Examining the How of Plural Policing: Moving from Normative Debate to Empirical Enquiry

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Abstract

The networked and plural nature of policing suggests that agencies are often involved in extensive exchanges of expertise, resources, and knowledge. However, the network structure and distribution of power between various policing actors can vary considerably. This highlights the importance of developing sound analytical perspectives that can help unpack the complexities behind the linkages. Applying the network perspective, this article underlines the value of utilising analytical tools and approaches drawn from social network analysis, such as brokerage and homophily, to empirically assess the roles of agencies and their contribution to plural policing. This, in turn, shows how, in the mixed economy of policing, as well as being understood in terms of the normative debates that often figure in the current literature, relational phenomena also require more sophisticated empirical approaches.

Keywords: policing, collaboration, network theory, social network analysis

Introduction

Policing scholars seem to agree that contemporary practices are shaped by pluralism as references are made to the 'extended policing family', 'the mixed economy of policing', and 'the policing complex' (Jones and Newburn 1998; Crawford and Lister 2004; Crawford *et al.* 2005). Several observers have noted that agencies tend to collaborate to handle policing and security issues (Crawford 1997; White and Gill 2013; White 2014). This suggests that the mixed economy of policing often involves an extensive exchange of information, expertise, resources, and knowledge. Policing and security agents are thus enmeshed in a web of linkages, and security is seen as being produced and delivered through networks (Dupont 2006; Fleming and Wood 2006; Whelan and Dupont 2017), which gives rise to the notion of security networks (Dupont 2004).

In the literature, two of the most salient perspectives seeking to conceptualise the complex nature of plural policing have been nodal governance (Johnston and Shearing 2003; Burris *et al.* 2005) and anchored pluralism (Loader and Walker 2006, 2007). Although enormously valuable in deepening our understanding of plural policing, the current debates in the literature have been predominantly concerned with the *if*, *why*, and *why not* of plural policing, and have paid far less attention to questions of *how* and *how much*. That is, underlying (normative) assumptions and claims often take precedence over empirical enquiry when scholars are exploring the linkages between policing agencies (see Crawford 2006; Martin 2012; Weber 2013 for notable exceptions). This leads to a mixture of conceptual and normative assumptions, on the one hand, and analytical and empirical aspirations, on the other, which makes it difficult to disentangle the two elements. This suggests there is a need for means to operationalise the theoretical frameworks, and make them better able to bear empirical scrutiny.

While collaboration and relations have been previously explored and discussed in policing literature, there have been few analyses of collaborative structures based on network theory. By taking the notion of collaboration in policing as its point of departure, this article aims to explore and explicate how concepts and analytical tools drawn from *network theory* can contribute to closing this gap and shed light on ways in which they can help operationalise theoretical approaches. Although there is increasing interest in utilising network concepts in policing studies (Dupont 2006; Brewer 2014), networks continue to be viewed mainly in terms of their metaphorical value (Whelan and Dupont 2017). This can create methodological

vagueness concerning the mapping of relationships and how one understands the contribution to policing made by different agencies.

To move beyond using networks as metaphors and employ rigorously analytical language to address research questions in plural policing, this article suggests that the concepts of brokerage and homophily – borrowed from social network analysis – can yield important insights, particularly when they are seen in relation to the concepts of nodal governance and anchored pluralism. Brokerage draws attention to the distribution of power (Marsden 1982), whilst homophily addresses the tendency of agencies to connect and interact more readily with ones that are similar to themselves (McPherson *et al*. 2001). The article examines the case of Norwegian airport and maritime port policing. The challenges of policing vast flows of people, goods, and capital at airports and ports are often met with multi-agency responses (see also Eski 2016). Examining policing in these sites, therefore, provides a unique case for exploring the complexities involved in network processes.

The article is divided into five sections. First, it outlines how the network perspective in plural policing literature can be understood, focusing on the concepts of brokerage and homophily. The second section describes plural policing as found in Norway. The third provides an overview of the research design and approach used in this study. This is followed by the empirical analysis of two security networks. The article concludes with a discussion of the findings and points out implications for future research.

Network Perspective in Plural Policing – Brokerage and Homophily

Networks have emerged as an important field of study addressing the increasing interconnectedness of contemporary societies (Castells 1996) and scholars of plural policing have taken up this notion. For instance, Leanne Weber (2013), in her 'nodal cartography' of migration policing, points out the importance of agencies' mentalities, technologies and practices, and relationships. Similarly, John Kerr (2015) investigates the configuration of security networks in the policing of art theft. These studies share an interest in the mapping of nodes, and provide rich qualitative descriptions of their practices and internal characteristics. However, 'illuminating the "nodal cartography" of post-modern security governance requires more than just the study of specific security nodes' (Blaustein 2014: 46), attention must also be given to their network of relations. To investigate these relationships, it is suggested that 'the macro-structural properties of a network, as well as the micro-properties of ties linking individual actors' (Brewer 2017: 713) are important dimensions that need to be considered.

Here, macro structures account for the overall pattern of relations that constitutes a network, while micro-properties pertain to analyses of actors' positions within the network, and how their structural position provides them with opportunities or constraints for (social) action (Wasserman and Faust 1994). This invites one to explore actors' relationships by using social network analysis (SNA).

The basic idea of SNA is to view organisations as being embedded in a social or relational structure which can be unpacked by various mathematical and analytical techniques (Borgatti *et al*. 2013). By applying SNA, previous studies of security networks have produced significant insights into how power is structured in networks (Dupont 2006; Brewer 2014; Nøkleberg 2016). It is assumed that a well-positioned actor possesses a greater ability to influence the course of events (Dupont 2006). Following this approach, then, power is assumed to be relational – it is a property of an agency's position in a network (Borgatti *et al.* 2013).

Brokerage

Network power can accrue to those positioned strategically as intermediaries, connecting otherwise unconnected actors or clusters of actors together (Gould and Fernandez 1989; Burt 1992). Broker agencies hold key structural positions in networks and are thus considered more influential and powerful to control the diffusion of network resources (Marsden 1982). Brokerage may be beneficial for the individual actor as novel information or resources can be acquired (Burt 1992), as they can tap into different parts of the network with ease. Establishing new relational ties is seen as a costly endeavour, suggesting that organisations may rather rely on other well-connected actors to access network resources rather than forming new connections (Brass 2009). Brokers are thus regarded as key actors and their loss from a network can greatly affect the functionality of a network.

In the criminological literature the notion of brokerage has most often been applied, empirically, to gain an understanding of the social environment of criminal and illicit networks (Morselli 2009; Athey and Bouchard 2013). In policing, less attention has been paid to the nature and role of brokerage within 'bright and licit' (Whelan and Dupont 2017) networks. The traditional understanding of brokerage has revolved around the importance of the police as the leading brokers (Brewer 2017). The notion of 'third party policing' (Mazerolle and Ransley 2006) captures how public agencies seek to harness the resources and capacities of private agencies through persuasion or coercion. By mobilising such additional resources, the police can accumulate substantial capital and become an important 'knowledge-broker' (Ericson and

Haggerty 1997) in networks. The police often control access to crime-related intelligence. In many circumstances, therefore, they are the leading actor in connecting and facilitating network resources 'with external agencies' (Cherney *et al.* 2006).

However, viewing the police as the only possible broker in security networks is too limited (O'Malley 2015). In fact, it has been shown previously that the 'network clearly acknowledges the power and authority of the police, but it does not depend on them to mediate its exchanges on a routine basis' (Dupont 2006: 177). Private policing actors now act as entrepreneurs in the way they strategically position themselves within the network, targeting opportunities for brokering (Brewer 2017). This indicates there is a complex plural policing environment, in which the composition and positioning of policing agencies within the network can vary. Although some studies have adopted the notion of brokers in policing, more empirical work is needed to develop our understanding of brokerage.

Brokers may be crucial for overall effectiveness in network processes. Similarly, if the perspective of anchored pluralism (Loader and Walker 2007) is adopted, it is assumed that the actor who operates as an anchor crucially affects the results of governance processes. In some respects, therefore, anchored pluralism is concerned with the notion of power, in the sense that states seek to 'strengthen their ability to govern by mobilizing, and then integrating, both state and non-state resources' (Shearing 2005: 2). In the process of mobilising resources by being positioned as an anchor, the organisation in question can increase its power and capacity to control the flow of events, which is very similar to the position of brokers in network theory. Parallels may thus be drawn between the notion of brokerage in SNA and the idea of anchoring in Loader and Walker's framework.

However, anchored pluralism has so far received scant empirical attention. If the perspective is to gain relevance, beyond its notable normative contribution as a critique of nodal governance, there is a need to be more empirically specific. In particular, how can one, empirically, determine where the anchor is situated in networked policing? Generally, anchored pluralism sees the state as the main anchor (Loader and Walker 2007), however, as is suggested by the pluralisation of policing, the empirical reality is more complicated. Some observers even argue that anchoring may come in many forms (Wood and Font 2004). In security networks it is, therefore, worthwhile to view anchoring processes as an open empirical question. More importantly, the apparent similarities between the concepts suggest that nuances of anchoring in plural and networked policing can be identified by means of various indicators of brokerage.

Homophily

In his exploration of plural policing, Dupont (2006) shows that most network ties are formed between agencies with similar responsibilities. On the other hand, security networks consisting of nodes with different backgrounds 'are likely to experience greater cultural challenges' (Whelan 2017: 125). Similarly, Eski (2016) shows that asymmetry and inequality are at play in collaboration across the public-private divide. Previous studies have also highlighted the existence of sectoral allegiance (Nøkleberg 2019), suggesting policing agencies tend to share information and resources more readily with organisations within their own sector. In network terms, this denotes the principle of homophily, which suggests that people (or organisations) are more likely to connect and interact with individuals (or organisations) similar to themselves (McPherson *et al.* 2001; Kossinets and Watts 2009). Homophily can have significant implications for network formation as it may produce clusters of dense subgroups of actors, who are homogeneous in many ways. Establishing network ties with similar actors is often driven by the need to find predictable and trustworthy partners (Atouba and Shumate 2015). Homophily is also assumed to influence the diffusion of information and other resources among social actors (Yavaş and Yücel 2014). Homophily can potentially show how the social patterns within networks may be explained by differences and similarities in interests.

While homophily may be particularly relevant to understanding the development of collaboration between agencies there is, nevertheless, an absence of studies exploring its role in the field of policing. Within the nodal perspectives on policing the notion of mentalities has been used to understand the dynamics of security governance (Burris *et al.* 2005). Similarly, White and Gill (2013) introduce rationalities as a way to conceptualise agencies' practices. It has been shown that policing agencies can be guided by different mentalities or rationalities, and a distinction is frequently made between organisations that adhere to the public good and those governed by market logic and the profit ethos (White and Gill 2013). Divergent characteristics may make collaboration challenging, and at worst even prevent collaboration. This article will show that by using the concept of homophily from SNA, it is possible to test empirically the extent to which policing agencies sharing similar rationalities (public good versus the market) are more likely to form collaborative ties with each other than those with divergent interests. Thus, homophily seems particularly fruitful in the process of develop the empirical potential of nodal governance.

The Nature of Norwegian Policing: Airport and Maritime Port Security

While plural policing is a well-documented phenomenon that has been explored in a number of (Anglocentric) contexts, Nordic plural policing has received less empirical attention (notable exceptions include Gundhus and Larsson 2007; Nøkleberg 2016; Søgaard *et al.* 2016; Stenström 2018). The Nordic policing model has traditionally been characterised by a strong state apparatus (Høigård 2011), where the public police is seen as the central institution that should provide policing services (Gundhus and Larsson 2007). This has had consequences for how public policing agencies have been organised and how they are demarcated from other (private) policing bodies. Moreover, the public police, in these countries, are largely unitary and centralised forces (Ugelvik 2016) and generally enjoy a high level of trust among citizens (Kääriäinen 2007). Nonetheless, the Nordic policing system is changing, following similar developments towards pluralisation and network organisation (Nøkleberg 2016). Collaboration between the police and external (private) agencies seem to have become more prominent (Wathne *et al.* 2019).

Airports and maritime ports are prime locations for studying plural policing and the evolution of security networks. In recent decades, they have become vital hubs for daily facilitating an immense flow of people, goods, and capital (Salter 2008; Eski 2016), and connecting local and national spaces to international ones. Ascending to become such important 'glocal' spaces, however, is accompanied by risks and vulnerabilities. In the wake of 9/11 (and subsequent terror attacks), new security measures were introduced for both air and sea transport, targeting specifically the threats of terrorism, human trafficking, illegal drugs and arms trade, and cargo theft (Eski and Buijt 2017). Airports and ports in Norway, as elsewhere, are thus subject to a comprehensive international and national regulatory security regime.

Given the complexity of policing flows at airports and ports, the security infrastructure generally involves networked responses. In Norwegian ports, there are many active collaboration, involving public and private actors, which are concerned with consultation and the exchange and sharing of expertise and resources. Similar patterns are found at airports, where these range from informal and temporary joint operations to formal and permanent collaborative units. This multi-nodal orientation has made the policing of airports and ports, in Norway, a dynamic environment with a plethora of agencies with different rationalities. In studying port policing, Eski (2016) also emphasises the importance of collaborative ties between port police and port security agencies. These relations are assumed to provide better results than if security is delivered in isolation. However, they are not always seen as equal, but rather involve 'public-private asymmetry' (Eski 2016: 117). Following the similarities of

Eski's empirical approach, the current study advances on these findings by shedding more light on, and providing more finely tuned approaches for its evaluation, the asymmetry of power within networked forms of governance.

Methods

This article draws on survey responses and semi-structured interviews with representatives of organisations involved in networked policing at ports and airports in Norway. The interviews are part of a larger case study of Oslo airport, the Port of Stavanger and the Port of Kristiansand. A total of 76 interviews were conducted between 2015 and 2017. The scope of the survey was expanded to cover five Norwegian cities (Oslo, Kristiansand, Stavanger, Bergen and Tromsø) with one airport and one port each, making a total of ten sites. The questionnaire were distributed during the first part of 2017, and 511 participants responded, giving a response rate of 57%.

In this article, analysis is limited to the security networks and collaborative landscape found at the port of Stavanger and Oslo airport. In order to investigate the agencies' positioning and assess the empirical value of the network perspective, this article relies mainly on survey data. However, to support the analysis of the quantified data, qualitative accounts are presented alongside the survey material to offer a richer description of emerging trends. In what follows, I will elaborate on the design and sample, and measures and concepts from SNA.

Sample and Design

From the outset, it was considered worthwhile to include a wide range of actors. Participants belonged to law enforcement and intelligence agencies, governmental organisations, publicly owned companies, the customs authorities, private security companies, and private businesses. At Oslo airport, 30 organisations were involved in policing, and in the port of Stavanger 38 organisations were identified (see appendix for full list). Interviews with key representative from different policing agencies were conducted, and the interviewees ranged from (top) management level to frontline workers. This combination provides important insight into experiences in everyday policing practice as well as at the strategic level of management. The interviews lasted between one and two hours and the topics covered included the mapping of collaborative partners, experiences of information and resource exchange, and trust and reciprocity in collaboration.

As noted by Dupont (2006), extensive data on linkages must be collected to capture the essence of security networks. The survey, therefore, aimed to map the relations connecting policing agencies. To capture collaborative ties, representatives were asked to name organisations with which collaboration – both formal and informal – had been formed/maintained over the previous twelve months. The collaborative ties were operationalised as 1) physical interactions between actors on issues concerning security and policing (e.g. meetings, briefings), 2) the transfer of information, expertise, and knowledge, 3) the pooling of resources (e.g. CCTV and communication equipment), and 4) the physical movement of actors (e.g. joint operations and task forces) (Brewer 2014).

The relational data from the interviews and survey were used to create two security networks, capturing all collaborative ties at the port of Stavanger and Oslo airport. The connections in these networks were analysed using the SNA software UCINET and Gephi (Borgatti *et al.* 2002; Bastian *et al.* 2009). The qualitative accounts of interviewees were coded and analysed according to the principles of thematic analysis (Braun and Clarke 2006).

Social Network Analysis and Measures

To analyse the distribution of network power, the concepts of brokerage and homophily were used. The extent to which policing agencies were strategically positioned as brokers, was measured using betweenness centrality (Freeman 1979) and Gould and Fernandez (1989) brokerage roles. Betweenness centrality is among the most common indicators of brokerage (Long *et al.* 2013), and it measures 'how often a given node falls along the shortest path between two other nodes' (Borgatti *et al.* 2013: 174). Being the node that lies between other nodes and thus mediates their relationships, one is assumed to possess great potential for controlling flows through the entirety network.

The brokerage structures suggest that a node may act as a broker through different sub-roles, depending on the direction in which information or resources flow within the network and between groups or clusters (Gould and Fernandez 1989). To categorise these structural roles, five brokerage types are described where the connections are considered as triads where node A is connected to node B, and B is connected to node C, but there is no tie connecting A and C, and it is assumed that node B plays the broker role in these connections[1]. According to

[1] The five brokerage roles are: 1) coordinator (all nodes belong to the same group), 2) gatekeeper (node A belongs to one group and nodes B and C to another), 3) representative (nodes A and B belong to one group and node C to a different one), 4) consultant (B is an external node who facilitates connections between the unconnected nodes A and C, which belong to the same group), and 5) liaison (nodes A, B and C all belong to different groups).

Gould and Fernandez, brokerage scores indicate the number of times an actor performs each role.

The analysis of homophily was based on the EI-index[2] of Krackhardt and Stern (1988) and Yule's Q (Lewis-Beck *et al.* 2004). The EI-index assumes that the network is composed of mutually exclusive groups, and always ranges from −1 to +1, where smaller values indicate greater homophily. To assess whether the homophily score exceeds what would be expected by chance, that is to check the index's significance, a permutation test can be run (Everett and Borgatti 2012). However, care should be taken in interpreting the index as it is sensitive to differences in group sizes (Crossley *et al.* 2015). Yule's Q is invariant to changes in category sizes and can thus account for this. Values vary between +/– 1, where +1 represents perfect homophily (Lewis-Beck *et al.* 2004). Drawing on the notion of rationalities (White and Gill 2013), the various policing agencies were divided into two groups – public and private. To conceptualise actors in this binary manner may seem a simplification of the empirical reality. It has previously been argued that the sharp distinction of public and private are often blurred and it is better to view the divide as a continuum (Jones and Newburn 1998). Nonetheless, to follow the binary distinction it was assumed, in this study, that it would provide greater analytical clarity. By increasing the number of categories (e.g. police, regulators, ministries, private security industry or businesses) – although potentially capturing nuances – the analyses may obscure the relevance of the public-private divide.

Findings

Charting Collaborative Ties of Security Networks

The security networks of the Port of Stavanger (PoS) and Oslo Airport (OA) share a number of similarities concerning their social structure (see figures 1 and 2) and analyses of their network characteristics yield comparable results (see table 1). Following the typology of Dupont (2004) and Whelan and Dupont (2017), the two networks can be understood as local exchange networks facilitating exchange of resources and information on (local) crime and security issues. Given their similarities, a thorough description will be given of the characteristics of the PoS network.

[2] EI-index = $\frac{E-I}{E+I}$ where *E*=the number of external edges (between-group) and *I*=the number of internal edges (within-group).

Network visualisation can offer insights into the collaborative landscape and social structure on the waterfront. Figure 1 represents the pattern of relations that exist between the 38 policing agencies at the PoS. In the figure, the nodes represent the agencies and each line between the nodes represents a relational tie; a total of 376 collaborative ties were reported to be active in the network.

Figure 1 here

The analysis of network characteristics (table 1) shows an average density of 0.267, indicating that 26.7% of all possible ties between the agencies are considered to be active. The network metrics also indicate that the policing agencies are well connected, with an average geodesic distance of 1.8. Thus, every agency can make contact with all the others through just under two intermediaries.

Table 1 here

In such dense networks, where policing agencies have many alternative ways of reaching other actors, the potential for exchange is high and it can take place fast within the boundaries of the network.

Figure 2 here

The analysis indicates that, although rather dense and connected, both networks can be divided into different clusters[3], which seem to correspond to the particular powers, responsibilities, and core tasks of the policing agencies. In the network on the waterfront, there are four clusters. The first (circle) comprises only public agencies, and their common component is their involvement in law enforcement, intelligence and securing critical infrastructure (e.g. the public police, the Ministry of Justice). The second cluster (square) includes those agencies whose responsibility is (security) regulation, and these are all public agencies (e.g. the Norwegian Coastal Administration). The third and fourth (diamond and triangle respectively) are a mix of private and public actors, and they have in common that they are primarily concerned with the operation of the port. They are understood as being operational port-security specialists, who are responsible for the day-to-day delivery of security. One can observe a similar clustering structure in the network at Oslo Airport (figure 2) and the three clusters are categorised along similar lines as the PoS: law enforcement, intelligence and

[3] Clustering were examined using the modularity in Gephi and the Girvan-Newman algorithm in UCINET; both analyses yield similar results.

critical infrastructure (circle), regulators (square), and operational airport security specialists (diamond).

The clustering structure may impact the distribution of network power, as each cluster may possess control over particular resources and expertise. The density within each cluster is higher than average network density, indicating that actors are more active within the confinement of their clusters. However, the idea of brokerage suggests that some agencies may be strategically positioned to tap into the expertise, resources and knowledge of other agencies, and thus act as a bridge between clusters. The following presents the extent to which policing agencies perform the role of brokers.

Brokerage

Table 2 shows the distribution of betweenness within the two security networks and includes agencies with the highest scores. With regard to betweenness centrality, the Norwegian Coastal Administration (NCA) holds the most central position in the network on the waterfront, but is closely followed by the public port authority of Stavanger (PAoS). The police has the third most central position, based on betweenness. These metrics show that policing agencies (representing a public interest or rationality) are well-positioned to become brokers and possess considerable power to facilitate the flow of resources between actors in the entirety of the network, particularly as these agencies also represent different clusters.

Nonetheless, it is worth noting that one private policing agency (Recognised Security Organisation (RSO)) also holds a fairly central position with regard to betweenness. As a result of the stringent maritime security regulations, RSOs have been established to act as intermediaries between government and port facilities. The RSO often carries out port facility security assessments and provides assistance and advice on port security matters. The post 9/11 security regulatory regime, therefore, helped create a new market for commercial security agencies. In the PoS, as elsewhere, private security companies provide a range of services to safeguard the closed port environment (Eski 2016), including CCTV monitoring and the registration of employees and visitors. However, the main private security company in PoS has a rather low betweenness score (rank 11, not included table 2). It, therefore, seems that private policing agencies act to a lesser extent as well-positioned brokers.

Table 2 here

This point becomes even more prominent when betweenness at Oslo airport is examined. The metrics show that the first private policing agency, in this network, is ranked 12th and has a low score. As such, private agencies may not possess the ability to control the flow of resources within the network. As in the case of the port, the public agencies take the most central positions at the airport concerning betweenness. The top three agencies (the airport police, regulatory authority, and Avinor Oslo airport) have all developed distinct types of expertise in airport policing and security that can be diffused throughout the network.

The analysis of betweenness seems to provide evidence to support the presence of brokerage and bridging actors. By applying Gould and Fernandez brokerage roles, these tendencies can be explored further.

Tables 3 and 4 present the brokerage scores for both security networks. On the waterfront, the NCA and the port authority are by far the most prominent brokers in terms of total brokerage scores[4] . However, nuances appear when the metrics are explored in more detail. The NCA only acts as a significant broker in terms of the roles of consultant and liaison. Thus, it operates as an external third-party broker, which seems to be well aligned with the role of a regulatory authority in the port security environment. One interviewee representing the regulator noted:

> We're doing a lot of work with procedures and instructions. We develop guidelines and we host meetings every year (…), where we gather all those working on port security and ISPS, to address and discuss common issues and seek possible solutions. (…). In a sense, we act as an advisory body. After all, we're responsible for ensuring that they [ports] operate in accordance with the regulations. (Regulatory authority 11)

This quote illustrates the important position the regulator plays in facilitating network exchanges and connecting organisations. In order to ensure compliance with (security) regulations, the NCA conducts audits and supervises port operators and facilities and if it is deemed necessary the regulator distributes information to other relevant actors.

The port authority of Stavanger exhibits substantial brokerage powers across every role except liaison. This suggests that the PAoS is crucial in facilitating the flow of information and resources within its own cluster (port security specialists), as well as in connecting internal actors with external cluster actors. The PAoS is responsible for the overall administration and operation of the port, including security and the implementation of the ISPS-code[5]. In this

[4] All brokerage position scores added together, not included in the tables.
[5] The International Ship and Port Facility Security Code.

regard, several interviewees explain that the port authority possesses crucial knowledge, and say that, in meetings with other agencies, it seeks to share such knowledge and expertise. The port authority is seen as an important catalyst for establishing local collaboration forums. As the PAoS has overall responsibility, other actors often seek advice and support on security-related questions. By describing the process of reporting security incidents, a port facility security officer (PFSO) in a private business at the port illustrates this point:

> If there are any serious security issues or incidents, we could, of course, take actions ourselves but you need to follow the procedures, so if there's an incident, first the employees must notify [anonymised person] working here, whose responsibility is to alert the port authority, then it is the port authority who contact the police. So there's a long chain here. (…) and of course, you can question if this is optimal. (Private business 67)

This account underscores that the port authority of Stavanger take up the position as an in-between agency and mediates the contacts between other actors. Similarly, on the relationship with the police, a PFSO expresses: 'no, not really, only on the day we really need them, then we call. Beyond that, that relationship goes through the port of Stavanger' (Private business 41). As such, there are occasions where direct contact between PFSO's and the police would occur, but generally the contact is expected to be funnelled through the port authority. Thus, solidifying the position of the port authority as an important broker. The reporting process also illustrates how significant the role of the port authority is in the diffusion of critical information across the network. As one representative of the port authority noted:

> A port facility had had a security incident; there was a hole in a fence, but we didn't know what had happened, couldn't find anything or anyone on the CCTV. As soon as I got the report I thought, first, this is a matter we must report to the Norwegian Coastal Administration, although the immediate threat was gone, and second, we need to inform all of the PFSOs in the port, so they can check and keep an eye on their facilities, I mean if similar incidents occurred. (Port authority 58)

In the context of brokerage, the interviewee identifies a number of important elements. First, it demonstrates the pivotal position the port authority play in brokering connections in the formal process of notifying the costal administration. Depending on the severity, then, the costal administration can decide if further (national) measures are needed (e.g. raising the security level). But of equal importance, the information, in this case of a security incident, is diffused back to the network through the port authority. As such, the PAoS has the capacity to connect different (unconnected) policing agencies and thus help to facilitate connections and network exchanges.

The brokerage analysis also shows that the police still holds a central position as an intermediary, especially between actors within its own group and external agencies. The customs authorities also act as a relatively important broker, both internally in their own cluster and by connecting internal and external agencies. Looking at the private actors' distribution in various brokerage roles, one observes that the RSO is involved in facilitating network exchange. However, the metrics suggest that the RSO's role as a broker is less significant than its position derived from betweenness. In general, the distribution across the different brokerage roles indicates that, on the waterfront, public policing agencies tend to hold the most central positions in the network.

Table 3 here

Looking at the analysis of Oslo airport, there are striking similarities in the distribution of brokerage roles. The results (table 4) indicate, even more clearly, that public policing agencies are more influential and powerful than their private counterparts. The airport police, being an important information and knowledge broker (Ericson and Haggerty 1997), act as a gatekeeper and representative, facilitating contact between in-group and external cluster organisations. The airport police is also a significant point of contact for other parts of the police force and for governmental agencies which do not necessarily have close connections with local actors at the airport.

Like the regulator at the port, the Civil Aviation Authority (CAA) holds a key position of consultant and liaison within the network, brokering network resources as an external third-party actor. The findings show that Avinor Oslo airport (AOA) has an important position, and often acts as a coordinator. AOA is responsible for the operation and security infrastructure of the airport, and consequently the organisation has acquired significant expertise in security matters. Through this role, AOA has a unique ability to connect policing agencies to each other to optimise the exchange of information and resources, which is often controlled by the airport.

Table 4 here

The analyses of betweenness centrality and brokerage roles seem to provide rather strong evidence to support the idea that network exchanges are dependent upon brokerage. Above, it was argued that similarities exist between the concept of brokerage and anchored pluralism. By treating it as an open empirical question, the network analysis is instrumental in the process of mapping the main actors operating as anchors. The anchoring processes have important implications for how collaboration in the airport and port functions in the everyday practice of

delivering security. Since public agencies, in the two networks, tend to assume the most significant roles, that is being the anchor, they have considerable ability to exercise power. This result in an uneven distribution of network power, and private policing agencies are reliant on accessing public nodes to reach otherwise unconnected agencies or clusters, and more importantly, to participate in the exchange of valuable network resources.

As shown in previous studies, frustration and conflicts may arise in collaborative processes, particularly as boundaries often need to be negotiated (Crawford 1997; Giacomantonio 2015). Such tensions often arise when the policing agencies represent different and, to some extent, contradictory interests. This is observed in some collaborative ties in the security networks, particularly concerning disagreements on common aims or strategies.

In order to reduce tensions and make collaboration easier, as reported by many interviewees, agencies develop and rely upon relationships with organisations similar to themselves. Private-private collaboration is perceived as a simpler process than public-private collaboration, as participants often share a common understanding (Nøkleberg 2019). As one representative from a private company at the airport put it: 'you know them, you know their capacities and they know ours. So it becomes natural for us to come together, as we're similar in many ways' (Private business 37). The tendency of policing agencies to associate with similar organisations will be examined in the next section.

Homophily

The clustering effect described above can indicate tendencies towards homophily, where actors are connected to and interact with similar organisations. To investigate homophily in the security networks, the EI-index and Yule's Q were utilised. Table 5 presents the EI-index and Yule's Q for the whole network, in the two networks under investigation. The EI-index of Oslo airport indicates a clear tendency towards homophily. Under random distribution – in which the sectoral belonging has no influence on the existence of tie formation between two actors – the expected EI-index for the full network is –0.007. The observed EI-index is –0.409, and the permutation test indicates a statistically significant difference. Relationships between policing agencies belonging to the same sector are thus considerably more frequent than expected under a distribution of independence. However, the two categories (public-private) differ somewhat in size. The total number of public actors is greater than that of private ones, which suggests that these public actors are more likely to connect with one another. Taking this into account,

the analysis of Yule's Q shows a rather large positive value of 0.592, indicating a similar pattern towards homophily at the airport as the EI-index.

Table 5 here

On the waterfront, the expected value for the EI-index is 0.026 and the observed index is –0.306. The deviation between these metrics is considered high and the observed difference is also statistically significant. The tendency towards homophily seems to be present at PoS. There is an even distribution along the public-private divide, making the EI-index less vulnerable to group-size differences. Nonetheless, Yule's Q shows that more connections appear to form among similar actors than among different ones.

These results suggest that homophily plays a crucial role in network formation in the two security networks. Policing agencies sharing similar rationalities (for example public good versus market logic) are more likely to form collaborative ties with one another. There may be several benefits to be derived from connecting with similar actors. As already noted, policing agencies seem to find it easier to interact with an actor from a similar sector, which highlights the importance of developing trusting relationships. Several respondents argued that collaborative efforts, following the principle of homophily, may involve less perceived risk and lower costs. Common interests and values make conflict and tension less likely. These perceived advantages could provide insights into the processes behind homophily.

However, homogeneity in collaborative ties can also adversely affect exchanges in the network as a whole. How effective would it be for network resources to circulate within one group, but not the other? Density and connectivity are significantly higher among private-private and public-public actors, which means that resources may take longer to be dispersed amongst all actors, and at worst, some policing agencies may even miss out on crucial information if exchange is 'siloed'. Like the uneven distribution of network power, homophily indicates an asymmetry in the collaborative processes in the two networks. It is not uncommon for some actors to be more prominent and exhibit greater potential to influence the course of events in social networks. The challenge, in this case, is that the most powerful and centrally-positioned actors are mainly public agencies and it is these agencies' perspectives, ideas, beliefs, norms or interests that are more likely to be transmitted across the network. For this reason, and despite the fact that they can circulate within their own cluster, knowledge and expertise found in other (private) agencies are often perceived as less valuable. Tellingly, an interviewee from a private security company said:

> In my opinion, the police should be more active in participating and seeking information. At a major airport like this, you have actors who think about and perform exercises based on different scenarios. But if a crisis occurs, the police takes over and may not always implement the most appropriate actions. It makes sense to seek information and advice from those who actually know the building, and we have that knowledge. And I think our organisation possesses important abilities, but these are not necessarily used optimally today, as there are different interests. (Private security 74)

A port facility security officer on the waterfront expressed a similar view:

> A couple of months ago we had an interesting experience: we had conducted an analysis, we had discussions, we produced, in our opinion, valuable information that should have been shared with other actors. I mean, ideas on how to improve certain things, the way we work [with security]. And when we tried to go through the official channels, we didn't hear anything, no response. Of course, that's a bit strange, but I can accept it happening once. Then we tried again, with the same result. It's kind of like, "isn't this good enough?". Come on, we're working with this on a daily basis, we possess significant knowledge. (Private business 46)

These quotes illustrate a fundamental issue in the collaborative practices found within the networks in the airport and port. The exchange of network resources seems to be seriously constrained by a lack of equality and acknowledgement. That is, public policing agencies seem to view their private counterparts' expertise, knowledge or perspectives as less valuable. This may place a strain on collaboration between public and private policing agencies, and give rise to tension and frustration.

Conclusion: From Normative Debates to Empirical Enquiries

This article demonstrates that the security infrastructure at airports and ports involves multiple organisations working together through networks. However, just as collaboration can take various forms (Crawford 1997), network structure and distribution of network power can also vary considerably. Thus, relational phenomena, in the mixed economy of policing, should not be understood only in the light of the normative debates in the current literature. The findings demonstrate that, by linking the concepts of nodal governance and anchored pluralism with social network analysis, one can elucidate more palpable analytical perspectives that foster empirically informed understanding of networked policing.

The empirical assessment clearly shows that public policing agencies have great power to control and facilitate the exchange of information and resources. Their network power far exceeds the influence exerted by private policing agencies. The claim that there has been a 'paradigm shift away from a literature that almost exclusively conceives brokerage through a

state-centred lens' (Brewer 2017: 713) seems to be challenged by the above analysis. In particular, the findings demonstrate the salient role of (state) anchored pluralism in explaining the network structure. This is not to suggest that the contribution of private policing agencies to policing is irrelevant. Their involvement in producing and delivering security at airports and ports is crucial, since they have developed important expertise and knowledge in this field. However, as is demonstrated in collaborative processes, the reach of these private agencies is somewhat limited.

Most of the literature on plural policing in general, and on security networks in particular, originates from the Anglosphere. As pointed out by van Stokkom and Terpstra (2018), this may lead to an overemphasis on Anglocentric findings, which are often assumed to be universal. By examining Norwegian policing, the article responds to the call of Whelan and Dupont (2017) for research in other countries and helps expand comparative aspects of plural policing. The article, therefore, underscores the importance of the contextual aspect (e.g. historical, cultural and political considerations), and speaks to the debate about Nordic policing exceptionalism (Ugelvik 2016).

Compared to the Anglosphere, where scholars often fit plural policing into neoliberal discourses in which the state has a less dominant role and private sector mechanisms – competition, entrepreneurship, the contracting-out of services – thrive (Loader 1999; Loader and Walker 2007; van Stokkom and Terpstra 2018), the Nordic policing model has, in general, been more reluctant to accept neoliberal perspectives and the state is perceived to have a much more prominent role in society (Peters and Painter 2010). The idea of a strong state and the empirical evidence provided in this study, may indicate that the pivotal role of anchored pluralism in explaining network structures and the power distribution of plural policing is stronger in the Nordic context than in those guided by neoliberal ideas. The importance of the 'entrepreneurial' imperatives (Brewer 2017) of private policing agencies – in which network opportunities and benefits are actively targeted – thus seems to be less prominent in the current study. It is also argued that the 'political, cultural and emotional norms and sentiments' of the Nordic countries 'fostered a resistance to – and did for a long time hamper – the marketization of policing' (Hansen Löfstrand 2019: 16).

Although framing the findings as an example of Nordic policing exceptionalism may offer valuable insights – which should be further explored – the perspective does not necessarily fully capture the current empirical situation. As with the Janus-faced nature of Nordic penal

exceptionalism (Barker 2012, see also Ugelvik and Dullum 2012), nuances seem to exist in the realm of policing. As is shown, there is clear evidence of the pluralisation of policing, as private sector agencies (together with other public agencies) enter the territory of the public police. The historically state-centred model of Nordic policing, therefore, is also seeing an emergence of marketisation and privatisation – similar to contexts of the Anglosphere. It is, however, suggested that this is not a result of governmental strategies to promote the outsourcing of policing, but rather political mobilisation by the private security industry and its association with the public good of security (Hansen Löfstrand 2019). Though this might be true in some elements of local policing (e.g. patrols in public areas), further challenges are present in the context of aviation and maritime security, which are more politicised and generally considered matters of national security. Airports and ports are, in Norway, understood as sites of critical infrastructure, where the government and its institutions have a particular responsibility for security and policing.

Several observers have pointed out transnational similarities in the security governance of airports and ports – indicating that the findings may be revealing more general trends (George and Whatford 2007; Bragdon 2008). The aviation and maritime sectors are governed and organised by international regulatory regimes, whose frameworks are designed to establish harmonisation across countries. More importantly, in accordance with these regulations, the state has a unique capacity to exercise power and control over the agencies involved in policing and security, which seems to strengthen the leading position of public agencies in security networks. The apparent significance of the regulatory regime highlights the need for more empirically grounded research on aviation and maritime policing in other countries.

By setting out techniques and analytical tools drawn from network theory, and applying them to Norwegian policing, an attempt has been made to move the plural policing literature beyond its normative orientation. By providing policing scholars with an expanded analytical toolbox this article aims to foster novel ways of exploring and understanding the contemporary plural policing environment.

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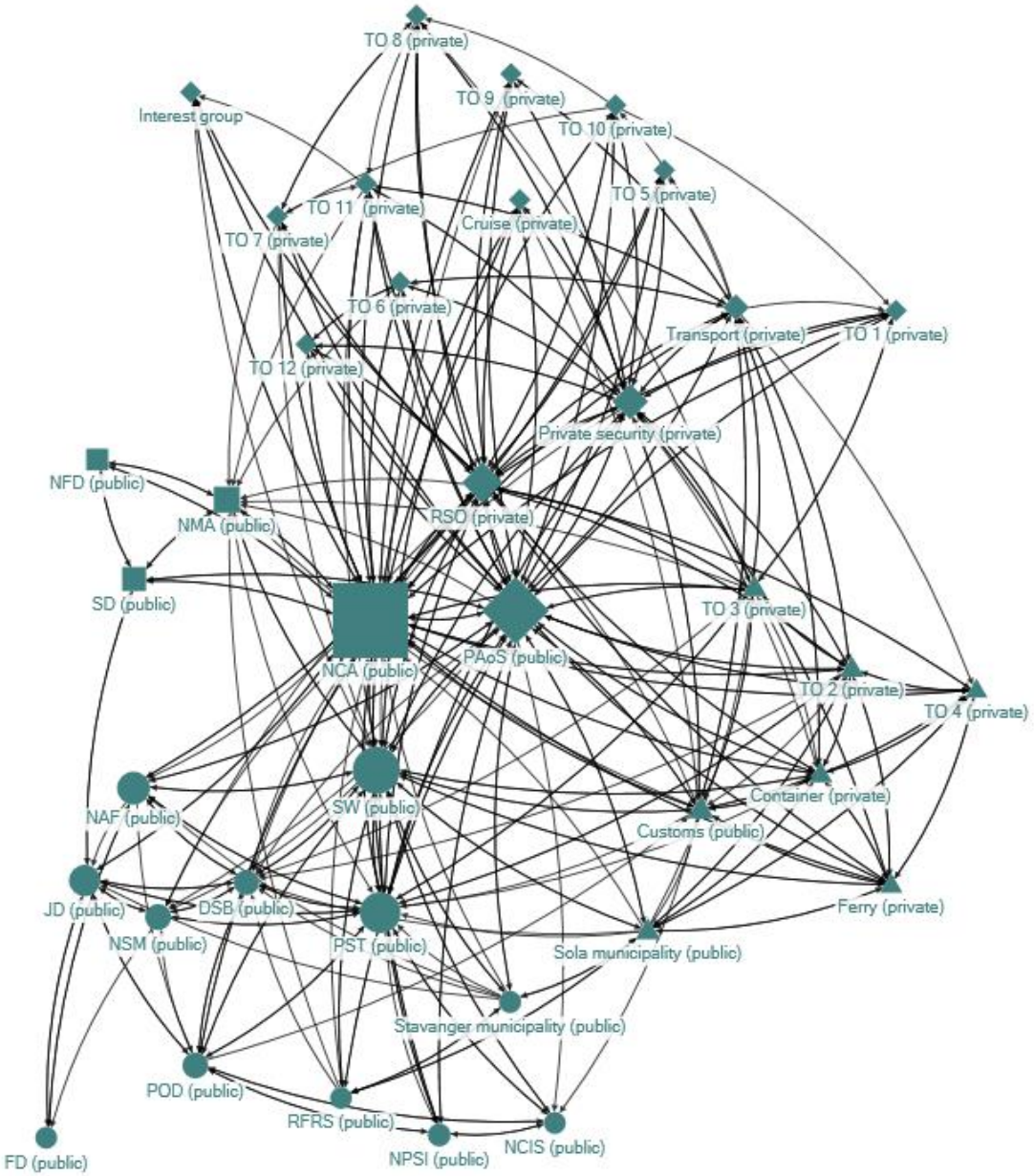

Figure 1. Active collaborative ties in port of Stavanger. Size corresponds to betweenness centrality and shape represents cluster belonging.

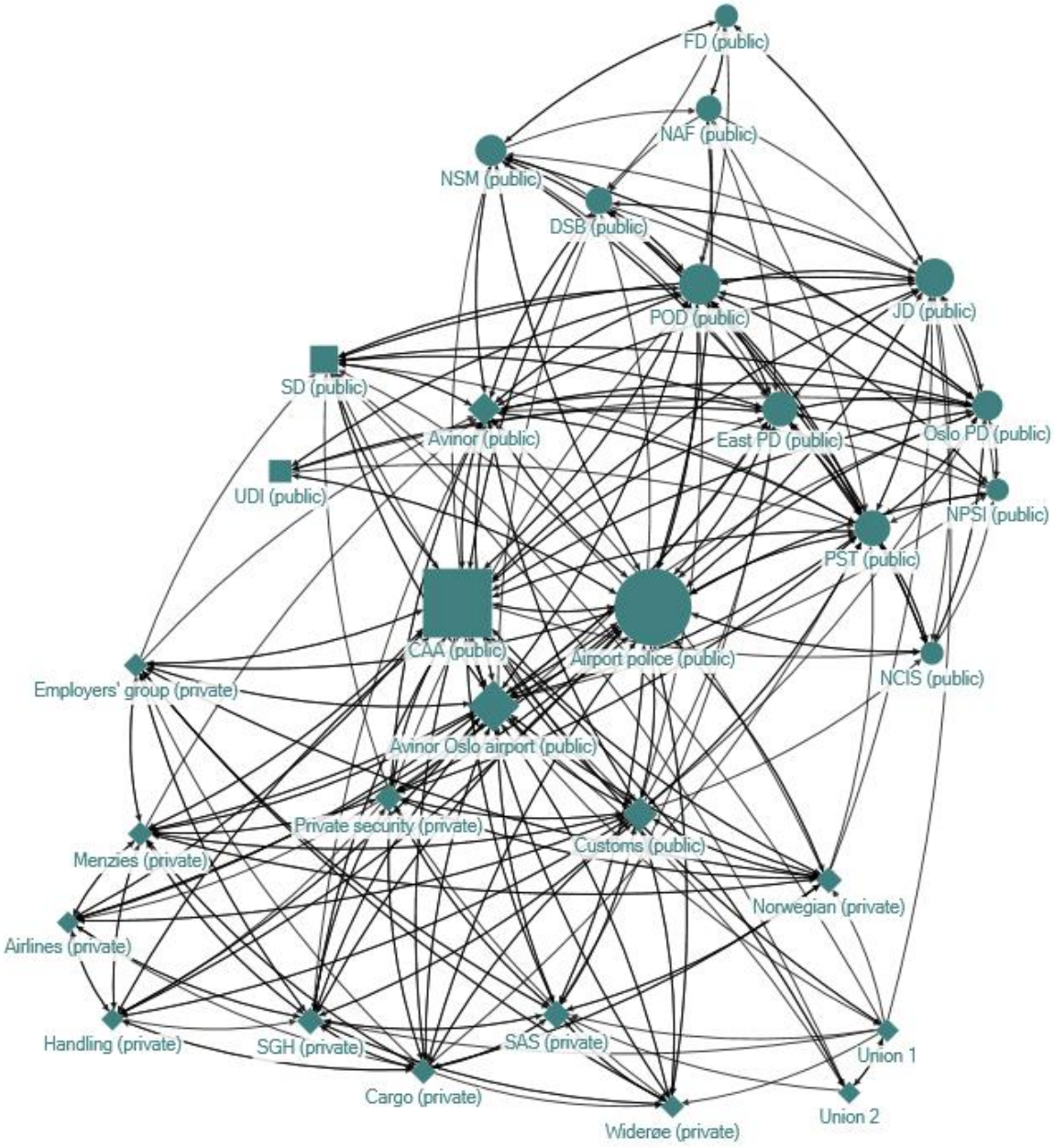

Figure 2. Active collaborative ties at Oslo airport. Size corresponds to betweenness centrality and shape represents cluster belonging.

Table 1. Network characteristics, average values.

	Density	***Degree***	***Geodesic distance***
Port of Stavanger	26.7%	9.9	1.8
Oslo airport	39.5%	11.4	1.7

Table 2. Betweenness centrality scores port of Stavanger and Oslo airport

Ranking Port of Stavanger	**Actor**	**Betweenness**
1	NCA (public)	328.7
2	PAoS (public)	260.1
3	SW (public)	110.8
4	RSO (private)	76.8
5	PST (public)	75.6
Oslo airport		
1	Airport police (public)	154.8
2	CAA (public)	119.5
3	Avinor Oslo airport (public)	61.8
4	POD (public)	33.3
5	JD (public)	28.3
12	SAS (private)	8.8

Table 3. Gould and Fernandez brokerage scores at port of Stavanger.

Rank (within cluster)	**Actor**	**Coo**	**Gat**	**Rep**	**Con**	**Lia**
1	SW (public)	35	100	62	7	46
2	PST (public)	24	47	45	2	10
3	DSB (public)	15	18	-	-	-
4	JD (public)	12	6	11	-	-
1	NCA (public)	-	77	79	142	418
2	NMA (public)	-	15	6	1	9
1	PAoS (public)	119	176	218	29	126
2	RSO (private)	28	24	42	6	18
3	Private security company	22	10	12	4	7
4	Transport (private)	9	14	7	3	-
1	Customs (public)	35	31	43	1	27
2	TO 3 (private)	1	3	20	3	13
3	TO 2 (private)	6	10	13	-	5

4	Sola municipality (public)	2	15	16	1	-

Note: Coo=coordinator, Gat=gatekeeper, Rep=representative, Con=consultant, and Lia=liaison. Scores represent the number of times an agency performs either of the roles.

Table 4. Gould and Fernandez brokerage scores at Oslo airport.

Rank (within cluster)	Actor	Coo	Gat	Rep	Con	Lia
1	Airport police (public)	26	117	116	52	35
2	POD (public)	29	31	31	4	6
3	PST (public)	17	33	33	3	7
4	East PD (public)	13	28	24	5	9
5	JD (public)	23	25	9	1	1
1	CAA (public)	-	10	17	99	178
2	SD (public)	-	-	-	7	18
1	Avinor Oslo airport (public)	73	62	57	3	5
2	Customs (public)	39	35	24	-	3
3	Avinor (public)	2	17	42	8	9
4	Private security company	22	8	19	-	-
5	SGH (private)	26	-	1	-	-

Table 5. EI-index and Yule's Q.

Oslo airport		Port of Stavanger	
EI-index	***Yule's Q***	***EI-index***	***Yule's Q***
–0.409***	0.592	–0.306***	0.419

Note: *** p-value<0.001, SD=0.053 (Oslo), SD=0.045 (Stavanger).

Appendix

List of organisations and abbreviations

Port of Stavanger	**Oslo airport**
Public	*Public*
The Norwegian Costal administration (NCA)	The Civil Aviation Authority Norway (CAA)
Port Authority of Stavanger (PAoS)	Avinor Oslo Airport
South West police district (SW)	Airport police
National Police Directorate (POD)	East police district (East PD)
The Norwegian Directorate for Civil Protection (DSB)	Oslo police district
The Norwegian National Security Authority (NSM)	National Police Directorate (POD)
The Norwegian Police Security Service (PST)	Avinor
The National Police Immigration Service (NPSI)	Ministry of Transport (SD)
The National Criminal Investigation Service (NCIS)	Ministry of Justice and Public Security (JD)
The Norwegian Armed Forces (NAF)	The Ministry of Defence (FD)
The Ministry of Defence (FD)	The Norwegian Armed Forces (NAF)
Ministry of Justice and Public Security (JD)	The Norwegian National Security Authority (NSM)
Ministry of Transport (SD)	The Norwegian Directorate for Civil Protection (DSB)
Ministry of Trade, Industry and Fisheries (NFD)	The Norwegian Directorate of Immigration (UDI)
The Norwegian Maritime Authority (NMA)	The Norwegian Police Security Service (PST)
Rogaland Fire and Rescue Service (RFRS)	The National Criminal Investigation Service (NCIS)
Customs	National Police Immigration Service (NPSI)
Stavanger municipality	Customs
Sola Municipality	
Private	
Private Security company	*Private*
Recognised Security Organisation (RSO)	Private Security Company
Container terminal	Norwegian
Ferry terminal	Scandinavian Airlines (SAS)
Cruise	Widerøe
Transport	Airlines (aggregated)
Terminal operator 1 (TO1)	SAS Ground Handling (SGH)
Terminal operator 2 (TO2)	Menzies
Terminal operator 3 (TO3)	Handling (aggregated)
Terminal operator 4 (TO4)	Cargo
Terminal operator 5 (TO5)	Union 1
Terminal operator 6 (TO6)	Union 2
Terminal operator 7 (TO7)	Employers group
Terminal operator 8 (TO8)	
Terminal operator 9 (TO9)	
Terminal operator 10 (TO10)	
Terminal operator 11 (TO11)	
Terminal operator 12 (TO12)	
Interest group	