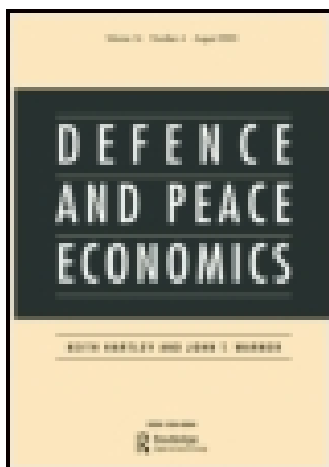




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THE LOBBIES' NETWORK AT THE EU POLICY LEVEL: THE CASE OF SECURITY AND DEFENSE

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Lobbyists may not share the same interests, but they usually agree to form a link in a network which could eventually be used to spread information, to search for potential partners, to speak with one voice to decision makers. In other words, social links represent value for lobbyists because they may ultimately facilitate access. In this article, we explore the network of the Security and Defense lobbies in the EU and we describe its structure.

Keywords: lobbying; networks; security; defense

JEL Codes: D72; D85

1. INTRODUCTION

A lobby is usually defined as a structure which represents and defends the interests of a particular group. At the EU level, the Green Paper 'European Transparency Initiative' of the European Commission (2006) defines lobbying as 'all activities carried out with the objective of influencing the policy formulation and decision-making of the European institutions'. And lobbyists 'are defined as persons carrying out such activities, working in a variety of organizations such as public affairs, consultancies, law firms, NGOs, think tanks, corporate lobby units (in-house representatives) or trade associations'.¹

The literature traditionally investigates the dilemma of lobbying in contemporary democracies (Saurugger 2008; Hudon 2010). On the one hand, lobbyists may pursue specific interests, due to which private actors may exercise power by influencing government or parliament's decisions. On the other hand, lobbyists may be expertise providers, due to which private actors may help government or parliament's decisions by providing information.

Disregarding the debate concerning democratic legitimacy, lobbying appears to be mainly a game of contact and relationship. One commonly observed characteristic of lobbies is that they seek contact not only with public officials, but also with other interest groups.

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¹The literature also refers to pressure groups and interest groups. We cannot, however, find consensus on the classification of these different groups. In this article, we therefore consider the terms 'lobby', 'pressure group', and 'interest group' to be synonyms.

Professional lobbyists usually advise in their books: ‘According to his objectives and his strategies, he (the lobbyist) will look for alliances to advance his positions. (...) The stakeholders do not necessarily have the same interests, but they agree to jointly strengthen their influence and speak with one voice to decision makers’ (Daridan and Luneau 2012, 36).

Lobbyists usually agree to form a link in a social network – even if they do not have the same interests – which could eventually be used to spread information, to search for potential partners, to speak with one voice to decision makers, to learn about the behind-the-scenes of actions and decisions, etc.² In other words, links represent value for lobbyists because they may ultimately facilitate access, communication, and collaboration.³ In this article, we explore the network of the Security and Defense lobbies in the EU. Our main objective was to describe its structure.

To our knowledge, the role of the Security and Defense lobbies in the EU has not yet received thorough attention in the literature, especially where their networks are concerned. Our article broadly fits in with the vast literature on lobbying and networks, with a peculiar emphasis on the links that may structure their interactions. Dür and de Bièvre (2007a) suggest that it is difficult to measure the influence of lobbyists on public policies. The same authors (2007b) argue that NGOs lobbying in the EU lack influence because they do not dispose of the resources which they need to threaten or enhance the political actor’s chances of re-election or re-appointment.⁴ Kluver (2011) shows that information supply, citizen support, and market power of entire lobbying coalitions account for variation in interest group influence. Grandjean (2013) plots out the network of interest groups in the Swiss Federal Parliament. Heaney (2014) studies the influence of interest groups in the US by examining the effects of multiplex networks. He departs from the observation that ‘some interest groups are indeed renowned as influential throughout a network, while others are universally ignored as irrelevant’. Box-Steffensmeier and Christenson (2014) suggest that interest groups do not work alone and ask how interest group coalitions’ strategies have changed over time and which factors determine whether interest groups work together or not. Scott and Summerlin-Long (2010) compare three levels of the North Carolina lobbying network – the network of individual lobbyists, the network of lobbying organizations, and the client network – in order to understand the structure and dynamics of interest groups.

In the lobbying literature, it is held that coalitions may be created to support specific policy options, and groups with more resources will have more influence than groups with little resources (see for instance Dür and de Bièvre 2007a). The influence and power of lobbies traditionally has been studied as the success of lobbies to see their demands fulfilled in policy outcomes close to their preferences (see Woll 2007; Dür 2008; Klüber 2013). In this article, we adopt a different approach because we do not try to measure or to identify the influence on policy-making. Our aim was to observe the structure of lobbies working in the area of Security and Defense, and we interpret power as the place occupied in that network by different interest groups. Again, we do not intend to measure the lobbies’ influence and, therefore, our results should not be interpreted in that way. However, we certainly believe that the structure of lobbying networks could be incorporated into that literature.⁵

²See for instance Granovetter (1973), Gargiulo and Benassi (2000).

³As pointed out by Milbrath (1960), communication is crucial for influencing perception.

⁴This finding is more than obvious at the EU level because lobbies in Europe do not finance political campaigns.

⁵Particularly, the influence on policy-making might be correlated with centrality in the lobbying network. If lobbyists are expertise providers, decision makers may favor the advice of those central interest groups which are more powerful in the sense that they have the information or the ability to access the information required. But, on the other hand, if decision makers favor private or specific interests (or are captured by a certain lobbying), central lobbyists may be less influential. In either case, the question of influence will not be the focus of this article.

Moreover, we do not deal with coalitions or alliances, but with networks. The literature has traditionally modeled the formation of coalitions as a two-stage process in which interest groups join alliances and compete in the lobbying arena (see Konrad 2009). By contrast, the network literature usually works with bilateral agreements. We presume that lobbies may deal with each other in order to gain synergies with a collaborative link, and the architecture of this network is the objective of this study. Although we recognize that some interest groups may structure their lobbying efforts through associations or other organizations, our bilateral agreements view can be justified by the fact that we have observed recurring tension or disagreement between several members belonging to associations. In addition, many of these interest groups also lobby individually in the Defense and Security area. Therefore, for us, it is difficult to refer to a coalition here, and we prefer the idea of bilateral agreements between interest groups forming a network. Our view is close to Baumgartner et al. (2009) who suggest that 'it's not so much that the networks shape policy as an institution, but that participants within a network coalesce and work together to try to shape policy'. Our view also matches the definition of Klüver (2013). Although she still uses the term 'lobbying coalitions', she defines them as groups of which the members do not need to officially join an alliance or coordinate lobbying strategies. Thus, for us, using a network with bilateral contacts will be more appropriate in a description of the lobbying domain.

We have adopted a broad and challenging approach to identify lobbies working within the area of Security and Defense. The research is based on electronic survey, phone contacts, and some personal interviews carried out over 389 interest groups recorded on the EU Transparency Register, which in one way or another answered our questions. The results show that lobbies form a network, and despite their number, some lobbies occupy a more central position in that network. These findings could perhaps be explained by the differences in costs and benefits of forming a link in the social network. However, we lack meaningful data to formally test this hypothesis⁶ and thus we limit ourselves to a formal description of the lobbies' network.

The remainder of this article is organized as follows. In Section 2, we discuss the place of Security and Defense lobbies at the EU level and the Transparency Register. In Section 3, we present a basic model of network stability. In Section 4, we present the structure of Security and Defense lobbies in the EU, and in Section 5, we draw our conclusions. All proofs are provided in Appendix 1.

2. SECURITY AND DEFENSE LOBBIES IN THE EU

Although the term 'lobby' is widespread, over the last years various political scandals have given it a rather negative connotation vis-a-vis the general public. This is especially true in Latin countries such as France and Belgium, where the tradition of lobbying is less rooted compared to Anglo-Saxon countries such as Britain and the United States. Therefore, the first challenge when looking for a lobby in Brussels is to find it. In practice, companies usually do not refer to their lobbyists with this term, but instead opt for titles such as 'Head of European Affairs', 'Public Affairs Management', and 'Institutional Relations'.

It should be emphasized that the division between Latin and Anglo-Saxon countries in fact reflects two opposed political traditions. In France, marked by the Rousseau tradition, lobbying is mainly considered an obstacle to the general interest because it departs from a

⁶The publicly available data of the Transparency Register on the estimated costs of representation is not an exploitable source because there are many asymmetries in what is reported by the interest groups.

special interest. On the other hand, in the United States, lobbying is seen as a fundamental right of citizens and the emerging public interest is born from the pluralism of ideas given by particular interests.

The European Union has adopted a position somewhere midway between these two designs. This is mainly because, despite the general public perception and opinion, as competencies increased, EU officials and parliamentarians had to search for technical advice on more complex subjects and therefore the number of lobbyists progressed in Brussels.

The European Parliament was first to ask the question whether lobbying should be regulated in 1989, and in 1996, it designed some provisions in its rules. In 2006, the European Commission adopted the Green Paper on transparency, lobbying, and corruption, while two years later the European Parliament adopted a resolution to frame the activities of interest representatives (lobbyists) working with institutions of the European Union. In June 2011, the Commission and the Parliament signed an agreement to establish a joint transparency register and to develop a code of conduct with sanctions.⁷

Despite the fact that Security and Defense issues mainly remain the EU member states' affairs, a common policy has developed over the last years and lobbyists have followed the decisions to Brussels. Since the Maastricht Treaty, the EU has tried to harmonize the foreign policy of its members through the CFSP (Common Foreign and Security Policy). The latter aims to combine a large part of the external actions of the European Union. It includes both diplomatic and military dimensions. In 1998, European officials took a next step with the creation of the CSDP (Common Security and Defense Policy), which makes the strategies recommended by the CFSP operational and applicable. On 3 and 4 June 1999, in Cologne, the European Council created the ESDP (European Security and Defense Policy). Through this mutual agreement, Europe hoped to create a military tool that would effectively support the CFSP. Since the Treaty of Lisbon, which renames the ESDP to the CSDP, the ambitions have been revised upwards. Besides creating the office of High Representative of the Union for Foreign Affairs & Security Policy, it has broadened the spectrum of possible European military (and civilian) interventions. The CSDP could also lead to a common defense, if the European Council decides on this unanimously. The Treaty provides in particular: a solidarity clause, a mutual defense clause, the possibility of more extensive measures, a permanent structured cooperation, and the recognition of the European Defense Agency.

Today, lobbying within the Security and Defense arena in the EU mainly consists of a game of influence involving all the institutions responsible for the CSDP decision process. This includes the European Council, the High Representative of the Union for Foreign Affairs & Security Policy, the Council of the EU, the European Commission, the European Parliament, the European External Action Service, the European Defense Agency, the European Union Institute of Security Studies, and several groups and committees.⁸ Besides these governmental and administrative institutions, there are many organizations representing industries, think tanks, NGOs, and others which constitute the lobbying network in the CSDP decision process. A description of their lobbying techniques and success stories goes beyond the framework of this study. The reader can find in Hainaut (2014) examples of how some of these actors have influenced the adoption of the 'Defense package' in 2009 and the creation of the European Defense Agency in 2004.

In the next sections, we will try to answer the question whether Security and Defense lobbies form a network.

⁷The reader can find a short history of the Transparency Register on the EU website.

⁸I.e., the Permanent Representatives Committees, the Political and Security Committee, the Military Committee of the European Union.

3. A MODEL OF THE LOBBIES' NETWORK

Before we observe the data, it can be interesting to theoretically suggest the factors affecting the form of a given network. For this task, we will use a strategic model of network formation which will allow us to suggest the reasons why the network takes a particular form. Links between interest groups are not set by chance, but they are motivated by the economic decisions of the actors involved. The model will finally show how costs, benefits, and the size of the network influence its structure.

Let us consider a simple and well-known network structure⁹ in which interest groups choose to form contact links with other lobbyists. These collaboration links are pairwise and may be costly. A set of $N = \{1, \dots, n\}$ interest groups participates in the lobbying game, and we assume $n \geq 3$. Lobbies form bilateral relationships which are captured by a binary variable, $g_{ij} \in \{0, 1\}$, where $g_{ij} = 1$ means that a collaboration link between lobby i and lobby j is established and $g_{ij} = 0$ means that no link is formed. The undirected network $g = \{(g_{ij})_{i,j \in N}\}$ depicts the collaborative contacts that exist among the lobbying groups.

Let us define, similar to Goyal and Joshi (2003), the complete network g^c as the set of all possible collaboration agreements ($g_{ij} = 1$ for all $i, j \in N, i \neq j$); the empty network g^e as a network in which lobbies do not collaborate with other lobbies ($g_{ij} = 0$ for all $i, j \in N, i \neq j$); the star network g^s in which one lobby occupies a central place in the network and all other interest groups are only linked to that central lobby ($g_{ij} = 1$ for all $j \neq i$ and $g_{jk} = 0$ for every pair of lobbies $j, k \neq i$); the dominant group architecture g^d in which there is a complete non-singleton component and all other lobbies are isolated; the star dominant group architecture g^{sd} in which one lobby occupies a central place in the non-singleton component and all other lobbies are isolated. These network structures have been extensively analyzed in the literature and they will help us to characterize our observations in Section 4. In Figure 1, we provide a visual representation of these networks.

We assume that lobbies maximize benefits. Those benefits can be obtained by the lobbying activity α which we assume to be exogenously determined, and by participation in a network. Interest groups can form bilateral links among themselves because networks facilitate contacts, exchange of information and ideas, business opportunities, etc. Participation in a network brings value to a lobby. Therefore, we denote γ the marginal benefit of a link and $\eta_i(g)$ the number of links (or degree) of lobby i . Forming and maintaining a link may be costly because resources are needed for such a task. We assume then that a marginal direct cost $f \geq 0$ may exist for lobby i . Possibly, benefits can also be obtained by indirect contact with other members of the network. Therefore, following Bloch and Jackson (2007), we model these indirect benefits as $\theta \sum \gamma^{l_{ij}(g)}$ where l is the number of links in the shortest path of length 2 and higher between i and j . Moreover, the number of links between others in the network may be costly because markets could be won by other interest groups who have information, opportunities might be lost, etc. This characteristic can be summarized by the sum of degree centralities for all lobbies $j \neq i$ which is represented by the last term in the expression below.

$$\pi_i(g) = \alpha + (\gamma - f) \eta_i(g) + \theta \sum_{l:2} \gamma^{l_{ij}(g)} - \gamma \frac{\sum \eta_j(g)}{(n-1)} \quad (1)$$

⁹See Jackson and Wolinsky (1996), Goyal and Joshi (2003), Möhlmeier, Rusinowska, and Tanimura (2013).

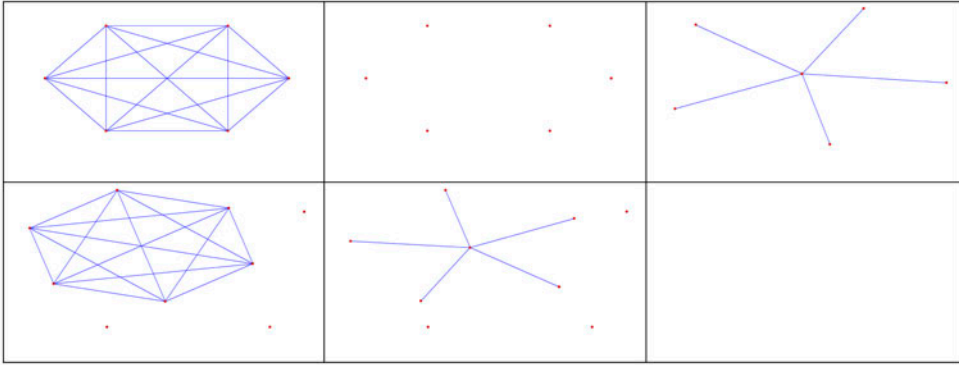


FIGURE 1 Examples: complete network, empty network, star network, star network, dominant group architecture, and star dominant group architecture

Observe that when the direct cost of a link is zero ($f=0$) and benefits are not obtained through indirect contacts ($\theta=0$), a complete network does not bring value to lobby i . That is, when everybody is connected, information transmitted by the network is perfectly available to all and therefore none have a possible advantage over others. This kind of network does not bring value to the participants. However, departing from an empty network, when the condition $\gamma > f > 0$ is fulfilled, adding a link increases the value of i . But, on the other hand, an increase in the number of links of others decreases our own value.

The main concept of network stability is Jackson and Wolinsky's (1996) concept of pairwise stability. This equilibrium concept states that a network g is pairwise stable if no player has an incentive to sever a link unilaterally, and no pair of firms has an incentive to form a link. Formally, if we denote $g - g_{ij}$ (respectively, $g + g_{ij}$), the network obtained from g by deleting (adding) the link between lobbies i and j then a network is pairwise stable if and only if

1. For all i, j s.t. $g_{ij} = 1$ $\pi_i(g) \geq \pi_i(g - g_{ij})$ and $\pi_j(g) \geq \pi_j(g - g_{ij})$
2. For all i, j s.t. $g_{ij} = 0$ if $\pi_i(g + g_{ij}) > \pi_i(g)$ then $\pi_j(g + g_{ij}) < \pi_j(g)$

We are now able to characterize our model regarding costs and network size.

Proposition 1. *In the model defined by 1:*

- (i) The complete network g^c is pairwise stable if and only if $f \leq \gamma - \frac{\gamma}{n-1} - \theta\gamma^2$.
- (ii) When the condition in (i) holds, the complete network g^c is the unique pairwise stable network.
- (iii) The empty network g^e is pairwise stable if and only if $\gamma - \frac{\gamma}{n-1} < f$.
- (iv) The star network g^s is pairwise stable if and only if $\gamma - \frac{\gamma}{n-1} - \theta\gamma^2 < f \leq \gamma - \frac{\gamma}{n-1}$.

Proof. See Appendix 1.

The intuition in (i) is simple. A link between lobby i and j has a marginal benefit of γ and a negative effect of $\frac{\gamma}{n-1}$. Unless the marginal benefit of a link (γ) is higher than the sum of the negative effect of the link ($\frac{\gamma}{n-1}$) plus the effect of just having an indirect link ($\theta\gamma^2$) and the direct cost of forming a link (f), the complete network cannot be stable.

Result (iii) suggests that unless a marginal benefit of building a link is not higher to the direct cost of forming a link plus the negative effect of that link, no links will be formed.

In Figure 2, we represent the stability areas for a small network of $n = 4$ with a high indirect benefit of a link $\theta = 1$. The black, gray, and white areas, respectively, correspond to the zones in which the complete, the star, and empty networks are pairwise stable. We observe that at high levels of direct cost f , the empty network is stable. On the other hand, when the marginal benefit of a link γ is high, the star network is stable. And with low levels of direct cost f and intermediate values of marginal benefit γ , the complete network tends to be stable.

In Figure 3, we increase the number of lobbies to 123. The area in which the complete network is stable increases with the number of participants. The reason is that when n increases everyone becomes more diluted among the participants, and thus the negative effect of letting other lobbies obtain an additional link when joining them is less important.

In Figure 4, we observe that the area in which the complete network is stable increases and the area in which the star is stable decreases with a lower indirect benefit θ . If $\theta = 0$ were valid, then we would just observe complete or empty networks for any level of marginal direct cost or benefit. In other words, a star network is a stable structure only if lobbies obtain high benefits when going through an intermediary to manage their contacts. Lobbies would otherwise decide to remain isolated or build a complete network.

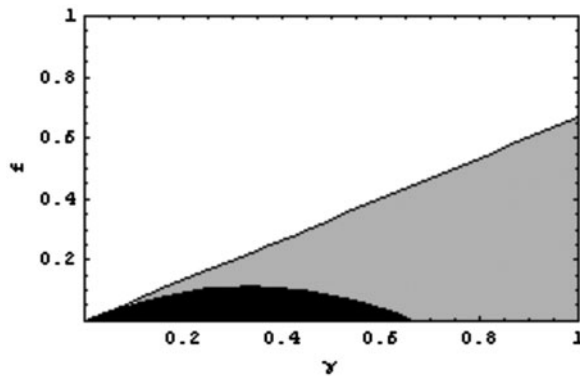


FIGURE 2 Stability areas for $n = 4$ and $\theta = 1$

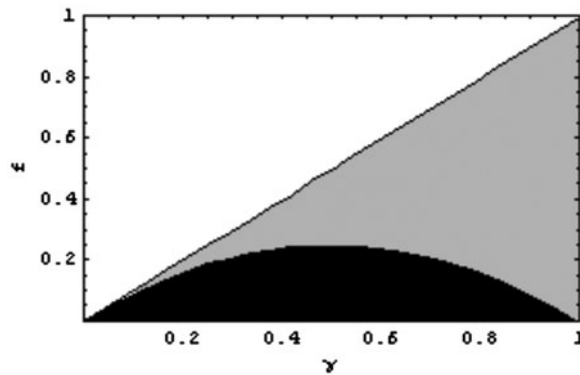


FIGURE 3 Stability areas for $n = 123$ and $\theta = 1$

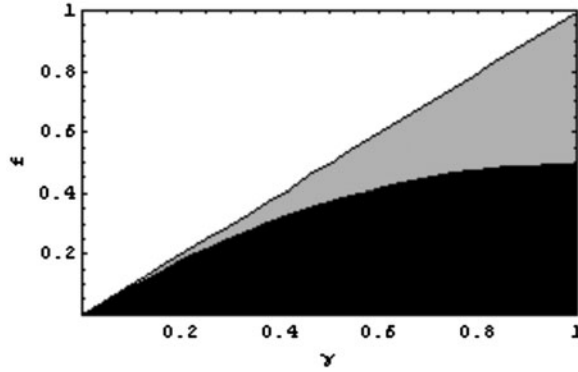


FIGURE 4 Stability areas for $n = 123$ and $\theta = 0.5$

We now turn to the dominant group g^d and the star dominant group g^{sd} architectures. Let us assume the existence of a small asymmetry in the model and suppose that isolated lobbies in the dominant group architectures have an extra cost F to form a link,¹⁰ i.e., isolated lobbies have a higher cost to form a link compared to the cost of forming a link for the members of the dominant group. This view can be justified when lobbies are not identical, face political constraints, come from different geographical locations as is the case for many of the Defense and Security industries,¹¹ or are so much peripheral to the defense sector that their activities in that domain represent just a tiny fraction of their business, and therefore, the cost of building a link in that sector is disproportionately high.

Thus, for an isolated lobby j the payoff function can be expressed as:

$$\pi_j(g) = \alpha + (\gamma - f - F) \eta_j(g) + \theta \sum_{i:2} \gamma^{d_{ji}(g)} - \gamma \frac{\sum \eta_i(g)}{(n-1)} \quad (2)$$

Proposition 2 *When isolated lobbies bear an extra cost F to form a link:*

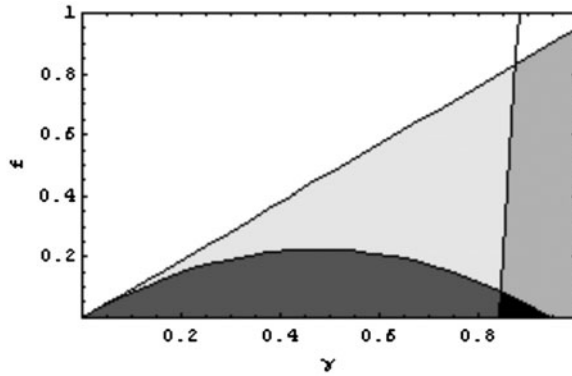
- (i) *The dominant group architecture g^d is pairwise stable if and only if $\gamma - F + \theta\gamma^2(n-r-1) - \frac{\gamma}{n-1} < f \leq \gamma - \theta\gamma^2 - \frac{\gamma}{n-1}$.*
- (ii) *The star dominant group architecture g^{sd} is pairwise stable if and only if $\max\{\gamma - \theta\gamma^2 - \frac{\gamma}{n-1}, \gamma - F + \theta\gamma^2(n-r-1) - \frac{\gamma}{n-1}\} < f < \gamma - \frac{\gamma}{n-1}$.*

Proof. See Appendix 1.

In Figure 5, we represent the stability areas for a network with, $n = 20$ and $r = 6$ isolated lobbies, a high indirect benefit of a link $\theta = 1$ and a very high extra cost of isolated lobbies

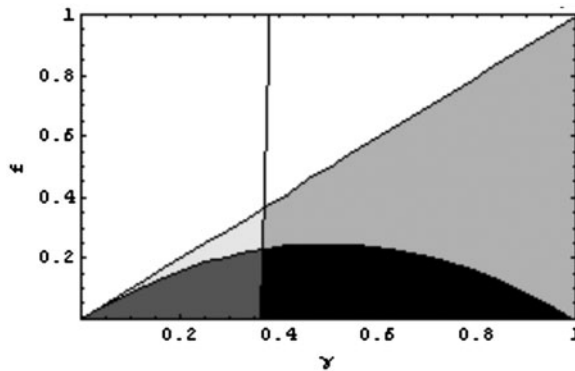
¹⁰Alternatively, we could follow a different approach common in the literature and criticize the concept of pairwise stability. Pairwise stability only considers deviations on one single link at a time and therefore, in some situations, it may constitute a weak concept. In some cases, a player would benefit from severing several links at once. Therefore, the concept of pairwise stability could be augmented by taking into account these extra considerations (as in Goya and Joshi). Alternatives to pairwise stability are discussed for instance in Jackson (2003). Another option next to our model structure could be that members of the dominant group suffer a loss when isolated lobbies join the main component.

¹¹For instance, DeVore (2014) reports: ‘In 1985, after the final attempt to broker an accord including Europe’s four largest states, the British, Italians and West Germans joined forces to launch the Eurofighter project, while France proceeded alone to build the Rafale fighter’.

FIGURE 5 Stability areas for $n = 20$, $r = 6$, $\theta = 1$, and $F = 10$

$F = 10$. This last value means that an isolated lobby has an extra cost which is ten times higher than the maximum cost that a lobby in the main component would pay for establishing or maintaining a link. The dark-gray and light-gray areas, respectively, correspond to the zones in which the dominant group and the star dominant group architectures are pairwise stable. We observe here that the dominant group architecture is a stable structure only for a low level of direct cost of a link f and for intermediate-low levels of marginal benefit γ . On the other hand, the star dominant group architecture is stable for intermediate-low levels of f and intermediate levels of γ . The reason is that some lobbies would prefer to remain isolated because of the extra cost they have to bear. When these extra costs are eliminated, a stable network structure suggests that they have joined the main component (i.e., a star or a complete network).

In Figure 6, we increase the number of lobbies to $n = 123$ and $r = 48$ isolated lobbies. Observe that the areas in which the dominant group and the star dominant group architectures are stable decrease with the number of lobbies. The reason is simple: As the number of lobbies increases, all of them become less central, and therefore the indirect cost that an isolated lobby would support to make a contact ($\frac{\gamma}{n-1}$) is lower. Moreover, as the number of isolated lobbies r increases, the areas of g^d and g^{sd} increase as well, because an isolated

FIGURE 6 Stability areas for $n = 123$, $r = 48$, $\theta = 1$, and $F = 10$

lobby would be less interested to accept a first link when there are less members in the main component and therefore less gains from indirect contacts.

4. THE LOBBIES' NETWORK OF SECURITY AND DEFENSE IN THE EU

In 2014, there were approximately 6500 recorded lobbies on the EU Transparency Register. Those lobbies are distributed over six different categories: Professional consultancies/law firms/self-employed consultants; In-house lobbyists and trade/professional associations; Non-governmental organizations; Think tanks, research and academic institutions; Organizations representing churches and religious communities; Organizations representing local, regional and municipal authorities, other public or mixed entities.

When subscribing to the register, lobbies have to choose among 36 fields of interest. One of those fields of interest is called 'Foreign and Security Policy and Defense'. In May 2013, 871 lobbies chose this particular field of interest. Our study departs from these lobbies.

To collect information about whether these lobbies were effectively working on topics related to Security and Defense, an online survey was sent to them. The aim of the survey was to obtain information about the potential collaborations or contacts between lobbies.¹² It definitely was a challenging task to carry out the survey. The administration of the Transparency Register, respecting their data protection rules, did not provide us with the e-mail addresses of the contact persons in the respective organizations. Therefore, we had to rely on the sparse contact information present on the public register and other addresses we gathered by visiting the websites of the interest groups. Unfortunately, just a few answers were obtained at the time of collecting the results. Therefore, we picked up the phone and called the 871 lobbies individually to ask them our questions. Again, the challenge was enormous because in many cases the first reaction on the other side of the line was 'we don't do any lobbying'.

The results of our survey are presented in Table I (no distinction is made between answers by phone or online).

- Category A: lobbies working in the fields of Security and Defense who answered the survey.
- Category B: lobbies working in the fields of Security and Defense who did not answer the survey.
- Category C: lobbies who did answer the survey, but do not work in the fields of Security and Defense.
- Category D: lobbies who did not answer the survey.

Also included in Category C are lobbies working for peace, health, or justice, who indicated that they work in the fields of Security and Defense. These groups are often quite diverse and present their objectives in a broad sense. They usually see themselves as defending more global topics other than just working in the defense area (they usually mention global topics such as human rights and poverty.). The literature usually names these groups as 'civil society organizations', which represent public or diffuse interests. Scholars normally oppose these organizations to 'special interest groups', which represent economic interests (see for instance Beyers, Eising, and Maloney 2008). We expected question 14 of

¹²The questionnaire is available in Appendix 2 and at <https://tools.uclouvain.be/limesurvey191/index.php?lang=en&sid=82,769&token=728np3vudszyzie>.

TABLE I Answers to the Survey by Category

Category	Number of answers	% by category
A	18	2
B	48	6
C	323	37
D	482	55
Total	871	100

our survey to capture the opposition with the defense industrial sector. However, we did not receive answers in that direction. Therefore, we decided not to include them in the more specialized Defense and Security network that we are trying to capture. We believe that these lobbies, which in principle could be qualified as antimilitarist, deserve their own research given the extent and diversity of the objectives they defend.

Also added to Category C were lobbies of which the name obviously made us believe that they do not work in the fields of Security and Defense. The answers made us realize that several companies and groups have apparently marked the field 'Foreign and Security Policy and Defense' just out of curiosity because their business and interests are not related to those topics. It should be noted that when lobbies indicate the policy areas in which they have an interest, they receive an e-mail alert whenever public consultations, policy roadmaps, and other news are available. We observed that on average an interest group registers to nine different topics.

In Figure 7, we represent which other topics were chosen by the lobbies opting for 'Foreign and Security Policy and Defense' (see dark bars). About 75% of them also marked the interest 'External relations'. The interest 'Justice and Fundamental Rights' is also very common (more than 60%). In the figure, we represent the other 13 interests which were chosen by at least 50% of the lobbies opting for the topic 'Foreign and Security Policy and Defense'.

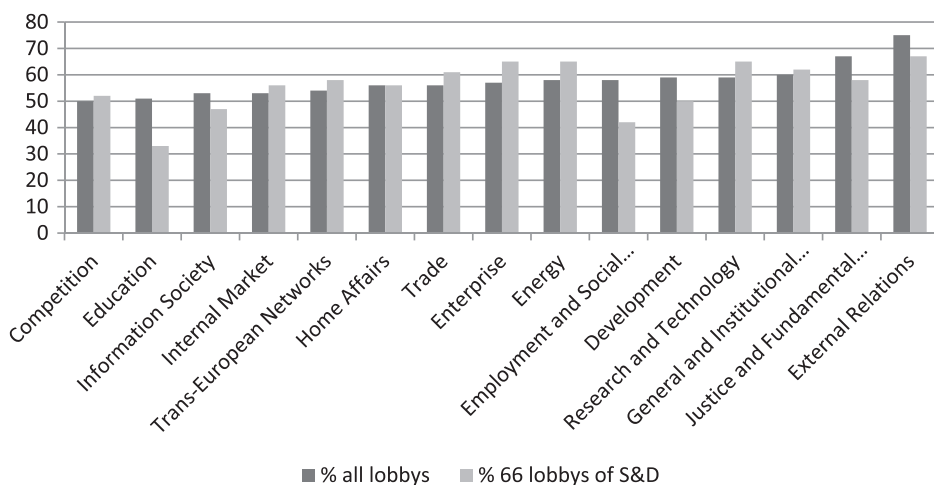


FIGURE 7 Other topics chosen by 'Foreign and Security Policy and Defense' interest groups

For these lobbies, the organization's head offices are distributed over 61 countries. Many organizations have their head offices in Belgium, but most of them have their offices abroad. We found that 90% of the registered interest groups have their head offices in Europe.

For the remainder of this study, we will use the term 'lobbies of Security and Defense' for all lobbies who belong to the categories A and B in Table I. This provides us with a total of 66 lobbies of Security and Defense.

Our survey allows us to disclose the existing links among interest groups. Links are built between those organizations which were mentioned in questions 9 and 10 (see Appendix 2). We will consider the answers given to those two questions together because it was difficult for the respondents to clearly distinguish those interest groups with which they regularly collaborate from those that they occasionally collaborate with. Furthermore, based on the answers of the different interest groups who participated in the survey, we were able to add 44 lobbies that were not registered in the Transparency Register, and we were able to link those organizations to other lobbies in the Register. Besides that, we were also able to add 13 other lobbies that were in the Register, because they were cited by at least one lobby that answered the survey. When just one lobby mentioned another one, we assumed a bilateral relation. This now makes a total of 123 lobbies actively working in the fields of Security and Defense at the European level.

In Figure 8, we represent the network of the 123 lobbies of Security and Defense in total in the EU. Following questions 9 and 10, we can qualify it as a collaboration/communication network.¹³ Table II provides some summary statistics. First, observe that the network is not entirely connected and with an average degree of 3.35 and a density of 0.027 it is far from complete. Figure 8 shows that 36 lobbies of the network do not have any link. Following the discussion in Section 3, it could be argued that some of the isolated lobbies have an extra cost to join the main component. For instance, the Aerospace Industries Association which defines itself as 'the voice of American aerospace and defense' appears isolated in our survey despite the fact that some of its members belong to the main network component. Honeywell Europe is found in the same category probably because defense is not its core business. We also find as isolates several professional consultancies which report that they work in the Defense & Security sector, but when their internal structures are observed in detail they appear to be too small (or unknown) to effectively sustain a link in the defense network.

We also see two distinct components: the main network in the center and a little network of four lobbies on the left side. The former represents lobbies working in the chemical industry which do not sustain any connection with the other lobbies of Security and Defense. The reason can probably be found in the implementation of the Chemical Weapons Convention.

The main component is composed of 83 interest groups. With an average degree of 4.87 and a density of 0.059, it is not a complete component. Moreover, with a degree centralization of 0.35, a closeness centralization of 0.45 and a betweenness centralization of 0.34, not all organizations have the same degree, can equally reach other lobbies or are equally important for connecting the others. Some lobbies occupy a more central position. If we observe the graph, some star structures appear in the network which suggest that lobbies in

¹³We did not obtain exploitable answers to question 11 in our survey to identify influential organizations and to represent a reputation network.

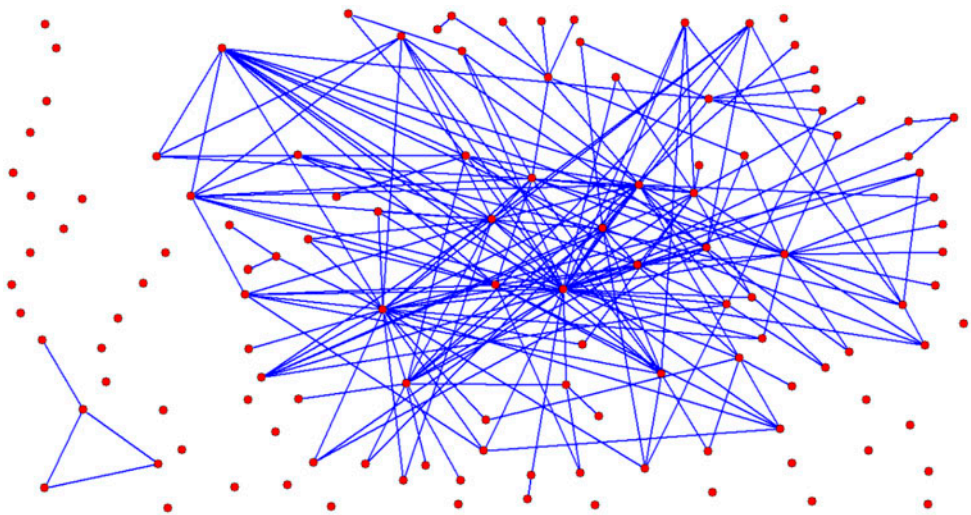


FIGURE 8 Lobbies' network of security and defense at the EU

TABLE II Network Properties

Property	Value	Largest component
Direction	Undirected	Undirected
Nodes	123	83
Size of the largest component	83	–
Isolated nodes	36	–
Links	206	202
Longest geodesic	From ATA to barco	From ATA to barco
Diameter	6	6
Average path length	2.88	2.88
Average degree	3.35	4.87
Density	0.027	0.059
Degree centralization	0.25	0.35
Closeness centralization	–	0.45
Betweenness centralization	0.15	0.34
Overall clustering coefficient	0.13	0.13
Average clustering coefficient	0.22	0.19

the sector of Defense and Security obtain benefits from indirect contacts and that the cost of establishing a direct link is not negligible.¹⁴

For the sake of completeness, we carried out a triad census on the main component (observe that we have an undirected network). The results show (see Table III) that although there might be evidence that the network may contain three or more clusters

¹⁴Observe also that the overall and average clustering coefficients are relatively small, suggesting that members of the stars are generally not connected among each other.

TABLE III Triad Census

Type	Number of triads (ni)	Expected (ei)	(ni-ei)/ei
102	12,629	760.36	15.61
300	85	0.00	21146.39
003	77,428	63645.55	0.22
201	1739	3.03	573.31

(or communities), the high occurrence of triad 201 suggests to discard balance models. Furthermore, type 201 corresponds to a star structure in a triad, which reinforces our observation that some lobbies occupy a more central position.

Following our model in Section 3, the results suggest, on the one hand, that lobbies in the Defense and Security sector obtain benefits from indirect contacts. Remember that a star structure can only be a stable structure if $\theta > 0$. In other words, lobbyists may look for brokers in the network rather than just establishing a direct link. On the other hand, the direct cost of forming and maintaining a link (f) is probably not equal to zero nor extremely high. Interest groups form links and the network is not empty, but not all links are to be formed to observe a complete network. This suggests costs at an intermediate level for maintaining a link (or a relation) with other groups. Moreover, direct benefits of a link (γ) cannot also be disproportionately high. Otherwise, some lobbies would not remain isolated. Those characteristics lead us to believe that the network comes close to what we have called in our theoretical model ‘a star dominant group architecture’. It is well known that such a structure allows for a rapid diffusion of information for the members in the main component.¹⁵

In Table IV, we provide centrality measures for the 11 most central members in the largest component. We can see from columns 2 and 3 that the most connected and the ones who have the ability to easily access others in the network and monitor what is happening are ASD, Airbus Group, and SDA.

These results certainly do not come as a surprise. ASD represents the aeronautic, spatial, security, and defense industries in Europe. It is composed of 16 big aerospace and defense enterprises and 27 member associations in 20 countries. Airbus Group (former EADS) is a trans-European leader enterprise in the aerospace and defense domains. It includes AIRBUS, EUROCOPTER, ASTRIUM, and CASSIDIAN. The Airbus Group is also the main partner of the Eurofighter consortium. Security and Defense Agenda (SDA) is a Brussels-based think tank exclusively focused on defense and security issues. It gathers stakeholders of all kinds (NATO, EU, industry, NGOs, media, national governments, ...) in international conferences, roundtables, debates, and publishes reports with analyses and policy recommendations.

The forth column in Table IV measures the importance of a lobby in terms of connecting other lobbies. Again, the main brokers in the network are the three organizations which occupy the first places. Nevertheless, EUROMIL, an organization that does not appear in the table because of its low degree but which defines itself as a ‘forum for cooperation among professional military associations on issues of common concern’ has a betweenness value that is equivalent to UTC.

¹⁵As we have mentioned in the introduction, an open question that we do not analyze in this article is whether such a structure also improves the influence on policy-making.

TABLE IV Centrality Measures

Label	Degree	Closeness centrality	Betweenness centrality
ASD	33	0.582	0.357
Airbus group	23	0.491	0.198
SDA	17	0.519	0.197
Thales	15	0.446	0.046
UTC	14	0.439	0.130
Fraunhofer gesellschaft	13	0.441	0.113
SAAB	13	0.429	0.070
BAE systems	12	0.436	0.037
ADS	12	0.466	0.055
EOS	11	0.451	0.042
Kangaroo group	11	0.443	0.067

Let us now try to identify the different communities or clusters that compose the largest component. For this task, we run the Louvain standard community detection algorithm (Blondel et al. 2008),¹⁶ which unveils hierarchies of communities. The method designed by scholars of the Université de Louvain helps in identifying sub-communities within larger networks. More precisely, it attempts to optimize the strength of a division of a network into clusters.¹⁷

In Figure 9, we observe that the result of the algorithm mainly produces communities separated by geographical or specific domains suggesting that the differences in costs and benefits may be important determinants in forming a link within the lobbies' network. For each of the nine communities, central players appear, respectively: Finmeccanica, SDA/UTC, EUROMIL, SAAB, ASD, Airbus Group/Thalès, Fraunhofer Gesellschaft, BAE Systems/ADS, and INERIS.¹⁸ Finmeccanica mainly appears as grouped with other Italian companies and associations such as Avio Aero and Confindustria. SDA/UTC appears to be linked to other think tanks such as Friends of Europe and Egmont, and to other American companies or associations such as Boeing, the American Chambers of Commerce or the American Defense Industry Forum. SAAB is clustered with other Swedish groups such as SAI and the Confederation of Swedish enterprise. The community of ASD includes several European companies such as Fokker, Barco, BDSI, and Diehl. In the Airbus Group/Thalès cluster, we mainly find French enterprises and associations such as Safran, Groupe Dassault, and GIFAS. BAE systems/ADS community mainly (but not exclusively) links British companies and associations such as Rolls Royce and the British Chamber of Commerce. Circling Fraunhofer Gesellschaft, we find some other European research centers such as ONERA, Tecnalia, and Isdefe. EUROMIL clusters different groups and associations such as ESRT and NATO PA. Certainly, each of the central entities plays a key role in its community. However, we lack the necessary information to clearly define their part in the social network.

¹⁶We use Pajek for all calculations.

¹⁷Clusters are also called in the literature communities, groups, or modules.

¹⁸This last lobby appears to be linked to the Airbus Group only.

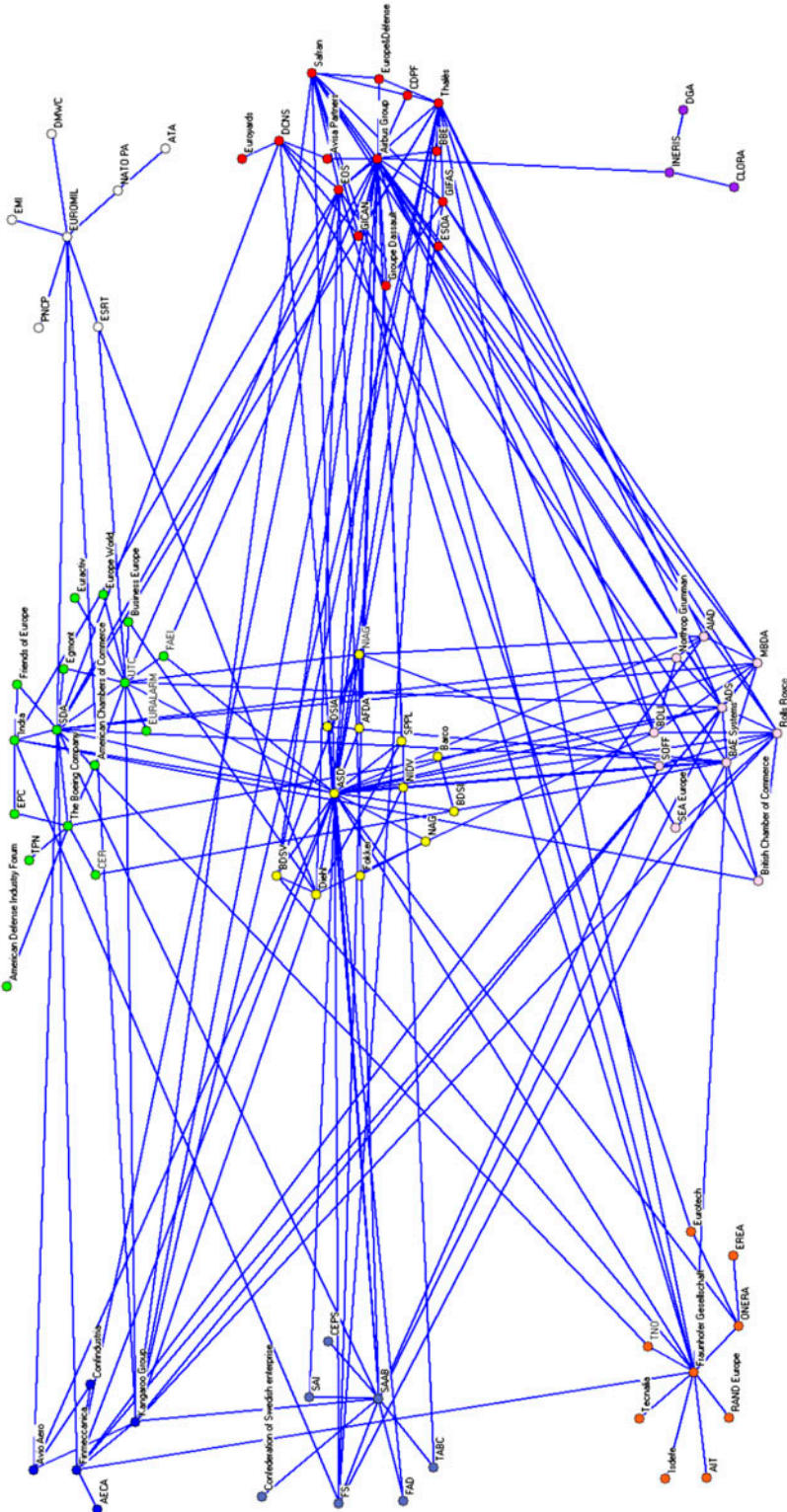


FIGURE 9 Security and defense lobby communities

5. CONCLUSIONS

In this article, we have identified a possible network of Security and Defense lobbies in the EU and some central players in it. Results are in accordance with the literature: policy networks result from the cooperation between lobbies that negotiate and share resources (Le Galès 1995, 14).

Extending beyond this, from this contribution, a point may be raised regarding democratic representation. The structure of the network is mainly organized along geographical or specific domains, but the existence of links among interest groups perhaps may question the logic of balanced representation in different instances. This is already an important concern in the EU with regard to subjects other than 'Security and Defense' (see the Submission by the Corporate Europe Observatory to the European Ombudsman Consultation on the composition of Commission expert groups, 28 August 2014).

Besides, we observe that the EU tends to regulate the lobbies toward increasing transparency, for instance through registration. The lobbies' network that is highlighted in this article deals with issues which also require secrecy. It is certainly challenging for researchers to consider the democratic representation of interests in such a policy sector.

Lobbying implies investing resources in the interactions with other members of the network. As shown in the literature (Marks and McAdam 1996), lobbies may opt for direct or indirect contacts, conferences and studies, rather than contentious behavior at the EU level. Such interactions make sense in a democratic policy-making process. The exploration of the interaction between several types of networks, their specific activities, and their interactions with lobbies from civil society present an opportunity for future research.

The empirical data in this article provides information about the existence of a network and about the weight of specific actors within them. However, our study should not be interpreted as a suggestion to identify those members in the network as the most influential on policy-making. As Baumgartner et al. (2009) state for the US: 'One might think that with no opposition, those lobbyists working on behalf of the issues with only one side would rule the day in Washington. Reality is far from this ...'.

We consider our results to be a first exploratory attempt to shed light on a domain that will become increasingly important in the EU, but today is covered with a veil of discretion. The EU Security and Defense policies are decided in a process in which lobbyists make their voices heard. Understanding how lobbyists cooperate and communicate among each other and the factors affecting the form of their social network may allow us to better comprehend their final policy positions and decisions.

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No potential conflict of interest was reported by the authors.

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APPENDIX 1. PROOF. PROPOSITION 1

(i) Condition 2 above is automatically satisfied because in a complete network there are no links to add. Condition 1 demands $\pi_i(g^c) - \pi_i(g^c - g_{ij}) \geq 0$. We have $\pi_i(g^c) = \pi_j(g^c) = \alpha - f(n-1)$ and $\pi_i(g^c - g_{ij}) = \pi_j(g - g_{ij}) = \alpha - \gamma + \frac{\gamma}{n-1} + \theta\gamma^2 - f(n-2)$. Therefore, $\pi_i(g^c) - \pi_i(g^c - g_{ij}) = \pi_j(g^c) - \pi_j(g^c - g_{ij}) = \gamma - \frac{\gamma}{n-1} - \theta\gamma^2 - f \geq 0$.

(ii) Let us consider a stable network $g \neq g^c$, where $g_{ij} = 0$. It follows from condition (i) that lobbies i and j benefit from forming a link. Observe that in the network, $g + g_{ij}$, the payoff of i and j is given by:

$$\pi_i(g + g_{ij}) = \alpha + (\gamma - f)(\eta_i(g) + 1) + \theta \sum_{l:2} \gamma^{l_{ij}(g+g_{ij})} - \gamma^{\sum_{(n-1)} (\eta_j(g)+1)}.$$

$$\text{Therefore, for } i \text{ and similarly for } j, \pi_i(g + g_{ij}) - \pi_i(g) = \gamma - f - \frac{\gamma}{(n-1)} + \theta \underbrace{\sum_{l:2} \left(\gamma^{l_{ij}(g+g_{ij})} - \gamma^{l_{ij}(g)} \right)}_{\geq -\theta\gamma^2} \geq 0.$$

Then, g cannot be stable because condition 2 is violated and the unique stable network is the complete network g^c .

(iii) Condition 1 above is automatically satisfied because there are no links to sever. Condition 2 demands that forming a link ij would result in $\pi_i(g^c + g_{ij}) - \pi_i(g^c) > 0$ and $\pi_j(g^c + g_{ij}) - \pi_j(g^c) < 0$. We have $\pi_i(g^c) = \pi_j(g^c) = \alpha$ and $\pi_i(g^c + g_{ij}) = \pi_j(g^c + g_{ij}) = \alpha + \gamma - f - \frac{\gamma}{n-1}$. Therefore, $\pi_i(g^c + g_{ij}) - \pi_i(g^c) = \pi_j(g^c + g_{ij}) - \pi_j(g^c) = \gamma - f - \frac{\gamma}{n-1} < 0$.

(iv) Consider a star g^s with center in i and two arbitrary lobbies, j, k where $g_{ij}, g_{ik} \in g^s$ but $g_{jk} \notin g^s$. The stability conditions require that (a), $\pi_i(g^s) - \pi_i(g^s - g_{ij}) \geq 0$, (b) $\pi_j(g^s) - \pi_j(g^s - g_{ij}) \geq 0$ and (c) $\pi_j(g^s + g_{jk}) - \pi_j(g^s) < 0$. Observe that, $\pi_i(g^s) - \pi_i(g^s - g_{ij}) = \gamma - \frac{\gamma}{n-1} - f$, therefore by (a) the star is pairwise stable if $\gamma - \frac{\gamma}{n-1} \geq f$. On the other hand, $\pi_j(g^s) - \pi_j(g^s - g_{ij}) = \gamma - \frac{\gamma}{n-1} + \theta\gamma^2(n-2) - f$, therefore by (b) pairwise stability requires, $\gamma - \frac{\gamma}{n-1} + \theta\gamma^2(n-2) \geq f$ which is satisfied by condition (a). Finally, $\pi_j(g^s + g_{jk}) - \pi_j(g^s) = -f + \gamma - \frac{\gamma}{n-1} - \theta\gamma^2$ therefore by (c) $\gamma - \frac{\gamma}{n-1} - \theta\gamma^2 < f$.

PROOF. PROPOSITION 2

(i) Consider a dominant group architecture where, $g_{ij} = 0$ $n-r$ non-isolated and r isolated lobbies, $\eta_i = \eta_k = n-r-1$, $\eta_j = \eta_l = 0$, then we need to prove that (a) $\pi_i(g^d + g_{ij}) - \pi_i(g^d) > 0$ then $\pi_j(g^d + g_{ij}) - \pi_j(g^d) < 0$ (b) $\pi_i(g^d - g_{ik}) - \pi_i(g^d) \leq 0$, and (c) $\pi_j(g^d + g_{il}) - \pi_j(g^d) < 0$. Observe that $\pi_i(g^d + g_{ij}) - \pi_i(g^d) = \gamma - f - \frac{\gamma}{n-1}$, therefore by (a) the dominant group architecture is pairwise stable if $\gamma - \frac{\gamma}{n-1} > f$. Moreover, $\pi_j(g^d + g_{ij}) - \pi_j(g^d) = \gamma - f - F + \theta\gamma^2(n-r-1) - \frac{\gamma}{n-1}$ therefore $\gamma - F + \theta\gamma^2(n-r-1) - \frac{\gamma}{n-1} < f$. On the other hand, condition (b) implies the first part of condition (a) given that $\pi_i(g^d - g_{ik}) - \pi_i(g^d) = -\gamma + f + \theta\gamma^2 + \frac{\gamma}{n-1}$, it follows that $\gamma - \theta\gamma^2 - \frac{\gamma}{n-1} \geq f$. Finally, condition (c) is implied by the second part of (a) given that $\pi_j(g^d + g_{il}) - \pi_j(g^d) = \gamma - f - F - \frac{\gamma}{n-1}$.

(ii) Consider a star dominant group architecture where lobby i occupy a central place, $n-r$ non-isolated and r isolated lobbies, $\eta_i = n-r-1, \eta_j = \eta_k = 1, \eta_l = \eta_m = 0$, then we have to prove that (a) $\pi_i(g^{sd}) - \pi_i(g^{sd} - g_{ij}) \geq 0$, (b) $\pi_j(g^{sd}) - \pi_j(g^{sd} - g_{ij}) \geq 0$, (c) $\pi_j(g^{sd} + g_{jk}) - \pi_j(g^{sd}) < 0$, (d) $\pi_i(g^{sd} + g_{il}) - \pi_i(g^{sd}) > 0$ then $\pi_l(g^{sd} + g_{il}) - \pi_l(g^{sd}) < 0$, (e) $\pi_j(g^{sd} + g_{jl}) - \pi_j(g^{sd}) > 0$ then $\pi_l(g^{sd} + g_{il}) - \pi_l(g^{sd}) < 0$, and (f) $\pi_l(g^{sd} + g_{lm}) - \pi_l(g^{sd}) < 0$. Observe that (a) $\pi_i(g^{sd}) - \pi_i(g^{sd} - g_{ij}) = \gamma - f - \frac{\gamma}{n-1}$; (b) $\pi_j(g^{sd}) - \pi_j(g^{sd} - g_{ij}) = \gamma - f + \theta\gamma^2(n-r-2) - \frac{\gamma}{n-1}$; (c) $\pi_j(g^{sd} + g_{jk}) - \pi_j(g^{sd}) = \gamma - f - \theta\gamma^2 - \frac{\gamma}{n-1}$ therefore $\gamma - \theta\gamma^2 - \frac{\gamma}{n-1} < f$; (d) $\pi_i(g^{sd} + g_{il}) - \pi_i(g^{sd}) = \gamma - f - \frac{\gamma}{n-1}$ and $\pi_l(g^{sd} + g_{il}) - \pi_l(g^{sd}) = \gamma - f - F + \theta\gamma^2(n-r-1) - \frac{\gamma}{n-1}$ therefore $\gamma - \frac{\gamma}{n-1} > f$ and $\gamma - F + \theta\gamma^2(n-r-1) - \frac{\gamma}{n-1} < f$ which imply (a), (b), (e) and (f); (e) $\pi_j(g^{sd} + g_{jl}) - \pi_j(g^{sd}) = \gamma - f - \frac{\gamma}{n-1}$ and $\pi_l(g^{sd} + g_{il}) - \pi_l(g^{sd}) = \gamma - f - F + \theta\gamma^2 + \theta\gamma^3(n-r-2) - \frac{\gamma}{n-1}$; (f) $\pi_l(g^{sd} + g_{lm}) - \pi_l(g^{sd}) = \gamma - f - F - \frac{\gamma}{n-1}$.

APPENDIX 2. QUESTIONS IN ONLINE SURVEY

1. What is the name of your organization?
2. Is your organization registered in the Transparency Register of the European Union?
3. According to the classification of the Transparency Register of the European Union, in which of the following subcategories is your organization ranked?
4. What is your function in the organization (CEO, HR Manager, Consultant, ...)?
5. In which country are the headquarters of your organization located?
6. Is your organization working in the Foreign and Security Policy and Defense sectors?
7. Is your organization working on subjects related to armament, Security, Defense or other close military domains?
8. In the military, armament, security or Defense domains, your organization represents the interests of: natural people, legal people, not applicable.
9. With which interest groups working in the military domain do you regularly collaborate? Please select those organizations, other than the organizations you represent, which you regularly collaborate with to develop common projects, to defend common interest, to fix common objectives, etc.

10. With which interest groups in the military domain do you occasionally collaborate? Please select those organizations, other than the organizations you represent, which you occasionally collaborate with to organize joint conferences, to informally exchange objectives and visions, etc.
11. In your opinion, what are the most important interest groups working on subjects related to armament, security, Defense and other close military domains?
12. Your work on subjects related to armament, security, Defense and other close military domains is mainly done at the level of: The European Commission, The European Parliament, The European Council, The Council of the European Union, The Court of Justice of the European Union, The European External Action Service, A national Government, Other.
13. Do you know any other interest group active on subjects related to armament, security, Defense and other close military domains which is not registered in the Transparency Register? Please specify.
14. Could you identify the organizations which often defend interests opposed to yours? Please name those organizations.
15. Write here any comment or remark.