as a treatment group would be a way of testing the causal relationships related to our proposed mechanisms of stigma and blame. Second, comparative studies of organizational failures with different characteristics and industry settings with different institutions, levels of labor market competition, and levels of social capital, is an exciting, albeit challenging, avenue for future research.

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Table 1 **Description of interviewees**

Demographic characteristic	Interviewee count (total: 19)
Trader (remainder= manager)	12
Danish (remainder=other nationality)	10
Located in OW Bunker Singapore	3
Remained in the industry	14
Promoted	6
Experience at OW Bunker> =60 months	8
Other industry experience	4
Other experience	16

Figure 1 **Time to new job (in months) for employees after OW Bunker collapse**

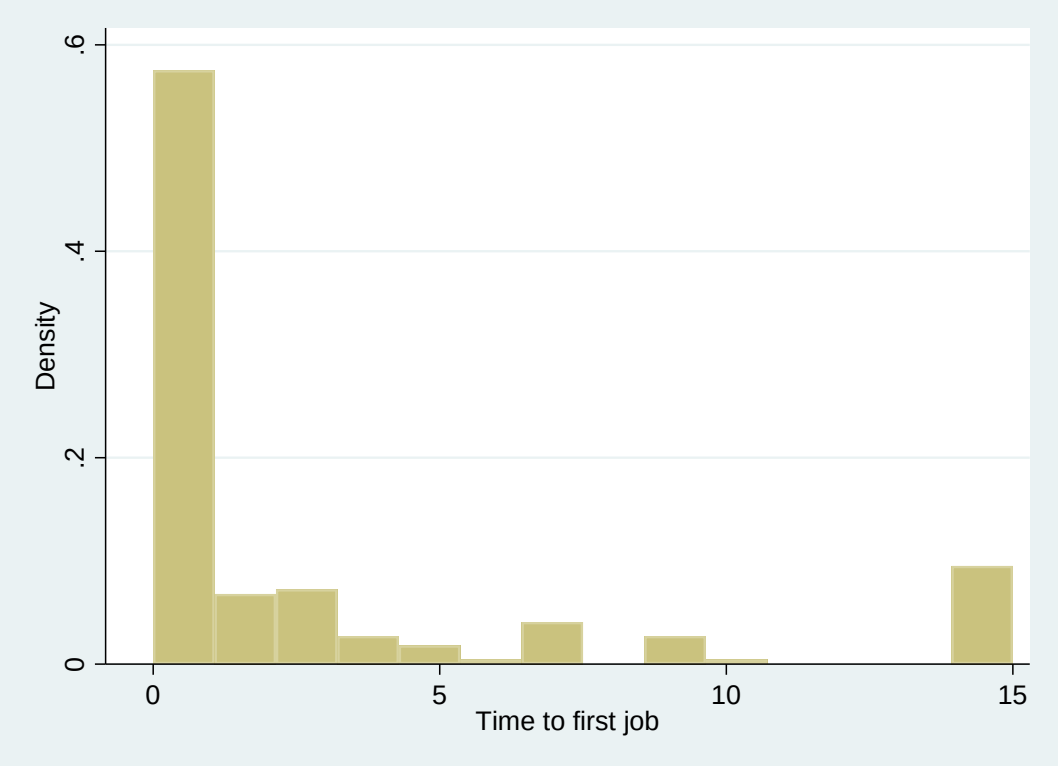

Table 2 Occupational category and the summary of the extent of employees' status change

	Summary of the extent of employees' status change		
Occupational category and OW Bunker	**Mean**	**Standard deviation**	**Frequency**
Trader	0.26	0.24	101
Manager	0.16	0.18	50

Table 3 Management and DOT Singapore employees' and the summary of the extent of status change

	Mean	**Standard deviation**	**Frequency**	**Total**
DOT in the industry	0,04	0,03	7	7
DOT Unemployed	X	X	X	2
Total (total DOT Singapore =9)				9
Managers in the industry	0,16	0,18	50	50
Managers Unemployed	X	X	X	8
Total (total managers =69)				58

Table 4 **Ordered Logit, DV: demotion/status quo/promotion**[8]

Demotion/status quo/promotion	**M1**	**M2**	**M3**
Experience at bankrupt firm	0.0474	0.430*	0.368
	(0.21)	(1.85)	(1.45)
Education	0.590**	0.656*	0.605*
	(2.17)	(1.86)	(1.72)
Other industry experience	0.163	0.431*	0.408*
	(0.88)	(1.93)	(1.78)
Other experience	0.128	0.322***	0.321***
	(1.23)	(2.68)	(2.78)
Male	0.186	0.432	0.357
	(0.45)	(0.84)	(0.70)
Danish	-0.959**	-0.510	-0.509
	(-2.46)	(-0.91)	(-0.91)
Move to a high-status location	-1.244***	-1.354***	-1.546***
	(-3.20)	(-3.13)	(-3.23)
Scale publications	0.255	0.0661	-0.0634
	(0.50)	(0.10)	(-0.09)
Scale location	-1.656	-1.638	-1.663
	(-0.97)	(-0.83)	(-0.82)
Manager at OW Bunker		**-1.900****	**-1.921****
		(-2.21)	**(-2.23)**
DOT Dubai or OW Bunker Singapore			**-0.298**
			(-0.46)
DOT in Singapore			**-0.939****
			(-2.02)
cut1			
Constant	-1.744***	-1.341**	-1.706**
	(-3.35)	(-2.17)	(-2.42)
cut2			
Constant	1.914***	2.708***	2.370***
	(3.41)	(4.15)	(3.21)
N	151	151	151

*t statistics in parentheses * p < 0.10, ** p < 0.05, *** p < 0.01*

[8] The lines **in bold** pertain to the main findings.

Table 5 Linear regression. DV combined measure of characteristics of the vertical move and employer's status

Status change (scale)	**M1**	**M2**	**M2**
Experience at bankrupt firm	0.0217	0.0534**	0.0374
	(1.02)	(2.58)	(1.59)
Education	0.0774**	0.0762**	0.0627*
	(2.59)	(2.23)	(1.73)
Other industry experience	0.0143	0.0358	0.0286
	(0.61)	(1.45)	(1.18)
Other experience	0.0203	0.0327**	0.0320**
	(1.32)	(2.55)	(2.34)
Male	-0.0666	-0.0433	-0.0601
	(-1.49)	(-0.80)	(-1.09)
Danish	0.0268	0.0569	0.0532
	(0.61)	(1.21)	(1.10)
Move to a high-status location	-0.103	-0.0995	-0.150**
	(-1.54)	(-1.48)	(-2.44)
Manager at OW Bunker		**-0.147****	**-0.147****
		(-2.42)	**(-2.51)**
DOT Dubai or OW Bunker Singapore			**-0.0971**
			(-1.57)
DOT in Singapore			**-0.226*****
			(-4.84)
Constant	0.160**	0.106	0.183**
	(2.38)	(1.29)	(2.04)
N	151	151	151

t statistics in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6 **Status change mechanisms following organizational failure**

	Human capital	**Blaming**	**Stigmatization**
Signals	Individual	Group-specific (de-individuation)	
	Education: Skills *Tenure, working as manager:* Past performance and responsibility *Resignation before failure:* Sagacity	Strong association to failure through organizational and geographical proximity	Weak association to failure through mere employment
Process	*Dyadic*: Between potential employer and displaced employee		*Social*: Amongst industry stakeholders interacting, exchanging information, building shared perceptions
Spill overs	None	Pointed brush (localized)	Broad brush (contagious)
Condition 1: Speed of organizational failure	*Slow decline*: Signals about responsibility and sagacity	*Fast decline*: No signals about responsibility and sagacity *Fast aftermath*: Insufficient time for social processes	*Slow aftermath*: Sufficient time for social processes
Condition 2: Localization of organizational failure		*Locus*: Organizationally and geographically heterogeneous	
Condition 3: Industry social capital		*Structural social capital*: Shared interest in retaining as many displaced employees as possible in industry *Cognitive social capital*: Identification with displaced employees and less proneness to stigmatize	

CHAPTER 4: GENDER AND CO-MOBILITY

With Ram Mudambi.

ABSTRACT

Employees' mobility correlates positively with firms' and individual outcomes. The co-mobility research, investigating employees' joint moves into a new employment, mirrors these findings. Co-mobility has been flagged by scholars as an important phenomenon in particular in contexts of organizational failure or downsizing, where it helps overcome the disastrous consequences to firm's employees. Although co-mobility is an important phenomenon, its antecedents remain unknown. This study addresses this gap by linking the gender homophily between co-mobile employees and the likelihood of co-mobility. Our research context is a quasi-natural experiment of an organizational collapse. We analyze 17.020 realized and non-realized moves and find a strong support that gender-based homophily affects co-mobility differently for men and woman. For men, a gender-homophilic dyad has a higher likelihood of co-mobility. For women, this trend is reversed. With additional tests, we provide some additional evidence that, while, dyad of men are more likely to be promoted and less likely to be demoted in their new jobs, women are more vulnerable and likely to suffer from demotion, which points to labor market discrimination. Furthermore, we find some evidence of the self-gender discrimination between senior and junior females that relates to the Queen Bee effect, present in the extant literature. Our study contributes to the co-mobility literature and extends the literature on gender and gender homophily and ties.

1. Introduction

The effects of worker mobility on individual and firm performance have been the subject of a large and diverse body of research (Agrawal & Cockburn, 2003; Corredoira & Rosenkopf, 2010; Gorg & Strobl, 2005; Hoisl, 2007; Magnani, 2006; Maliranta, Mohnen, & Rouvinen, 2009; Rosenkopf & Almeida, 2003; Somaya & Williamson, 2008, Carnahan & Somaya, 2013; Somaya et al., 2008) These studies have uncovered beneficial effects of mobility for the mobile individual, but also for both: the losing and the receiving firm. Scholars have pointed to knowledge spill-overs and the persistence of team-based social capital, even for individuals no longer co-located, as the underlying mechanisms and logic of these effects. However, they have also raised concerns and investigated boundary conditions for such positive effects of mobility. For instance, the positive effect of mobility is reversed and hurts the performance when a firm loses an employee to a competitor (Somaya et al., 2008) or when star performers embedded in local teams move alone to a new workplace (Groysberg, Lee, & Nanda, 2008). More recently, in line with the findings on the team-resident human capital (Chillemi & Gui, 1997), the literature has moved beyond the study of the individuals' mobility to group mobility, or employees' join movement to the same employer (Eftekhari & Timmermans, 2015, Campbell, Saxton, & Banerjee, 2014).

Such co-mobility research analyzes such group moves and the outcomes for organizations and individuals. In general, it reports positive links between employees' co-mobility and individual performance (Groysberg et al., 2008). Co-mobile workers across a wide range of occupations experience wage premia as compared to solo movers. This is particularly pronounced for individuals with non-overlapping knowledge, a finding is traced to jointly held human capital (Marx & Timmermans, 2017). However, the antecedents and precise mechanisms underlying co-mobility remain unknown.

Homophily – defined as the propensity of individuals to connect with others with whom they share characteristics – has been widely studied in all of the social sciences (McPherson, Smith-Lovin, & Cook, 2001). However, some types of homophily as stronger than others (Greenberg & Mollick, 2017) For instance, shared nationality has been demonstrated to be particularly strong (Bacharach, Bamberger, & Vashdi, 2005) and is generally regarded as positively correlated with the event of co-mobility. Such effects are illustrated in the phenomenon of national migrants who cluster and rely on a local networks in their professional

life, including in their job search (Montgomery, 1991; Munshi, 2003; Portes, 1998; Pugatch & Yang, 2011; Vertovec, 2002).

However, the effect of another type of homophily, shared gender, is not as clear-cut. Scholars have found that women and men form ties differently contingent on whether the tie is informal (e.g., seeking friendship or support), or formal, as in an instrumental search for resources (Herminia Ibarra, 1992). In the latter case, women are less likely than men to form same gender ties. Furthermore, pertaining to the labor markets relations specifically, women are underrepresented in the paid employment across a wide range of industries (Altonji & Blank, 1999; Ellemers, van den Heuvel, de Gilder, Maass, & Bonvini, 2004). The same trend has been observed in the access to financing and growth capital in entrepreneurship (Bigelow, Lundmark, McLean Parks, & Wuebker, 2014; Brooks, Huang, Kearney, & Murray, 2014). Furthermore, once active in the labor market, woman's outcomes are, *ceteris paribus*, are systematically lower than men (Hoisl & Mariani, 2017). In professional context, women also suffer from same sex conflict between a senior female and her female subordinates, a phenomenon that is known as the Queen Bee effect (Derks, Van Laar, Ellemers, & de Groot, 2011; Mavin, 2008; Staines, Tavris, & Jayaratne, 1974). Scholars also report that, on average, females are more likely to opt out of severely competitive environments, a phenomenon known as "shying away from competition"(Niederle & Vesterlund, 2007). However, the extant literature is silent about same-sex conflict and shying away from competition behavior among men. In this study, we posit that all of the above mechanisms may differentially affect the patterns of co-mobility between women and men. We accordingly aim to fill in the gap on the determinants of co-mobility by testing for the existence of all the mechanisms mentioned above.

Our research context is a quasi-natural experiment of an exogenous and unexpected organizational collapse that triggered employees' simultaneous departures and search for new employment. Our data set comprises 17,020 realized and potential dyads. We find strong evidence that gender-based homophily affects co-mobility differently for men and women. For men, a gender-homophilic dyad has a higher likelihood of co-mobility. In contrast, for women, gender-homophily has a strong negative effect on the likelihood of co-mobility. We investigate this finding in more detail and provide some evidence that while male-based dyads are less at risk of demotion and more likely to be promoted in their new employment, female dyads are more prone to demotion, even though the initial numbers of female managers were lower. This additional analysis suggests that gender discrimination in the labor market is one of the

underlying mechanisms of differential gender effects on co-mobility. Moreover the association between gender and the likelihood of co-mobility is in particularly strong for dyads of a junior and senior female providing some evidence for the "Queen Bee" effect.

Thanks to the specific set-up of our study as a quasi-natural experiment, we contribute to the co-mobility and mobility literature by studying gender as an antecedent with a solid identification strategy. Our exploratory study also contributes to the literature on organizational failure and its consequences for employees (Cannella, Fraser, & Lee, 1995; Rider & Negro, 2015; Semadeni, Cannella, Fraser, & Lee, 2008) by differentiating the effects based on gender.

2. Mobility and co-mobility

The literature on employee mobility can be classified into categories according to the characteristics of the triggering event. Some events associated with mobility are expected (Chillemi & Gui, 1997; Mawdsley & Somaya, 2015; Somaya & Williamson, 2008); for instance, university graduation is naturally followed by a first employment (Faggian, Mccann, & Sheppard, 2007; Faggian, McCann, & Sheppard, 2006). Other events that trigger employee mobility such as organizational failure or downsizing may be unexpected (and exogenous), leaving the individual no choice (Cannella et al., 1995; Hoetker & Agarwal, 2007; Rider & Negro, 2015; Sutton & Callahan, 1987). Contingent on the characteristics of the triggering event, an important body of literature (Mawdsley & Somaya, 2015, Agrawal & Cockburn, 2003) has unveiled that mobility can be beneficial both to the mobile individual and to the former and new employer (through direct or indirect knowledge spillovers occurring through employees' social capital). Another possible channel through which employees' moves may benefit firms is the release of resources trapped in underperforming firms (Hoetker & Agarwal, 2007).

In contrast, other studies have found some boundary conditions and moderating effects for the positive effects of mobility. One such moderating condition on firm's performance occurs when an employee moves to a competitor or forms his or her own entrepreneurial entry (Campbell et al., 2012; Klepper & Sleeper, 2005; Somaya & Williamson, 2008). The same conditions are also likely to negatively affect the focal employee. Star performers, strongly embedded in their team, are analogously likely to suffer negative performance consequences upon moving into another employment (Groysberg et al., 2008).

Expanding on the studies of the effects of team embeddedness, group mobility of employees into new employment – often termed co-mobility – has attracted scholars' attention (Chillemi & Gui, 1997; Fleming & Marx, 2006; Groysberg & Abrahams, 2006; Campbell et al., 2014, Eftekhari & Timmermans, 2015, Marx & Timmermans, 2017). Such co-mobility has been found to generate wage premia for co-mobile employees suggesting that it increases their bargaining power in the negotiations with the new employer. Co-mobility is also potentially followed by individual and firm productivity gains because of employees' mutual complementarities (Marx & Timmermans, 2017). Overall the co-mobility findings corroborate the view of team-resident human capital (Chillemi & Gui, 1997), the value of which is leveraged by the new employer through a group hiring. The phenomenon of co-mobility has just begun to receive attention in the literature (Marx & Timmermans, 2017) and therefore numerous aspects have been highlighted as important topics for study. The antecedents of co-mobility are crucial elements that are under-researched. Further, scholars have emphasized the need for better methodologies to support causal inference, e.g, the use of an experimental setting or instrumental variables (Marx & Timmermans, 2015). Addressing this research gap, we study gender and gender homophily as an antecedent of employees' co-mobility. In terms of methodology, we use of an exogenous and unexpected organizational failure as a quasi-natural experiment.

a. Gender and gender homophily as an antecedent of co-mobility

Scholars have linked various individual and shared demographics to the likelihood of mobility and co-mobility. In particular the literature studying homophily in the context of labor market outcomes has advanced that migrants of the same origin or nationality often cluster in the same locations in the host country (Borjas, 1990, 1994; Pugatch & Yang, 2011). They also leverage informal information flows such as referrals from their locally-based compatriots in order to get a job (Montgomery, 1991; Munshi, 2003; Sanders, Nee, & Sernau, 2002; Vertovec, 2002; Yakubovich, 2005). Analogously, gender and shared gender, or gender homophily (Kleinbaum, Stuart, & Tushman, 2013; Rivera, Soderstrom, & Uzzi, 2010) has attracted a great deal of attention from scholars. Unlike nationality, scholars have highlighted the existence of gender-based differences in informal contexts of female friendship networks in management (Brands & Kilduff, 2014), professional networking behavior (Bevelander & Page, 2011) and, most importantly, in labor market relations (Altonji & Blank, 1999; Ibarra, 1993; Ibarra, 1992; Shipilov, Gulati, Kilduff, Li, & Tsai, 2014). This literature has provided some evidence on the fact that females' performance outcomes are, *ceteris paribus*, lower than men (Lyngsie & Foss,

2016; Sackett, DuBois, & Noe, 1991). Furthermore, women are even discriminated in their access to employment. Such trend has been observed in females' constrained access to finance in entrepreneurship and to paid employment (Bigelow, Lundmark, McLean Parks, & Wuebker, 2014; Brooks, Huang, Kearney, & Murray, 2014; Carter, Brush, Greene, Gatewood, & Hart, 2003; Goldin & Rouse, 2000). Conditional of being employed, females still experience inequality driven by "tokenism" (Kanter, 1977; Yoder, 1991).

There are other behavioral mechanisms that drive gender differences in the labor markets. The extant literature has pointed to some same-gender issues for females in professional context. According to the so- called Queen Bee effect (B Derks et al., 2011; Derks et al., 2011; Ellemers et al., 2004; Joseph, 1985; Lyngsie & Foss, 2016; Sheppard & Aquino, 2013; Staines et al., 1974) women, especially in senior positions, may disassociate from their female colleagues and compete harshly or block each other's progress within the organization.

Finally, while part of a particularly competitive working environment, females are also more likely than males to simply "opt out" or "shy away from competition" (Niederle & Vesterlund, 2007).

While much has been said about discriminatory practices directed at females, the same sex conflicts at work or "shying away from competition" behavior, scholars have remained silent about similar issues arising among males in the labor market. In sum, females and males are subject to different same-sex dynamics in the labor markets. Exploiting this tension, we aim at further elucidate gender-based differences in the context of co-mobility and we advance that all the mentioned mechanisms may differentially drive patterns of co-mobility, so that females will be more likely to be co-mobile than men. We further put test them and contribute to new theory building on drivers of co-mobility for females. The remainder of the paper will investigate our empirical case.

3. Methods

Our purpose is to investigate the patterns of co-mobility between females and males and unveil the underlying mechanisms. For this purpose, we undertake a case study of an unexpected and exogenous organizational failure that has given rise to simultaneous employees' departures in search for a new employment. We select this case for several reasons. First, given the characteristics of the failure, both: unexpected and exogenous, it offers an identification

strategy and allows us to attribute the reason of leaving a job and also the subsequently triggered co-mobility to the organizational failure. Second, the case firm have hired both men and women and this in a variety of hierarchical positions which, in turn, allows us to conduct additional tests and disentangle specific underlying mechanisms related to their respective behavior and also future labor market outcomes. Furthermore, according to abundant qualitative evidence, all front office employees, the focus of our analysis, knew each other and actively engaged in helping each other out, exchanging information, even negotiating common hiring. This triggered a high rate of co-mobility, while still allowing a degree of variation in the dependent variable so that we can study the determinants of the phenomenon. Last but not least, the case firm was global and present in 30 different locations and geographical mobility of employees was a frequent phenomenon. A similarly global industry offers us a unique context to study global migrations, and, in the same time, allows us to address the geographical mobility constraints.

a. Empirical setting

Founded in 1980, OW Bunker was a Danish company active in trading activities and physical supply of marine fuel (bunker) to shipping firms. The company grew continuously throughout the 90' and 00' thanks to high oil prices and good access to the financial assets secured by credit lines from well prospering banks. It reached the effective of 622 employees spread out in 30 offices worldwide and 30 operating supply ships at the end of 2013. In a highly complex and competitive market, the Danish company became the global leader with 10% of the global market worth 25 billion USD. In March 2014, OW Bunker finalized the second most successful IPO in the recent history of the Danish stock exchange. Six months later, on November 5th, an information about the financial fraud committed by the head of one of the most important trading subsidiaries in Singapore was released to the media. The company lost its financial stability and two days later, filed for bankruptcy. The OW Bunker collapse came as a shock to the industry and most importantly to all employees. The bankruptcy resulted in an unseen market turmoil: customers, ship owners or operators, with running contracts were often left with no fuel supplies, while some fuel suppliers couldn't receive the payment for already delivered supplies. The corporate investors suffered severe financial losses. The collapse ended all employment contracts abruptly, except for few employees who worked along with debtors or trustees on solving arising claims.

Similar, spectacular bankruptcies have been rarely observed in a global context. The cases of Enron, Arthur Andersen (Jensen, 2006) Brobeck, Phleger & Harrison (Rider & Negro,

2015), Lehman Brothers and Fannie Mae are probably the sole exceptions even though the degree of their exogenous character varies. To the authors' best knowledge, a similar collapse is also without precedent in the bunker trading industry.

b. Study design

The sudden failure of OW Bunker offers a useful quasi- natural experiment setting to unveil the patterns of co-mobility between women and to study the underlying mechanisms. The organizational failure of OW Bunker was unexpected and exogenous, induced by a fraud committed by an isolated individual in one organizational subsidiary. Following the fraud and the subsequent failure of the firm, its employees in different locations departed simultaneously in search of second best employment options. We use the shock of the organizational failure to strengthen our identification strategy as the reason for all employees' departures was purely exogenous and the outcome, co-mobility, can be attributed to the organizational failure. We acknowledge, nevertheless, that the actual matching process in which some employees move jointly together remains subject to endogeneity.

c. Data collection

In order to study the patterns of co-mobility between women and men, we use insights from hand collected quantitative data on the career trajectories of 207 (out of a total 230) core front office employees directly involved in trading at OW Bunker immediately prior to the organizational failure. These data is complemented with insights from nineteen qualitative interviews conducted with former OW Bunker traders and managers that serve the purpose of including an anecdotic evidence on the mechanisms we test. We present the summary of the qualitative data collected in Table 1 below.

******* Insert Table 1 about here *******

The quantitative data has been collected as described in the Chapter 3. We use the dataset including 207 individuals for descriptive statistics. Alternatively, in order to unveil the patterns of co-mobility between women and men, we further have constructed a dyadic data set. From the dataset of 207 individuals, we have excluded the 22 unemployed and expanded it into all potential and realized moves with a total of 34,040 dyads (185*184 as a dyad has to be composed of two different dyad members so excluding dyads with one and the same individual).This data set includes dyads which are exact structural equivalents. We have followed Kleinbaum et al., (2013) and included a single dyad only once, which has led us to

further decrease in the number of observation. The final data set we use in the main analysis includes exactly half of 34.040 observation, so 17,020 unique dyads. In robustness checks reported respectively in the Appendix 1 and 2, we use two variations of the dyadic data set: one including dyads with unemployed members and one including not only unique but also equivalent dyads.

d. Measures and Method

Our main quantitative analysis is carried at the dyadic level. We nevertheless report the individual level statistics and correlation matrix separately for females in Table 2 and males in Table 3.

******* Insert Table 2 about here *******

******* Insert Table 3 about here *******

Tables 2 and 3 demonstrate that the average rate of co-mobility for females is around the one of the whole population, 70%, but lower than the one of males. It also displays a higher standard deviation. The co-mobility, as individual demographic, does not correlate with any other characteristics neither for female nor male, except for the moves into another industry.

We further construct all main variables for our quantitative analysis at the dyadic level. To study patterns of co-mobility among men and women, we use of the dependent variable *Co-mobility firm*. This variable takes the value of one for a given pair of employees who move together to the same firm following Marx & Timmermans (2015)[9]. As alternative and for the purpose of a robustness check, we re-define co-mobility in a conservative way and consider that co-mobility happens exclusively in case of employees migrating to the same nominal firm in the exact same geographic location- city. While in the individual data set around 70% of all employed individuals are co-mobile, in the dyadic data set, due to a multiplication of observations at the dyadic level, there are 1.436 instances of co-mobility according to the first definition.

While there are 40 females and 145 males in the individual data set, the dyadic dataset includes 780 female-female dyads and 10,440 male-male dyads. We have computed a dummy for shared gender for females and males called respectively *same gender female* and *same*

[9] Following indications from industry publications and interviews with another industry expert, representative of IBIA (www.ibia.net), bunker association, we cluster 7 firms under the umbrella of one holding they belong to. The qualitative evidence corroborated that the hiring was centralized and managed by the headquarters of the whole holding.

gender male. We use the former as our main independent variable. The two dummy variables display different correlation pattern with the dependent variable as reported below in the Table 4.While it is strongly negatively correlated with the co-mobility variable for females, the trend is reversed for males.

******* Insert Table 4 about here *******

We control for a set of three characteristics as they may also be driving the individual propensity to co-mobility. *Same nationality* is a dummy taking the value of one for a dyad in which both employees are of the same nationality (Bacharach et al., 2005). 2,116 out of 17,020 dyads are characterized by this shared demographic. The correlation matrix at the dyadic level suggest that this control correlates strongly positively with the measure of co-mobility for males but negatively for females.

Different position is a dummy taking the value of one for each dyad where both employees have been working in different occupational category at non-managerial or trader level prior to the organizational failure. This variable is measuring dissimilarity because we aim at testing for the existence of the Queen Bee effect, stipulated to be present between females at different hierarchical levels. 7,564 of all 17,020 dyads are characterized by this demographic. This measure also displays a different correlation pattern with the dependent variable: it is negative for the females and positive for males. It is also slightly correlated with some of the other controls, such as shared education. Such correlation does not cause any multi-collinearity issue in the further analysis as it is lower than the threshold of 0.50 suggested by the rule of thumb. The descriptive statistics at individual level reported in Table 2 corroborate that only 10% (or 4 out of 40) of all employed females occupied managerial positions, while the same ratio reaches 40% for males (or 56 individuals out of all 145 employed). The correlations at individual level are insignificant and, respectively positive and negative. The consistent correlation of pattern of *different position* with nationality in both: dyadic and individual matrix, may be driven by a prevalence of Danish nationals in the sample. Indeed, in total, 67 out of 207 individuals distributed globally are Danish. As the operations of OW Bunker has become successively global, the company has implemented promotions from within of Danish employees to expand, a procedure known in the human resources management. The correlation coefficient of managerial category in a subsample of Danish individuals is highly positive and significant which confirms this intuition as well. As mentioned, the extent to which the independent variables are correlated does not result in a multi-collinearity issue in our analysis.

Same education is a dummy taking the value of one for a dyad in which both employees are of the same educational level: either primary/secondary education or bachelor/master/MBA or PhD. A similar dichotomized measure was used in the study by Rider & Negro (2015). 11,326 of all dyads are characterized by such demographic and the trend is particularly driven by the educated dyad members as 10,585 of these dyads are based on members sharing higher education. This coefficient is negatively and significantly correlated with the *different position*, which only captures the fact that higher educated individuals occupy similar positions. This variable also correlates positively with the dependent variable.

We further use three other dyad level controls. *Co-located* takes the value of one in case of both former employees being co-located before the organizational failure. It aims at controlling for strong ties that are likely to be created between employees in the same firm's location that may affect the likelihood of co-mobility. It is strongly correlated with the dependent variable as demonstrated in Table 4.

Simultaneous, is a dyad-level dummy that takes the value of one for all dyads which regained a new employment simultaneously. The time dimension of the move is counted in months. Co-mobility can be driven by various mechanisms such as strong ties, complementarities, informational flows (referrals and scouting out of opportunity) and increased bargaining power (Marx & Timmermans, 2015). The existence of such mechanisms is contingent on whether co-mobility is sequential or simultaneous: while bargaining power is exclusively a mechanism at play for simultaneous moves, strong ties, complementarities and informational flows can arise in case of both: simultaneous and sequential co-mobility. We include the control mentioned above in order to account for such differences. This control is strongly and positively correlated with the dependent variable.

We finally use *Repatriation* which is a dummy variable which takes the value of one for all dyads working in a foreign country prior to the organizational failure and regaining their home country with the new employer. This variable captures individual expats' preferences for an employment in the home country that the sudden organizational failure could potentially reveal. There is a total of 7 individuals in the data at individual level who, after an expat experience, are repatriated upon the move into their new employment. Given that around 70% of all individuals where nationals working in their own home country, the proportion of

repatriation is rather small. This control does not display any significant correlation with the dependent variables neither for females not for males.

Ideally, we would further include individual fixed effects in order to alleviate the omitted variable bias and control for time invariant characteristics such as preferences, skills etc. However, the way in which we constructed our dyadic data set, diagonally dropping parts of dyad to reduce the duplicates (reducing the size of the data set by half from 34,040 to 17,020), results in an asymmetrical form of the dyads. Indeed, one dyad member can be included as first part of the dyad in some instances, or as second dyad member in others. Using the fixed effects is therefore not useful in such a set-up as it drastically reduces the samples size by dropping observations. The extant literature (Kleinbaum et al., 2013) has not implemented fixed effects in similar specifications. We nevertheless additionally use individual demographics presented in Table 2 and 3 such as age, position, education, move to another industry, promotion, firm, industry and other experience in some of models. The individual fixed effects are used in robustness checks with the dyadic data set including 34,020 observations where the composition of dyads is symmetrical.

Finally, we need to control for firm related characteristics in order to rule out that these are driving the results. It is theoretically and practically difficult to include sensitive firm level controls for a broad range of receiving firms that span many different industries. Some of such firms are also spin-offs or new companies formed after the collapse of the world leader, mostly privately held in which cases archival data is simply not available. We have therefore decided to proceed on two different robustness tests. In one, we compute a dummy for the holding firm that was hiring aggressively former OW Bunker employees. In the other one, we use a dummy for a newly spawned firms as these may as well absorb many of the former employees.

We also use three of the individual demographic for testing the mechanisms and ruling out alternative explanations. First the dummy variable *Other industry* denotes the quality of the individual move in terms of either remaining in the same industry (0), or finding a new employment in a different one (1). *Promotion* is dummy variable that takes the value of one if an individual formerly in a non-managerial promotion regains an employment at a managerial level or higher non-managerial level (such as from junior to senior level) or a manager gains an employment at a higher level (such as from team manager to division manager) and zero otherwise. As alternative, *Demotion* is a dummy that captures the loss in terms of hierarchical

position. We use *Promotion* and *Demotion to* further compute dyadic level dummies that takes the value of one if any of dyad members experiences respectively either a promotion or a demotion after the OW Bunker bankruptcy, referred to as *Promotion dyadic* and *Demotion dyadic*. *Geographical mobility* is a dummy taking the value of one if a given individual changed his or her geographical location while moving into the new employment.

Following Kleinbaum et al. (2013), we report on the main estimation problem linked with dyadic regression: the non-independence of data. In our case, this issue arises along two dimensions. First, interactions within a dyad are not independent. The fact that the dyad member *i* is co-mobile is contingent on dyad member *j* being co-mobile as well. The second issue arises due to the fact that one individual is part of multiple dyads, called common person effect. The fact that there may be an unobserved attribute to the person causes a problem of correlation between different dyads. It should not affect the parameter estimates, but it can possibly result in an underestimation of the standard errors. Following the best practice of empirical work in similar dyadic data sets (Cameron, Gelbach, & Miller, 2011; Kleinbaum et al., 2013), we use multi-way clustering in order to address this issue of non-independence. "The standard errors are calculated in three separate, cluster-robust covariance matrices: one by clustering according to *i*, one by clustering according to *j*, and one by clustering according to their intersection. Standard errors in the regressions we report, which cluster on both dyad members, are estimated based on the matrix formed by adding the first two covariance matrices and subtracting the third". (Kleinbaum et al, 2013 p.1323).

We use a logit framework to estimate the probability of co-mobility and two different types of error clustering: at the dyad level (models 1-5) and a multi way clustering (6-10).

4. Findings and discussion

******* Insert Table 5 about here *******

Table 5 above reports the results of our quantitative analysis. In our main analysis we compare two sets of models: model 1 and 2 with model 6 and 7. In line with theoretical arguments, shared demographics such as nationality, education or co-location positively correlate with the likelihood of co-mobility in model 1 and 6 with controls only. The coefficient of the *simultaneous* variable displays the same sign. The coefficient of *different position* and *repatriation* are not significant. The trend for all of the control variables remain consistent throughout all of the models we use in the quantitative analysis including the tests of various

mechanisms. The coefficient of the main independent variable capturing the effect of female dyads is negative and, respectively, insignificant and significant in the model 2 and 6. The latter coefficient, along with the correlation matrix provide support for the differential gender patterns of co-mobility.

a. Robustness checks

We run multiple robustness checks to confirm the stability of our findings.

The definition of co-mobility used in the main analysis, does not allow us to differentiate between small and large-size moves. This may bias our results as gender differences may only play out in case large size moves, including more than two employees landing at the same employer. We address such possibility and proceed on a set of additional tests. We first compute a dummy variable that takes the value of one for large-size moves to the same employer. The group size of co-mobile employees is skewed towards larger groups. In absolute terms, only 8% of all employees moved in larger groups, however, in relative terms, 90% of co-mobile employees were part of larger groups. Our results remain consistent but insignificant while tested in split samples dedicated to large and small size moves with the use of the variable defined in this way. Alternatively, we re-define co-mobility to test the large versus small size moves further. We consider that co-mobility occurs between two or more employees moving to the same firm in the very same geographical location (city). Such conservatively defined co-mobility reduces the variation of large vs. small groups and allows us to carry out a further investigation. The results remain highly consistent and significant when tested in the sample of small size moves such as for two individuals only with this conservative definition of co-mobility and the multi-way error clustering.

We moreover test our findings with the use of the unemployed in the dyadic data set considering two individuals becoming unemployed as co-mobile. The coefficient of *same gender female* is insignificant in the main analysis. Such effect be driven by the fact that gender and unemployment is dependent. We indeed confirm with a Chi Square test that females are less likely to be unemployed then males.

We also test all findings in the data set with 34,040 observations, including not only unique dyads but also the structural equivalents. Such specification allows us to use both: individual and firm fixed effects. The results are highly significant and consistent.

We are aware of the possibility that the particular composition of our sample, where females are relatively underrepresented, may affect the results. In absence of a better benchmark, we run a Chi Square test that compares the expected and observed frequencies of co-mobility for females and males. The test demonstrates that the realized frequencies of co-mobility for females are significantly below the expected ones. We consider this an evidence of dependence between gender and co-mobility.

Finally, we acknowledge that the individuals in our sample may display a different baseline propensity to be co-mobile. In order to account for this, we first test all our specifications from the main analysis using the dyadic data set restricted to the co-mobile individuals only. There is a heterogeneity of realized and not realized dyads even in a data set based exclusively on co-mobile individuals. This characteristic allows us to test again for the effects of gender. In this new data set only 210 dyads, out of 5,995 are female ones. All the signs remain consistent while testing our results in this specification, the results for females are however insignificant. We additionally address the issue of different propensity to become co-mobile in the robustness tests pertaining to the "job embeddedness" below.

Scholars have found that women, as compared to men, change jobs less frequently. This so called "job embeddedness" is a result of females' belongingness to the community, but also family obligations (Jiang, Liu, McKay, Lee, & Mitchell, 2012; Mitchell, Holtom, Lee, Sablynski, & Erez, 2001) and constrain woman's' mobility. Personal preferences have been flagged by scholars in the patterns of mobility. Females, in particularly in their 40ties, have been found more geographically constrained, which was explained by their will to not to extract their teenage children from their established social networks (Azoulay, Ganguli, & Graff Zivin, 2017). We find abundant evidence of such geographical constraint in our qualitative data, coming both from female and male employees. As one female trader put it:

"I know that many of my former colleagues, they are having wife, husband, children, villa, big house, big apartment, whatever and having a lot of money they need to pay every month. When you have been in the shipping industry for many years, not many of them are able to say okay, I would rather be elsewhere. I would rather go into this, they only think they have to do one thing"

We run another test in order to make sure that the differential pattern of co-mobility is not driven, partly or entirely, by a different propensity to be mobile in the first place. For this

purpose, we set the *geographical mobility* as dependent variable and run a simple logit analysis in the individual data set (with 185 individuals) with a full set of individual level demographics including gender as the independent variable. We store the estimated propensity to mobility for all of the individuals and further include it as a regressor in another logit analysis, this time using co-mobility as dependent variable. The coefficient of the variable denoting the propensity of mobility is not significant even though it displays a negative sign. We interpret this result as an evidence of co-mobility, including its different pattern for female and males, not being driven by a different propensity to be mobile.

Additionally, we run a simple logit analysis with the individual data set (with either 185 employed or all 207 individuals including the unemployed) with co-mobility as dependent variable and various demographics such as gender, nationality and age. This analysis, even though limited to a very small number of individuals, corroborates that the overall effect of gender correlates positively with the likelihood of co-mobility for males and negatively for females.

Our findings indicate a different effects of shared gender for females and males: while the same gender decreases the likelihood of co-mobility for the former, for the latter, the effect is reversed.

b. Tests of mechanisms

There may be several explanations for our results on differential gender effects and co-mobility. First, it is possible that what drives the results is the labor market discrimination. Under such scenario, a single female would face difficulties in finding a new employer. Because of the faced difficulties in their job search, two females would be less likely to move together in the same job. We test the labor market discrimination quantitatively with two dependent variables: *Promotion dyad* (model 3 and model 8) and *Demotion dyad* (model 4 and model 9) with a logit modelling framework. The pattern we find is very consistent and provides with a strong evidence of discrimination in the labor market: not only are females significantly more likely to be demoted (the coefficient *same gender female* is significant in both models: 4 and 9), but also significantly less likely to be promoted (the coefficient *of same gender female* is significant in the model 4). These two effects are significant even though females were initially under-represented in managerial positions. We further check whether a similar pattern exists for males and find some evidence of an opposite trend in the models 3 and 4. We find that male

dyads are not only more likely to be promoted, regardless of the overrepresentation of managers at the baseline, but also less likely to be demoted. The evidence from the quantitative analysis demonstrates that there is a systematic discrimination of females: in their access to promotion and in the access to same level jobs as the ones held previously. The discrimination, in our case, in not driven by employers abstaining from offering women any jobs, but rather offering better deals to men. Interestingly, the demotion of females coincides with two dyad members being employed in different positions as demonstrated in model 4 and 9. This may indicate that employers who hire two females "punish" them in demoting one of them. The individual descriptive statistics provided in Table 2 do not demonstrate that a senior female was the one at risk of demotion (the coefficient of *position* and *demotion* is not significant), as compared to a junior.

We further turn to the mechanism of same-sex conflict in the model 5 and model 10 with logit modelling framework and *Co-mobility* as dependent variable. If the Queen Bee effect was true, then two females in different hierarchical positions, would be less likely to become co-mobile. We find a negative and significant interaction product of *same gender female and different position* in the model 5. As compared to the baseline of mixed dyads with both: members in similar and different positions, senior females were less likely to become co-mobile with another junior female and even less likely than just any female dyad regardless of members' position. Our analysis provides with a partial evidence towards the Queen Bee effect, as the interaction product is not significant in the model 10. Table 6 presents the marginal effects of the interaction product from the model 5 and Figure 1 provides its graphical illustration.

******* Insert Table 6 about here *******

******* Insert Figure 1 about here *******

This partial evidence on the Queen Bee effect diverges from another type of same-sex female behavior, a variant of homophily called activists' homophily (Greenberg & Mollick, 2014). Scholars found similar behavior in a small portion of female backers that disproportionally support other females in technology related fields where women are traditionally underrepresented. We believe that the different results and the fact that we do not observe the activist homophily in our study is driven by the fact that i) the actors that we study are homogenous (employees within a given industry that face potential employers in negotiations over a new job) ii) the interests of such homogenous actors involved in a female

dyad are therefore conflicted. One female trader can see herself threatened in her career progression by a senior female and *vice versa*, as they apply for jobs in the same market. Such effect may also be strengthened by labor market discrimination. On the contrary, there is no conflict of interest between the female investors and entrepreneurs in the study by Greenberg & Mollick (2014).

Another mechanism that may affect females' propensity to be co-mobile is the attitude to "shy away from competition". Such trend could affect the co-mobility positively as women could move together into jobs outside of the bunker trading industry. We have not found a direct evidence of such behavior in our qualitative interviews, however one of our 18 interviewees, a former female trader has decided to opt out from the trading industry. She spontaneously has provided us some insights into her current job, where, being at the other side of the table, she works with who used to be her colleagues. She has pointed out to some of the attitudes and behavior that are common within the competitive industry that she considers negative. As she put it:

"(…) today many traders are extremely aggressive. "Why don't you give me this deal? Because you're not lowering the price and the other one could supply with one batch you are having for divided into two". I would not allow that (…) I'm not into that style. I don't want, today as an (ship)operator, trading for bunker with a trader that's aggressive, you know, of the smart people. I don't want to trade with them. If they are too smart and they think "I can do this". Yeah, I'll make sure and when it comes to the actual trade, they're not able to do anything".

While she did not "shy away" from the industry, she still took a stance towards it. According to the descriptive statistics 60% of all females remained in the same industry. Nevertheless, a Chi-Square test of moves inside and outside industry for both genders indicates a higher observed frequency of moves outside the bunker trading industry for women. Also the variable denoting move into a different industry and the one of becoming co-mobile are not independent, including in the subsample of females, as indicated by another Chi-Square test. Regardless of the patterns of inter and intra-industry moves, we consider that this phenomenon alone cannot explain the lower propensity for being co-mobile among females.

c. Alternative explanations

We have assumed that in our setting the co-mobility is coordinated. This assumption is based on an abundant qualitative evidence from the interviewees and multiple industry media releases that tracked employees' careers in the aftermath of the OW Bunker bankruptcy. Additionally, former OW Bunker have founded a restricted Facebook-based help group that has served them as platform for exchange news and referrals. We have analyzed the composition of this group and have found all observation points from our quantitative data set active on this site. Based on these elements we have considered our assumption workable. Marx and Timmermans (2017) provided an important distinction between a coincidental and coordinated co-mobility and tested for the differential effects of co-mobility in both cases. The authors have filtered out 85 % of coincidental moves by defining the co-mobility as moves occurring the same month for both dyad members. We follow the tests implemented and, on the top of controlling for simultaneous moves in all our specifications, we have performed an additional split sample test including simultaneous and non-simultaneous moves. The sample size is drastically reduced in case of the simultaneous moves, but all signs remain consistent when we replicate our main analysis. The findings seem however to be driven by the non-simultaneous moves and we therefore acknowledge that a part of non-simultaneous moves may simply be coincidental. Our setting includes global moves. As compared to a co-mobility unfolding locally, global moves may require more time to materialize. While we are not able to further distinguish to which extent the non-simultaneous co-mobility is coincidental, we believe that such rate should be relatively low as: i) we observe employees from a single firm, who have corroborated being in a cohesive network and were all active in a help group dedicated to a job search ii) we observe global and not local moves. Moreover, Marx and Timmermans (2017) have also applied another filter which has boosted the rate of coordinated co-mobility. They have namely dropped all large size firm (>100 employees) from their data set. We have faced some difficulties in estimating the size of all firms present in our sample given that they originate from different industries and often represent a complex structure. We believe nevertheless that the split samples test of large and small size moves included in the section dedicated to robustness checks captures the size of the firm to an important extent.

Another mechanism that may affect the rates of co-mobility among the displaced employees is the State's intervention and planning. In the case of OW Bunker failure, the displaced employees were located in many places worldwide, and, in consequence, one coordinated state's

intervention as alternative explanation is ruled out. The remainder of this section provides an analysis of two scenarios in which institutional context could affect the rates of co-mobility. First, in our sample we have found individuals located in institutional setting that do not offer any support. Indeed, some of the data points have been working as expats without any acquired right to state's support and even running the risk of losing their stay permit with an immediate effect upon the bankruptcy. In such case of expats, the co-mobility may be enhanced as individuals may act fast, driven by desperation, and therefore taking just any job opportunity locally. Second, in institutional settings such as the European Union, individuals eligible and beneficent of social support may have been simply using the safety net and taking their time to ponder all options. We have found some evidence of such behavior, especially among Europeans working in Europe. In such case, co-mobility defined as common moves into new employment could be deferred in time and the rates of joint moves to unemployment may increase. However, since we observe the individuals and their move into the first employment throughout, at least, the first year and a half after the organizational failure, we consider that, eventually, this characteristic will affect the co-mobility rates in the same way as in the first scenario. As most of the employees, except for Danes, were nationals working in their own countries, the "expat effect" should be mainly captured by the variable dedicated to the Danish nationality at the individual level. Table 2 and 3 dedicated to females and males indicate, respectively, a negative and positive correlation between the Danish nationality and becoming co-mobile. Both coefficients are however not significant. In order to control for the effect of a safety net, we compute a dummy variable that takes the value of one when both dyad members are nationals from the European Union. We include this dummy in the model 6 and the results yielded are significant and consistent with the main analysis.

Denmark, work place to around 20% of the front office employees and 29 (out of all 69) Danes, has seen some institutional support, but it was mainly targeted at back-office employees, holding no educational degrees. Only one from our Danish interviewees mentioned such state support in the job search, saying that it was not targeted at their occupational group: "*(My union) is more for the academics. So, since I have a master's degree and I was a member of Djoef and HK*[10]*. Nobody really came to my rescue. I had to take contact to them myself if I wanted anything from them, but I didn't really want anything from them*". There is no further

[10] Two of Danish unions targeted at highly educated within social science/economics and retails and admin staff : https://www.djoef.dk/omdjoef/medlemskab-og-fordele/hvemkanblivemedlem.aspx#I, https://www.hk.dk/blivmedlem.

evidence of state support in Denmark the qualitative interviews and therefore we consider that the state's planning should not affect our results.

Employees' group moves may finally also be a result of various employers' strategies or attitudes towards hiring, as such employees' co-mobility is endogenous to the receiving firm. One of such strategies, addressed as well by Marx & Timmermans (2017) may be aggressive hiring. Indeed, big firms may be aggressively hiring whole teams in order to preserve the human capital and use them in a "plug and play" way. There is a qualitative evidence for similar strategies used in the context of former OW Bunker employees. As a male trader put it:

"And then there were companies who were just buying out big amounts of people and then what they have been doing is so called the warehousing. Now they would take over an entire entity, they would keep it for a while to see which of these fruits in the basket are the nice and sweets ones and which are the less sweet ones and the little bit of rough and then they would only keep the good ones and throw the other ones out after some time".

We consider that such types of strategies have been addressed with the robustness check using split samples for small size moves and large-size moves mentioned in the Findings section. We nevertheless consider two additional scenarios and conduct related tests. First, a particular instance of an aggressive hiring attitude may also occur because of an intensive "spin-off" or internationalization activity by the incumbent firms. We further rule out that co-mobility observed in our setting is driven by new firm's demand by including a dummy for a new subsidiary (in absence of firms fixed effects). Our results remain stable and such dummy displays a significant and positive coefficient. Second, as outlined by the qualitative interviews, one holding engaged in a particularly aggressive way in hiring former OW Bunker employees. We compute a dummy that takes the value of one if a dyad's employer is the mentioned holding. Our results are consistent but the level of significance drops suggesting that the given employer and the aggressive hiring could have affected the patterns of co-mobility. This finding is in line with the mechanism of labor market discrimination suggesting that the gender effect of homophily is driven, at least partly, by the supply side.

Extant literature (Cannella et al., 1995; Rider & Negro, 2015; Semadeni et al., 2008) has demonstrated that failure affects employees' careers as they may be stigmatized by external audiences such as employers. Displaced employees may experience unemployment or receive a new job but at a lower hierarchical position and/or with lower salary. Addressing such

alternative explanation, we find a boundary condition for stigma in the findings of the Chapter 3. The same paper demonstrates nonetheless that there is a blame ascribed to the organizational managers that makes this group particularly exposed. As a result, managers, contrarily to traders, may be less likely to be co-mobile. We further check for this possibility and, with a Chi-Square test, find no significant difference in patterns of co-mobility between dyads of managers and traders.

To sum up, our results suggest differential gender effects on co-mobility. We believe that our findings on the effects of shared gender for woman are driven by a mix of two elements: first, the labor market conditions seem to be important in shaping the observed pattern. While two co-mobile men are more likely to be promoted and less likely to be demoted, these trends are just opposite for females. Second, we additionally find a partial evidence of a same-sex discrimination, known in the literature as the Queen Bee effect. While we cannot exactly establish the direction of causality for these two mechanisms, based on the extant literature, we may presume that the market conditions make females more competitive, ultimately triggering the same-sex discrimination. We also find some evidence to support the "shying away from competition" behavior as a driver of co-mobility among females.

5. Conclusion

We find a strong evidence that shared gender affects co-mobility differently for men and women. Male dyads has a higher likelihood of co-mobility. In contrast, for women, gender homophily has a strong negative effect on the likelihood of co-mobility. According to our analysis, the effects of gender homophily for females are driven by discriminatory labor market practices and same-sex competition.

Our study contributes to the co-mobility literature by exploring the differential effects of gender homophily on co-mobility. We believe that our estimation based on a quasi- natural experiment of organizational failure, including a sample approaching the population of front-desk employees, provides a sound causal inference.

There are several limitations to our study. Our study design is based on one group pre- and post-test design (Rider & Negro, 2015). The ideal set up for natural experiments is based on the differences-in-differences framework in which a control group is required. Following this design practice will mean for us in practice to find a group of employees at a similar firm within

the industry and use them for the purpose of comparing the rates of co-mobility. Nevertheless, since the whole industry has been treated by the bankruptcy of the major player, the sudden supply of employees in the market negatively impacts the potential propensity of employees from the competing firms to change jobs in the same time. Consequently, it results impossible to use a design with a control group.

As our data has been collected on Linkedin platform, we also lack financial indicators on employees' wages after the organizational failure We used the *Promotion* and *Demotion* as dependent variables in our additional analyses as alternative indicator of performance and, as such, they may raise some concerns. Even though, as reported by various media releases[11], all types of existing firms in the market have seized the opportunity of OW Bunker collapse to expand and form new subsidiaries, there may be differences between the promotion rates and quality offered by various types of firms. Smaller or newly established entrepreneurial firms may have been offering significantly better occupational positions, thus higher promotion rates, in order to attract employees, while well-established big firms may be more reluctant to use such strategy, benefiting from high status (Bidwell & Briscoe, 2010; Bidwell, Won, Barbulescu, & Mollick, 2015). This leads us to conclude that the used dependent variables are only an imperfect proxy of the labor market outcomes. Furthermore, our study focuses on one company case- and one particular industry of service intermediaries. While our findings on how gender homophily correlates with co-mobility may be relevant to similar industries, the external validity of our study is limited. We therefore expect that the findings may vary in terms of industries and also in terms of the event, non-option and unexpected, triggering the subsequent employees' moves.

Finally, we suggest some avenues for future research. We believe that the investigation of co-mobility within a different industry and also following an expected or protracted failure, in order to detect patterns of similarity or dissimilarity could be interesting. The industry characteristics, such as low barriers to entry absent in our study, may change the patterns of co-mobility, since entrepreneurship may be a viable option. Second, a different type of shock may be also considered. Downsizing or restructuring (forced, non-optional but not necessarily exogenous) may impact the co-mobility patterns in way different from the organizational failure. In contrast to our study of a global industry, scholars may further investigate the co-mobility

[11] http://www.reuters.com/article/bunker-bankruptcy-mercuria-idUSL3N0TL35K20141202, http://www.reuters.com/article/singapore-shipping-oil-ow-bunk-idUSL3N0T24RM20141114

patterns after a shock but within national, not global, boundaries. Finally, we suggest that scholars further explore the same-gender discrimination among females, possibly, within dyads of two junior or two seniors.

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Table 1 **Demographics in the sample of interviewees**

Demographic	**Frequency among interviewees (total of 19)**	**Female**	**Male**
Co-mobile	16	4	12
Changed geographical location	3	0	3
Trader (remainder= manager)	13	5	8
Danish (remainder=other nationality)	10	3	7
Remained in the industry	14	4	10
Promoted	6	0	6
Experience at OW Bunker> =60 months	8	1	7
Other industry experience	4	0	4
Other experience	14	3	11
Total		5	14

Table 2 **Individual demographics- descriptive statistics and correlations matrix: females**

	mean	sd	count	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1.Co-mobility	.7	.46	40	1												
2.Position	.1	.30	40	0.21	1											
3.Education	.77	.42	40	-0.09	-0.02	1										
4.Experience at OW Bunker	54.27	44.61	40	0.13	0.12	-0.09	1									
5.Other industry experience	23.27	52.17	40	0.14	0.32*	-0.27	-0.07	1								
6.Other experience	25.65	39.77	40	-0.12	-0.13	-0.21	0.00	-0.27	1							
7.Age	2	.64	40	0.08	0.26	-0.18	0.52***	0.51***	0.05	1						
8.Danish nationality	.15	.36	40	-0.03	-0.14	-0.10	0.14	-0.08	-0.09	-0.11	1					
9.Move to another industry	.45	.81	40	-0.8***	-0.18	0.22	-0.09	-0.22	0.18	-0.09	-0.06	1				
10.Promotion	.22	.42	40	-0.03	0.02	0.14	0.14	0.25	-0.04	0.28	-0.05	0.07	1			
11.Geographical mobility	.25	.43	40	0.25	0.12	-0.10	-0.03	0.30	-0.05	0.18	0.08	-0.25	0.24	1		
12. Demotion	.12	.33	40	0.24	-0.12	0.02	0.03	-0.01	0.034	0.12	0.05	-0.21	-0.20	-0.04	1	
13. Repatriation	.05	.22	40	0.15	-0.07	-0.15	0.1	-0.10	0.21	0	0.22	-0.12	-0.12	0.39*	0.26	1

Table 3 **Individual demographics- descriptive statistics and correlations matrix: males**

	mean	sd	count	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1.Co-mobility	.77	.42	145	1												
2.Position	.39	.49	145	-0.03	1											
3.Education	.79	.40	145	0.00	-0.11	1										
4.Experience at OW Bunker	52.13	56.53	145	0.15	0.30***	-0.18*	1									
5.Other industry experience	27.83	55.68	145	0.05	0.20*	-0.25*	-0.12	1								
6.Other experience	39.75	59.17	145	-0.08	0.24**	0.03	-0.10	-0.18*	1							
7.Age	2.30	.86	145	-0.05	0.37***	-0.15	0.38***	0.32***	0.34***	1						
8.Danish nationality	.37	.48	145	0.04	0.31***	0.04	0.13	-0.08	0.11	-0.00	1					
9.Move to another industry	.25	.62	145	-0.4***	0.03	0.18*	-0.18*	-0.14	0.23*	-0.05	0.23**	1				
10.Promotion	.24	.43	145	0.04	-0.3***	0.09	-0.03	-0.11	0.02	0.02	0.04	0.22*	1			
11.Geographical mobility	.40	.49	145	-0.12	0.03	0.10	-0.08	0.05	0.06	0.00	0.15	0.16*	-0.01	1		
12. Demotion	.08	.27	145	0.16	0.3***	-0.03	0.10	-0.02	0.01	0.18*	0.05	-0.12	-0.1*	-0.04	1	
13. Repatriation	.03	.18	145	0.01	0.08	-0.09	0.09	0.20*	-0.1	-0.02	-0.06	-0.07	-0.02	0.23**	0.08	1

Table 4 **Descriptive Statistics and correlation matrix- dyadic level**

	mean	sd	count	1	2	3	4	5	6	7	8	9	10
1. Co-mobility	.08	.27	17020	1									
2.Same gender female	.04	.20	17020	-0.02**	1								
3.Same gender male	.61	.48	17020	0.03***	-0.27***	1							
4.Different position	.44	.49	17020	0.00	-0.11***	0.09***	1						
5.Same education	.66	.47	17020	0.02***	-0.01	0.01	-0.03***	1					
6.Same nationality	.12	.32	17020	0.10***	-0.04***	0.10***	0.03***	0.00	1				
7.Co-located	.07	.27	17020	0.11***	-0.00	-0.00	0.00	0.02***	0.40***	1			
8.Repatriation	.00	.03	17020	-0.00	0.00	-0.00	0.00	-0.01*	-0.00	-0.00	1		
9.Promotion dyad	.42	.49	17020	-0.01*	-0.01	0.02*	-0.09***	0.06**	-0.01*	0.03**	-0.01	1	
10.Demotion dyad	.17	.28	17020	0.06***	0.03***	-0.05**	0.10*	-0.01	0.07***	0.03**	0.03***	-0.1***	1

Table 5 **Quantitative analysis – logit, error clustered at dyad (m1-5) and multi-way cluster (m6-10)**

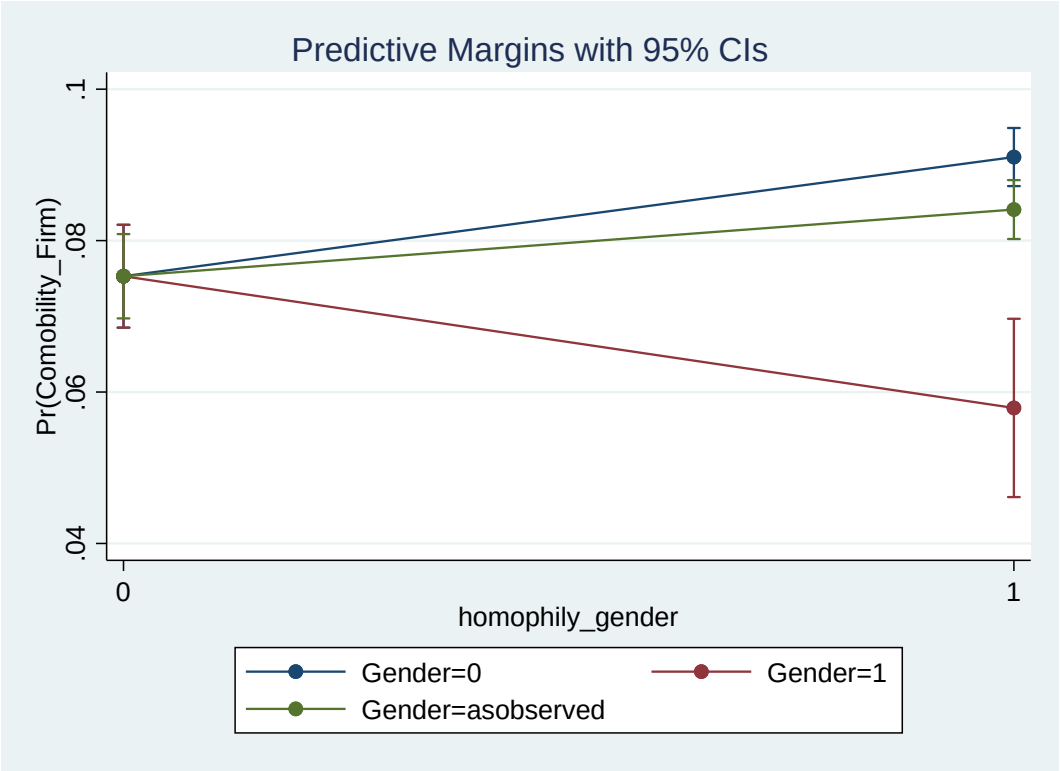
DV	Co-mobility		Promotion -dyad	Demotion -dyad	Co-mobility	Co-mobility		Promotion -dyad	Demotion -dyad	Co-mobility
Mechanism	Co-mobility		Discrimination		Queen Bee	Co-mobility		Discrimination		Queen Bee
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Same nationality	0.97***	0.96***	0.07	0.46***	0.96***	0.644**	0.59**	-0.23	0.59***	0.59**
	(11.31)	(11.14)	(1.37)	(6.89)	(11.13)	(2.50)	(2.29)	(-1.10)	(2.73)	(2.29)
Different position	0.07	0.07	0.26***	0.26***	0.08	0.05	0.02	-0.37***	0.59***	0.03
	(1.10)	(1.07)	(6.06)	(5.76)	(1.23)	(0.50)	(0.24)	(-4.53)	(3.54)	(0.31)
Same education	0.20***	0.20***	0.34***	0.08	0.20***	0.189	0.181	0.28**	-0.04	0.18
	(2.72)	(2.67)	(7.43)	(1.48)	(2.70)	(1.02)	(0.99)	(2.07)	(-0.19)	(0.99)
Co-located	0.73***	0.74***	0.18***	0.14*	0.74***	0.76***	0.79***	0.32**	0.05	0.79***
	(7.80)	(7.86)	(2.88)	(1.74)	(7.89)	(3.03)	(3.13)	(2.50)	(0.27)	(3.14)
Repatriation	-0.79	-0.77	-0.13	1.46***	-0.78	-0.426	-0.41	-0.50	1.62**	-0.41
	(-0.85)	(-0.82)	(-0.26)	(2.77)	(-0.83)	(-0.53)	(-0.49)	(-0.74)	(2.29)	(-0.49)
Simultaneous move	0.63***	0.63***	0.24***	0.07	0.63***	0.78***	0.78***	0.10	0.17	0.78***
	(10.69)	(10.69)	(6.45)	(1.49)	(10.6)	(5.49)	(5.49)	(0.88)	(1.08)	(5.48)
Same gender female		**-0.15**	-0.37***	0.74***	-0.01		**-0.28***	-0.13	0.40**	-0.20
		(-0.88)	(-4.24)	(6.93)	(-0.06)		**(-1.88)**	(-0.73)	(2.25)	(-1.18)
Same gender male		0.08	0.45***	-0.73***	0.08		0.21	0.11	-0.35	0.21
		(1.33)	(11.78)	(-15.60)	(1.29)		(1.05)	(0.59)	(-1.11)	(1.05)
Same gender female *different position					**-0.81**					**-0.52**
					(-1.63)					**(-0.67)**
Constant	-2.95***	-2.97***	-1.94***	-1.27***	-2.97***	-2.9***	-3.10***	-0.40*	-1.75***	-3.10***
	(-19.95)	(-19.61)	(-20.66)	(-10.76)	(-19.63)	(-13.9)	(-12.7)	(-1.92)	(-4.42)	(-12.81)
Individual and move controls [1]	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No
Promotion	Yes	Yes	No	No	Yes	No	No	No	No	No
Error Cluster	Dyad	Dyad	Dyad	Dyad	Dyad	Multi way	Multi way	Multi way	Multi way	Multi way
N	16836	16836	17020	17020	16836	17020	17020	17020	17020	17020

[1] Set of variables including: move to another industry, education, position, age, firm experience, other industry experience, other experience

Table 6 Marginal effects: same gender female * different position (m 5)

	Margin	Standard error	Z	P>z
Same gender female=0	.085	.002	41.01	0.00
Same gender female =1	.065	.01	6.08	0.00
Different position=0	.083	.002	28.81	0.00
Different positon=1	.087	.003	26.05	0.00
Same gender female=0 *different position-0	.083	.002	28.33	0.00
Same gender female =0 *different position=1	.088	.01	26.03	0.00
Same gender=1 * different position=0	.082	.002	6.64	0.00
Same gender=1 *different position=1	.043	.003	2.38	0.00

Figure 1 **Marginal effects: same gender female * different position (m 5)**



APPENDIX 1

Table Quantitative analysis: Logit and errors clustered at dyad level (data set including unemployed)

DV	**Co-mobility**		**Promotion dyad**	**Demotion dyad**	**Co-mobility**
Mechanism	**Co-mobility**		**Discrimination**		**Queen Bee**
	M1	**M2**	**M3**	**M4**	**M5**
Same nationality	0.597** (2.41)	0.573** (2.32)	-0.172 (-0.86)	0.601*** (2.84)	0.573** (2.32)
Different position	0.0726 (0.79)	0.0625 (0.69)	-0.374*** (-4.80)	0.543*** (3.43)	0.0503 (0.55)
Same education	0.147 (0.91)	0.143 (0.89)	0.276** (2.05)	-0.0454 (-0.19)	0.143 (0.89)
Co-located	0.732*** (3.11)	0.744*** (3.18)	0.257* (1.86)	0.0418 (0.20)	0.743*** (3.18)
Repatriation	-0.414 (-0.47)	-0.413 (-0.46)	-0.336 (-0.49)	1.770** (2.50)	-0.409 (-0.45)
Simultaneous move	1.361*** (7.08)	1.358*** (7.02)	0.200* (1.87)	0.265* (1.74)	1.359*** (7.00)
Same gender female		0.0149 (0.08)	-0.201 (-1.05)	0.293 (1.55)	-0.0724 (-0.45)
Same gender male		0.134 (0.75)	0.177 (0.99)	-0.262 (-0.88)	0.134 (0.75)
Same gender female * different position					0.324 (0.76)
N	21321	21321	21321	21321	21321

* p < 0.05, ** p < 0.01, *** p < 0.001

APPENDIX 2

Table Quantitative analysis: Logit and errors clustered at dyad level (data set with 34.040 observations)

Mechanism	**Co-mobility**		**Discrimination**		**Queen Bee**
DV	**Co-mobility**		**Promotion dyad**	**Demotion dyad**	**Co-mobility**
	M1	**M2**	**M3**	**M4**	**M5**
Same nationality	.683*** (9.89)	0.64*** (9.25)	-0.26*** (-4.91)	0.72*** (11.21)	0.64*** (9.25)
Different position	0.05 (1.12)	0.03 (0.69)	-0.29*** (-10.52)	0.70*** (13.82)	0.03 (0.76)
Same education	0.17*** (3.35)	0.17*** (3.27)	0.34*** (10.07)	-0.05 (-1.10)	0.17*** (3.27)
Co-located	1.05*** (13.35)	1.07*** (13.53)	0.31*** (5.38)	0.02 (0.29)	1.07*** (13.53)
Repatriation	-0.65 (-0.97)	-0.64 (-0.94)	-0.43 (-0.96)	1.68*** (3.96)	-0.64 (-0.95)
Simultaneous move	0.61*** (13.52)	0.61*** (13.50)	0.10*** (3.03)	0.18*** (3.99)	0.61*** (13.50)
Same gender female		-0.30*** (-2.28)	-0.15** (-2.06)	0.69*** (7.14)	-0.27* (-1.95)
Same gender male		0.24*** (3.95)	0.15*** (3.85)	-0.59*** (-11.74)	0.24*** (3.95)
Same gender female * different position					-0.21 (-0.57)
Firm and first dyad member fixed effects	Yes	Yes	Yes	Yes	Yes
N	25760	25760	25760	30 912	25 760

* p < 0.05, ** p < 0.01, *** p < 0.001

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