Hierarchical, decentralized, or something else? The cooperation networks of support for Minor Interpellations among the members of the opposition in the German Bundestag

ABSTRACT

Members of the German parliament may force government to publicly answer questions by issuing minor interpellations (kleine Anfragen). The associated chance to embarrass government and vie for public support makes interpellations popular with the opposition. Using 3608 interpellations from the session 2009-2013 that have been signed by authoring and supporting delegates, we use social network analysis to map the support networks for interpellations within the three opposition parties. We find that parties differ markedly in terms of internal structure. While social democrats are hierarchically organized, Greens cooperate horizontally. The network for socialist Linke in contrast shows signs of homophily and social segregation.

1. Introduction

In politics, You are who You know. While institutions and strategy make up an essential part of collective organizations, personal connections are at least equally important since whatever the rules of the game are and whichever ways players pursue their goals, it is impossible to understand outcomes without a sense of who interacts with whom to produce them. In this perspective, politics is a network. In this study, we investigate the social network among members of the opposition in the German parliament during the legislative term 2009–2013. We infer social connections by tracking which delegates supported other members' parliamentary requests for information, so called Minor Interpellations *(kleine Anfragen)*, or MI for short. These inquiries are an important means of the opposition to raise public attention, criticize government and try to muster public support for the next election. Since they have to be signed by either a parliamentary group or at least five per cent of the members of the Bundestag, MI require parliamentarians to work together. Mapping out this

cooperation as a network offers a unique window into who cooperates within the parliamentary groups, who is responsible for conflict with government and who plays a central role in expressing the party's agenda.

The question of how parliamentarians in the opposition work together is important from at least three vantage points: First, in a parliamentary system like Germany, the temporal alternation between government and opposition is one of the main elements in the separation of powers. Therefore, it is important to understand the opposition's internal organization, both in terms of internal working and structures of the different parties and in terms of the cooperation between the parties on an aggregate level. Second, coming from an elite perspective which mainly focuses on those in power, the idea of an alternation between government and opposition raises the interesting question of who is central in this powerless elite framing a government in waiting. And, third, and quite frankly: not much is known. Networks in parliamentary systems are an under-researched field, so how social contacts organize parliamentary work, what patterns exist and relate to aspects like policy specialization are basically open questions.

Our analysis is to a large extent an inductive and descriptive endeavor. We want to show which parliamentarians work together, what the complete network of co-signees looks like and whether specific patterns and structures become apparent within it. To do so, we will first justify our approach, outline existing work in the literature and state our expectations (section 2). We will then describe our data (3) and our method (4). After that, we will concentrate on aggregate characteristics of the cooperation patterns (5.1). In a second step we investigate the global opposition network derived from the MIs (5.2) and then focus on the structure of the networks for each of the three opposition parties separately (6.1 – 6.3). We discuss our findings in the concluding section (7).

2. Theory and related work

2.1 Why look at Minor Interpellations and what is that, anyway?

Like in other democracies, oversight and control of the executive are important tasks of the German parliament. Among the numerous instruments the Bundestag has at its disposal is that delegates and parliamentary groups may force the executive to provide information and answer questions. Basically,

there are four different ways of inquiring, all of which are laid down in the parliamentary rules of procedure[1] (see Siefken 2010: 21).

The first two possibilities are rights of individual delegates. Every parliamentarian may either ask questions orally during a special weekly session or may submit written questions the answers to which are distributed among all members of parliament. The two others options are minority rights which either five per cent of delegates (32 persons during the term 2009–2013) or a parliamentary group may exercise. These are Major Interpellations (*große Anfragen*) and MIs (Minor Interpellations; *kleine Anfragen*), respectively. Both are submitted in written form. In the case of Major Interpellations, the topic of the inquiry and the answers from the executive (which is not obliged to reply) may be the subject of a plenary debate. In the case of MIs, no debate takes place but the provision of an answer – which is available publicly – is mandatory which makes the instrument quite sharp. Also, the qualification as *minor* is rather misleading since MIs usually consist of multiple, sometimes up to a few hundred, questions (Siefken 2010: 23).

Regarding the usage of the four instruments, oral questions were mainly used during the 1970s to be later succeeded in popularity by written questions during the 1980s. The popularity of both instruments has declined a bit, the same being the case for Major Interpellations which were mostly popular in the 1950s and during the 1980s (Siefken 2010: 24). The usage of MIs, however, has seen a tremendous increase during recent years, making them a very interesting source of information. During the legislative period 2009–2013 there were 54 Major and 3629 Minor Interpellations. This proportion stresses the relative importance of the latter instrument. In the following, we will concentrate solely on these MIs and for the sake of brevity simply refer to them as interpellations.

Although conventional wisdom held that MIs were mainly a technical means of control and oversight (see Eschenburg in Siefken 2010: 27), newer work has shown that this is only part of the story. To a considerable extent, delegates also use MIs as instruments of agenda setting, to promote their standing in the party and to show activity to their constituency (Kepplinger 2008). In a survey conducted among delegates of the opposition before and after the 2002 election, Kepplinger (2008) found that apart from "official" motivations for an interpellation such as raising pressure on government, "unofficial"

reasons such as capturing media attention, gaining support from outside parliament and improving one's standing inside the party were among the prime motives for submitting an MI (Kepplinger 2008: 311). The major role of the media can also be seen from the fact that several respondents directly coordinated with journalists when drafting an interpellation and that a large number of delegates always passed the replies they got on to media and organizations inside their constituency (Kepplinger 2008: 313). Similarly, Patzelt cites an anonymous delegate that freely admits that MIs are not always asked to get an answer but rather because of the ensuing media attention that then serves as a justification to both voters and those in the party in charge of the nomination process (Patzelt 1993: 328).

Seen from a functional perspective then, MIs can mainly be characterized as an instrument that a politician can actively use to raise the media's attention to a given problem, try to shape the public impression of it[2] while at the same time pointing out to his party and his constituency that he is taking care of it (Kepplinger 2008: 306-309). This makes the expansion of MIs during the last terms all the more understandable since they provide delegates with a document that not only testifies to their activity but that can also be easily passed on to those interested in the matter (Siefken 2010: 27).

2.2 Related work: empirical findings

Generally speaking, social network analysis has proven to be well suited for bringing to light the structures and functioning principles of any kind of organizations, ranging from groups as different as terrorists (Krebs 2002), organized criminals (Heber 2009), publicizing scholars (Barabási 2002, Newman 2001) or indeed politicians. In this latter regard we completely agree with McClurg and Lazers statement that "Politics is, at its core, a network phenomenon" (McClurg and Lazer 2014: 1).

Yet, surprisingly, political science is starting only very slowly to use network analysis methods.[3] This is especially true with regard to the legislative arena where there are only very few empirical studies on social networks. A pioneering strand of literature in parliamentary studies deals with legislative cosponsoring in the US (see Bratton and Rouse 2011, Fowler 2006a, Fowler 2006b, Kirkland 2011, Kirkland 2013, Tam Cho and Fowler 2010, Kirkland and Gross 2014). These studies of legislative cosponsoring construct networks by tracing which delegate supports another's bill, revealing social and work-related contacts in parliament that would otherwise be completely unobservable. Furthermore, they show that

"institutional arrangements and strategic incentives may influence the shape of the network" (Fowler 2006b: 464). A different path is taken by Porter and his colleagues. They analyze mutual membership in committees in the House of Representatives, e.g. pointing out close connections between committees and their respective subcommittees (Porter et al. 2005). Another network application for the study of parliamentarians comes from Victor and Ringe (2009). Their analysis of caucuses within the House of Representatives shows that the most central and better connected legislators in these informal groups are "legislative leaders, senior members, and those who are electorally safe". Hence, they conclude, caucuses are not an alternative pathway for junior legislators to gain more influence but "a social structure that replicates the formal institutional organization by allowing structurally disadvantaged members to connect to their colleagues in formal positions of power and influence" (Victor and Ringe 2009: 762). While the reported works are highly enlightening, they all exclusively deal with the US House or Senate and thus with the legislative branch of a presidential system. What is lacking is a systematic analysis of network patterns within legislative bodies in parliamentary systems with their clearly distinct functional logic and differing party organizations compared to presidential systems. Our analysis of the networks defined by members of the Bundestag signing each other's MIs fills this gap, as it focuses explicitly on those who are not in power.

2.3 Research questions and some theoretical expectations

In line with our inductive approach we do not state explicit hypotheses for testing, yet there are several expectations that can be derived from the literature which we intend to examine.

1. Minor Interpellations are an instrument of the opposition parties

Parties that are out of power must use every possibility to publicly expose government failure if they want to win the next election. MIs, just as all other kinds of publicly visible inquiries are a good way to do this. Therefore we expect by far most of the MIs to come from the opposition parties. The governing parties have several other ways of communicating with the public (e.g. government press conferences) and should only use MIs in some instances to gain additional media attention for presenting their point of view. Given the basic logic of parliamentary systems we can furthermore expect that there should virtually be no MIs signed by parliamentarians from both the governing and

opposition parties. For the cooperation between opposition parties, it is less clear what to expect. On the one hand, delegates of the opposition could work together by signing MIs across two or more opposition parties to either foreshadow possible coalitions (or avoid raising such an impression) or to maximize voters' perception that their criticism is objective since it appears widely shared and above party quarrels. On the other hand, acting solely on their own could also be an alternative for parties, particularly, if MIs work as a means to gain public attention: If one can get the evening news to report about one's party and its work, it does not make much sense to share this attention with others.

2. The institutional structure of the parliamentary group matters

Given the strong role of institutions in the findings of Fowler (2006a, 2006b) and Victor and Ringe (2009), we expect the network structure to be substantially shaped by the institutional structure within the parliamentary groups. To be more precise, we expect delegates who work together in a party's working groups – which are known to serve as backdrop for discussing MIs and seeking support (Siefken 2010: 28) – to cooperate extensively. The reasons are simple: First, working groups define themselves according to specific policy areas, so parliamentarians within a working group share common interests. This should in turn increase mutual support for MIs. Second, we expect delegates to contact potential supporters in person. Thus, the mere fact of having more personal contacts to other members of a working group than to the rest of the parliamentary group should enhance the possibility to find supporters within the working groups.

3. The most central delegates should be rank-and-file

Network analysis not only helps to see the complete structure of a network, but also to identify central members within it. As parliamentarians can use MIs to gain public visibility and prove how hard they worked for the party goals, we expect them to improve their standing by launching a lot of MIs. Given that not all delegates will have the same means of communicating with the public and that those with a formal role inside the party group can more easily resort to other justifications of their activity, we expect particularly those members of the opposition from the second row – not the party elite – to launch interpellations. For the derived network this means that the most centrally located persons will probably be mostly rank-and-file.

4. Networks will show homophily

One of the most pervasive phenomena in social networks is homophily (also known as assortativity), meaning that similar individuals have higher chances to be connected than dissimilar ones (McPherson et al. 2001). We expect delegates to be no exception to this rule. There are several reasons for why similar delegates might be more likely to support each other's MIs. Similarity in terms of institutional position (e.g. working groups) has already been discussed above, but the most obvious reason is personal sympathy, derived from a common background or situation. In principle, homophily may exist along many different dimensions. We concentrate on four potentially relevant ones indicating a common social background: 1) whether one entered the Bundestag through obtaining a direct vs. a list mandate, 2) whether one is new to parliament or not, 3) one's gender and 4) one's region of origin (West vs. East Germany).

3. Method

In this section, we give a short overview of the methodological aspects necessary for our later analysis. For a thorough review of network analysis, see Newman (2010), Wasserman and Faust (1994), Scott (2013), or Scott and Carrington (2011).

FIGURE 1: Example for Our Network Structure

A network consists of nodes representing discrete entities and (directed or undirected) edges standing for connections among them. While undirected edges usually are depicted as lines and represent mutual relationships (such as having coauthored a scientific paper together), directed edges usually are represented by arrows and indicate a non-mutual relation (such as one person sending an email to another). Both nodes and edges may have attributes (e.g. age or gender for nodes or the number of papers written together for edges). The attributes for edges are often referred to as edge weights.

In our analysis, nodes are parliamentarians and edges are support relations derived from signing onto a delegate's MI. To construct the network among delegates, we exploited the fact that MIs carry the name of the delegates in the standardized format "MI by delegates A, B, C, …, and the party group X." The first name on an MI always denotes the initiator of the text and all other names are supporters (Siefken 2010: 28). This allows us to draw a directed edge from each supporter to the initiator to capture the

underlying support relation. Since the relation is non-mutual (support need not be returned), edges are directed, i.e. an arrow from B to A is used to indicate that B has signed an MI launched by A.

In Figure 1 we have depicted a small network of fictitious delegates that illustrates our visualization, containing the most relevant elements of the networks we will be analyzing. The numbers in the nodes represent the numbers of MIs launched and the numbers on the edges represent the number of times a delegate has supported another one. While there are many ways in which network information may be expressed visually, we use the following pattern (if not stated otherwise).

a) The size of the nodes represents the number of interpellations launched by a person. For example, Peter has written three MIs and Sarah has written four which can be seen by comparing node size.

b) The thickness of the edges indicates the number of times a delegate has signed another's MIs (i.e. edge weight). In Fig. 1 Peter has supported Sarah on three occasions making his edge to her appear thick. Sarah has supported Anne once so the edge between them appears thinner.

c) The color used to fill a node represents how often a delegate has supported an MI, expressed as a fraction of the number of signatures the most supportive delegate has granted. To keep all forms of nodes visible in the plot, it goes from a 10-per-cent grey (i.e. near-black) for delegates who never signed an interpellation to 90-per-cent grey (i.e. near-white) for the delegate most actively supporting others.[4] Peter is drawn in the lightest color since he is the most supportive node in the network. Michael, on the other hand, is drawn in the darkest possible shading since he has not supported any of the fictitious delegates.

d) Additionally, we divide the number of times a delegate has supported another one by the number of MIs written by the supported person. This value yields an impression of the strength of the relation and is used for coloring the edges. To obtain a well-readable visualization, edges go from a 10-per-cent grey (near-black) for edges granting support on every instance to a 90-per-cent grey for edges with minimal support. In our example Peter has supported Sarah three out of four times, so his support for her is rather stable and the edge appears comparatively dark. For Michael, however, Peter's support is even more reliable since

he supported all of Michael's interpellations. Hence this edge is drawn in the darkest possible shading. Turning to Sarah and Anne, we see that they have mutually supported each other once. However, the edge from Anne to Sarah is lighter since Anne has signed only one fourth of Sara's MIs while the one signature from Sara is equivalent to half of Anne's MIs.

It is difficult to visualize the phenomenon of homophily in the small example plot but in principle, the question examined would be to test whether more edges run between for example male, female or mixed pairs of delegates than would be expected by chance.

4. Data

4.1 Data collection

Formally, MIs need either support from five per cent of delegates (32 individuals in the legislative period 2009-2013) or from one of the party groups. In practice, all receive endorsement of the party group leadership in the general phrase quoted in the preceding section but still retain a full list of supporters.[5] It is this list we used for constructing the network.

To gather the data, we downloaded digital versions of all MIs issued during the 17th legislative term 2009-2013 directly from the Bundestag. We then used automatized text-extraction tools to harvest from the document header both the interpellation's individual document number and the names of supporters, treating the first name in the list as author and the remaining ones as delegates supporting the interpellation. In a next step we use the document number to link the edges between authors and supporters to information concerning the content of the interpellation (see below) which we gathered separately. After checking the authors' and supporters' names for correctness by comparing the official documents with information from the parliamentary documentation database (DIP), we constructed the network as described in the previous section. For delegates, we collected personal information as the delegate's party, gender, the state he or she was elected for, the mode of candidacy (direct or list), and when he or she entered the Bundestag For this end we used official information provided by the Bundestag (Feldkamp 2011).

Since we expect that support for an MI is not independent of its content, we also used the fact that the DIP assigns all MIs to one or more of 28 topics. This list is exhaustive (i.e. there are no non-

categorized interpellations) but not mutually exclusive (i.e. some inquiries receive more than one category). Some of the categories are rather broad (such as "law" or "culture"), while others are quite narrowly focused (such as "Bundestag" or "political life and parties"). However, the majority of them can be readily linked to classical policy fields (e.g. "foreign policy and international relations", "economy", "internal security" or "environment"). A full list of categories is available in the appendix. Knowing the topic of an MI yields significant leverage since it allows us to calculate how much delegates and the relations between them specialize on a certain policy field.

4.2 Substantial content of data

Why do delegates support an MI? Or, one could also ask: What does our data *mean*? At first sight, the process of openly signing an MI appears not necessary for the parliamentary process: MIs with fewer than 32 supporters (five per cent of the Bundestag) were (obviously) supported by the party group, rendering it unnecessary that individual delegates have their names explicitly on them, especially since questions and answers are publicly available. Indeed, the existence of 21 interpellations supported solely by the party group shows that this is not only in theory a viable option. In principle, delegates could also easily launch an MI without party leadership supporting it[6], but they obviously do not take that path (presumably, because this would be looked upon as an open revolt): MIs with support from 32 or more individual delegates are all (somewhat unnecessarily) endorsed by the party group leadership, too. Therefore, the most sensible assumption is that all MIs come from the same internal process which does not require anyone on the outside to know, count or read the names of supporters. Yet, it appears not very likely that the support process is purely random.

One way to interpret the role of supporters on MIs is to draw on the functional interpretation which stresses the role of MIs as means to demonstrate activity and gain a foothold in one's constituency, the party, and the media. Here, putting one's name on an MI (or collecting someone's name, of course) is a cheap way of signaling social relations to those outside the party group (see Fowler 2006a: 458f for a similar idea). Thus, having one's name together with many well-known others is a potential asset demonstrating that one is tightly connected inside the legislature and the party. Names would then indicate the degree and shape of social support that the delegate writing an interpellation is able to

muster. Conversely, if someone puts his or her name on an MI, he or she would probably expect the initiator to either remember the favor in the future, find his or her own name positively enhanced by the connection, or both. Additionally, we can expect that more close social contacts in the party group will more likely hear of and support a planned MI even if it is not directly advancing them professionally.

While this interpretation assumes that personal esteem and importance are central in the interpretation of contacts, professional reasons will matter as well. For example, individuals might support inquiries of delegates they closely work together with (e.g. within a working group) or whose experience they share, Conversely, individuals writing an inquiry will most certainly seek out those experienced in the matter to have them e.g. read through the text and correct errors and omissions. It appears natural that the persons asked to do so will be more likely to support the MI. Also, it is obvious that individuals working together will have a higher likelihood of hearing of and supporting an upcoming MI. Thus, we can expect the network to be positioned somewhere between a social component, based on interpersonal esteem and a professional component, mainly based on expertise and institutional structures.

5. Minor Interpellations in the Bundestag and the opposition as a whole

In this section we first give an overview of aggregate characteristics describing the cooperation patterns in the Bundestag that lead to MIs. For this end we focus (1) on the number of MIs launched and signed, (2) the number of MIs concerning specific policy areas indicating the amount of attention a party devotes to these topics and (3) characteristics of the individual members of the Bundestag who launch and sign interpellations. In the second part of the section we focus on the opposition network on a global scale and (1) analyze support patterns and (2) test whether writing and signing MIs are jobs for generalists or experts in specific topics.

5.1 Descriptive overview

5.1.1 Number of MIs written and signed by party

Our data covers 3608 MIs filed in the 17th Bundestag (2009–2013). Their sheer volume is rather unevenly distributed: Only 39 MIs were filed by members of the governing coalition of Christian

democratic CDU/CSU and liberal FDP (with members of both parties always signing together). For the remainder of the analysis we will ignore interpellations coming from governing parties.

The vast majority was initiated by members of one of the opposition parties: 445 came from the social democratic SPD, 1442 from the Greens and 1682 from socialist Linke (Left Party). The skew fits our expectation that MIs are mainly a means of the opposition to drive government crazy with questions as Siefken (2010, 26) has also noted. However, the usage of this instrument also varies considerably across parties with smaller ones much more actively relying on the instrument. We find only weak traces of opposition parties cooperating. Just a single interpellation (17/10187) concerning the introduction of a statistic on homelessness was signed by members of all three parties. Another three were signed by members of Greens and SPD together. All four had a social democrat as initiator. All in all, working against government policies seems to be more of an individual struggle for the different parliamentary groups than a collective undertaking.

On average an interpellation is supported by 9.8 persons with eight supporters denoting the modal category. While most MIs only have relatively few individual supporters[7], 36 attracted 31 or more supporters and a few exceed even 60 names. The MIs which attracted most supporters were issued by SPD and concerned reductions in expenses for bureaucracy (17/13591, 63 supporters) and the planned reduction of military bases (17/8194, 61 supporters). The number of supporters varies considerably across the party groups between 17.4 supporters in SPD and 7.9 in Linke. However, normalized to the size of the group the disparity reduces to a rather narrow band between 10.4 per cent of the group supporting an interpellation on average within Linke and 14.4 among Greens.

Within the opposition party groups, involvement is widespread – among Greens and Linke only six delegates each never initiated an MI of their own while the number is much higher for SPD where 64 individuals never launched an interpellation themselves.[8]

5.1.2 MIs by topic and attention profiles for the parties

The parliamentary groups differ widely in respect to how many of their MIs concern a given topic. To calculate the fraction of attention a party devotes to a given subject, we counted for each topic how many MIs were assigned to it. For interpellations that were assigned to multiple topics, we gave a score

of $1/k$ to each of the topics with k counting the number of topics the MI was assigned to. This way, we assumed that attention within the respective interpellation was evenly distributed between the topics. Summing up the scores over topics for the different party groups (the four MIs issued by multiple groups were left out) and normalizing to unity per party yields figure 2 which indicates how much attention the parties devote to the fifteen topics most popular across the whole of opposition. Together these make up 82.7 per cent of the attention volume.

FIGURE 2: Fraction of MIs Dealing With a Given Topic

Across the opposition, attention in terms of MIs is unevenly distributed. Most is taken up by matters of traffic (11.8 per cent). Social policy and groups (8.1 per cent), internal security (8.1 per cent) and environment (7.9 per cent) receive less of total attention but still feature prominently. The least attention is devoted to matters of the Bundestag (< .1 per cent) and Eastern Germany (.2 per cent). Comparing the different party groups to this baseline reveals that underneath the global average there is considerable variation: SPD devotes for example more attention to matters of traffic, health and economy than the rest of the opposition while placing less emphasis on security, international relations, and defense. The Greens devote their attention strongly to transportation and environment while holding less interest for example in matters of internal security or social policy. The pattern for Linke is quite different, devoting most attention to internal security, social policy, and foreign policy and international relations.

Interestingly, SPD and Greens end up ten out of fifteen times on the same side of the average which appears consistent with the parties' usual coalition preference for each other. Yet, while Greens and Linke are usually regarded to both locate left of SPD suggesting that they should have substantial interests in common, the pattern of inquiries gives a slightly different picture: That both parties never end up on the same side is in itself not surprising since they issue the bulk of inquiries. However, the differences between both parties are sometimes quite substantial such as in matters of environment and security which seem to make up different core topics of the parties.

5.1.3 Characteristics of individuals launching and supporting MIs

Turning to the individual level, the first thing to notice is that the number of MIs a person has written

is highly skewed. On average, a delegate issued 11.7 interpellations during the term. However, 76 delegates of the opposition did not issue a single one and another 74 wrote three or less. Also, the average is somewhat inflated because of two extreme outliers: During the four years observed, Ulla Jelpke (Linke) has authored a staggering 456 MIs, roughly one fourth of all interpellations issued by her party group. Given that the Bundestag is out of session for about nine weeks during summer and subtracting weekends, this amounts to a little more than issuing one interpellation every other day. She is followed by Sylvia Kotting-Uhl (Greens) with 125 MIs.

The number of MIs supported is similarly skewed, but here the average number is at 114.8 and thus much higher. The most active supporter is Jens Petermann of Linke who supported 672 MIs. At the individual level, the number of written and signed MIs is correlated considerably (r_p = .544, excluding Ulla Jelpke), indicating that only parts of the party groups take center stage in the interpellation process.

Given the size of the parliamentary groups it is easy to calculate for each delegate, which fraction of the respective group usually signs onto his or her MIs. This measure can be regarded as a rough impression of individual social support. Here, we find (for delegates with 20 or more MIs) the highest values for three Green parliamentarians who muster support from between one sixth and one fourth of their party group on average.

We may also ask how many of the MIs passed around in his or her party group an individual has signed. This is one way to express centrality since those who are reached by many individuals writing MIs are obviously central in a sense, too. Here, the picture is rather straightforward: All top five ranks are occupied by the party group leadership of SPD with chairman Frank-Walter Steinmeier supporting every single MI issued in his party group. Interestingly, the party group leadership of the Greens and the Linke is much further down on this scale, indicating that the leaders of the parliamentary group for these two parties play a lesser role compared to SPD.

The strong variation in the number of MIs written and supported raises the question how these differences can be explained. To test for significant differences in average activity, we conducted Mann-Whitney U-tests to see whether the distributions of written and supported interpellations differed

across the four covariates gender, candidature, region and newcomers (see table 1).

TABLE 1: Differences in the number of MIs (written/signed) according to covariates

Looking at all three opposition parties together (first column) suggests that females and list candidates are both more likely to write and support MIs while East Germans and newcomers only support more whereas veteran delegates write more MIs. This finding at first sight seems to corroborate results indicating that cosponsoring is a means for individuals less central in the parliamentary process to pass their name around (see Fowler 2006a: 458), but most differences disappear once we control for party group: The only significant differences can be found within the Linke where women write more MIs than men and in SPD where direct candidates sign more MIs than their list colleagues.

Summing up, only few parliamentarians launch a lot of MIs, while the majority write only very few. The same skewed distribution describes the signatures. And, while three Green delegates are supported by the largest share of the whole party group, the party leadership of the SPD supports most MIs.

5.2 The opposition network as a whole

Since there are no MIs written together by members of a governing and an opposition party, the network consists on a global scale of two components. One has 306 nodes and encompasses only members of the opposition parties SPD, Greens and Linke while the other component has 29 nodes and covers only members of the governing parties CDU/CSU and FDP.[9]

FIGURE 3: The Complete Opposition Network

The opposition component consists of three densely knit clusters (see Figure 3). Of all possible links between the 306 delegates, 7.4 per cent are present which is reflected in an average degree of 22.7 indicating that each delegate is linked to around 23 others. Searching for the best connected individuals reveals that Michael Groß (SPD) has 135 supporters which is nearly twice as large as second-runner up Uwe Beckmeyer (SPD) who received support from 71 delegates. In terms of out-degree, there is a group of five SPD-delegates that is clearly set apart from the rest of their group. This group consists of party group chair Frank-Walter Steinmeier and four SPD chief whips (*parlamentarische Geschäftsführer*). Their high out-degrees of 85 or higher indicate that this group plays a prominent role in organizing interpellation behavior within the SPD.

FIGURE 4: Degree distribution (Kernel Density Estimates)

Comparing the degrees across party groups, we find that SPD differs visibly from Linke and Greens who in turn appear rather similar (Figure 4): In the kernel density estimates for both Linke and Greens there is a smaller peak at low levels of in-degree (indicating a small share of weakly connected individuals), followed by a larger one for higher values showing that most individuals receive quite broad support from the party group. For SPD, the situation is somewhat reversed: Here, the curve for in-degree also has two distinct peaks, but the larger one is at low levels of in-degree which indicates that within the network of social democrats, we can expect to find more peripherally connected delegates and comparatively few parliamentarians who receive broad support from the group. In terms of out-degree, the form of the curves is much more similar, yet for Greens and Linke, the distributions match more strongly and among social democrats, delegates have fewer outgoing ties except for the small group including Frank Walter Steinmeier and the chief whips.

The plot in Figure 3 singles out the four individuals in SPD who initiated MIs that were also supported by Greens and/or Linke (marked as squares). Examining individuals who supported the respective MIs indicates that most are regular rank-and-file members of the group. Together with the observation that the topics of the MIs seem not driven by a specific need to coordinate (they cover e.g. statistics on homelessness or violence in Mexico) and their very little number this supports the earlier conclusion that MIs are in general not a means of cooperation among the opposition parties.

Across all individuals, in-and out degree are mildly correlated ($r_p = .269$) but much of the relation is overshadowed through the high degree values of Michael Groß and the five central SPD delegates around Frank Walter Steinmeier. Ignoring them for the calculation, the correlation rises to $r_p = .471$, indicating that those who support many others have a strong standing in terms of support by the group. Yet, this relation is not necessarily a sign of explicit reciprocation. Rather, it may simply be a function of the general activity of some delegates. Indeed, this seems to be the case: The correlations between the number of written MIs and in-degree ($r_p = .434$) and between supported MIs and out-degree ($r_p = .772$) are positive (again ignoring the six excessively connected SPD-delegates) suggesting that active delegates have an increased probability to pick up relationships.

5.2.1 Support

In terms of support frequencies, the distribution of edge weights is extremely skewed. While 44.9 per cent of the 6935 edges stem from a single instance of support, another 16.4 per cent have a weight of two. The maximum count is a staggering 322 instances of support going from Jens Petermann to Ulla Jelpke (both Linke). On average, a delegate supports another one 5.1 times.

How strong is cooperation among delegates? A simple way to put numbers on this question is to standardize edge weight to the number of MIs that the target person has written. This way, we get the percentage of times a delegate has supported another delegate he or she is tied to. Across all edges, support is granted on 41.0 per cent of occasions but this value is inflated since individuals with e.g. a single MI are bound to have full support. Concentrating on delegates with ten or more MIs indicates that a delegate writing an interpellation has an average chance of .252 of getting support from a contact. Looking at the most supportive edges we find 113 with a weight of ten or higher that support all of the target's MIs. The two strongest among these edges even have a weight of 59, and 89, respectively. They are both between Green delegates.

Since we know how supportive an edge is, we can try to identify individuals that receive a lot of support from their contacts. One way to do this is to calculate the fraction of support instances a person has received as a share of all possible ones. This can be done by taking a given delegate, summing up the weights of all incoming edges and divide the result by the product of the number of MIs issued times the delegate's in-degree. Since this measure does not take into account that a person with a single MI must necessarily receive full support all the time, we can only interpret it for a sufficient number of MIs written and compare it for people who have written the same number of interpellations. Comparing individuals with ten to 19 MIs to those with 20 to 29, average support drops quickly from 31.8 per cent of possible instances to 25.8 per cent and remains there for higher numbers of MIs indicating that with rising number of interpellations, it gets harder to maintain a strong support in one's personal network. Similarly, comparing individuals with an in-degree of 20 to 29 yields average support of 53.5 per cent against 34.9 per cent for delegates with an in-degree of 40 to 49. Again, the larger one's support network is, the less probable one is to fully mobilize it all the time.

These trade-offs can be illustrated by comparing for example Hans-Joachim Hacker (SPD, 23 MIs with an average of 14.7 supporters) to Katja Keul (Greens, 18 MIs, 15.0 supporters on average), two parliamentarians who are roughly comparable in terms of productivity and overall support from others. Both illustrate two widely different strategies to gather network support (Figure 5): While Hans-Joachim Hacker has a high in-degree of 61 together with a lower average support share (24.1 per cent), Katja Keul has 26 people supporting her with an average share of 57.7 per cent. The former strategy relies on a diverse network of weaker contacts (i.e. contacts supporting less often) while the latter concentrates on a smaller number of more strongly supportive persons.

FIGURE 5: Distribution of edge weights (Hans-Joachim Hacker and Katja Keul)

FIGURE 6: Distribution in expertise

To sum up, we find that there are clear trade-offs between the average support a delegate gets for her interpellations and the number of MIs she launches or the size of her signee network respectively. This also results in two distinct strategies for gathering support: either she can try to get the signatures from virtually all party group members (on a MI-by-MI basis), or she can opt for a small group of delegates that has already supported numerous other of her MIs.

5.2.2 Generalists and experts

In general there could be two kinds of working modes: generalists writing or signing MIs on virtually all kinds of topics and experts who focus solely on a single matter. A convenient way to single out those experts is to first calculate how much attention they give to every single topic just as we did for the party groups above and then calculate the Herfindahl index across all topics. We do this for writing as well as for signing MIs. The closer the result approaches unity, the more a person is focused on just a single topic. However, since a delegate who writes (signs) just a single MI will necessarily have a Herfindahl value of 1.0, we only look at the top 50 per cent that write (sign) most MIs within a party group. Figure 6 shows the Kernel density estimates for these Herfindahl values. Three conclusions can be drawn: First, in general, parliamentarians show a more specialized behavior when writing MIs than when signing them. Second, while for Greens and Linke we find two different groups of writing MIs – a larger one of generalists and a smaller bunch of experts (the peaks on the right of the plot) – there is

no such distinction among the SPD members. Most of them are somewhere in between generalist and experts when it comes to writing interpellations. Third, turning to the support pattern, we find a similarity between the Greens and the SPD. Both party groups consist of two subgroups – a larger one signing MIs on virtually all topics (generalists) and a smaller one signing only on interpellations that cover specific matters. In this regard the Linke is clearly different. Their delegates are all generalists when it comes to supporting MIs.

6. Comparison between the three opposition networks

In this section we first give a focused comparative overview of the individual opposition networks using network statistics, before we then take a closer look into their particular structures. Table 2 lists characteristics for the three networks. Comparing the parties based on these numbers it becomes apparent that SPD is overall much less involved in the writing of MIs than the Greens and the Linke. This point is also reflected in much lower density and degree values. While density calculates as the number of edges present divided by the number of all possible edges (connecting every node with every other node) the degree gives the average number of edges connected to a node (regardless whether incoming our outgoing edges). On average Green and Linke delegates launched more than six times more MIs than SPD members. Particularly revealing in this regard is the number of delegates who did not even once write a MI on their own: while there are only six such instances for both smaller parties there are 64 SPD delegates who never launched an interpellation. Turning to the signatures, the SPD delegates on average support about 50 while Greens and Linke sign more than three times as many MIs. This is of course also a function of the much smaller number of MIs available for the social democrats. The average support a delegate gives to his or her fellow colleagues (calculated as the mean weight of all edges) is also much smaller for the SPD while there are no major differences between Greens and Linke. For all three parties the underlying distribution of this support is highly skewed: about one third to half of the edges have a weight of one, but there are also some exhibiting an extremely strong support. The maxima are 43, 119 and 322 signatures for SPD, Greens and Linke respectively.

We may also ask how strongly delegates work as teams, each supporting the MIs written by the other (=

reciprocity). Looking at the fraction of edges which are reciprocated, we find the highest reciprocity for the Greens and the Linke, indicating a much stronger horizontal organization in these two parties than in the SPD. The low reciprocity values for the social democrats can largely be explained by the facts that a high number of SPD delegates are not at all involved in writing or signing MIs and the highly centralized structure of the network where certain hubs only collect the support but do not return the favor to their signees.

TABLE 2: Characteristics of the three opposition networks

The following three sections we will analyze the subgraphs induced by the nodes of each party group. Since these networks are very dense, we will not plot edges with a weight of less than four to enhance readability (i.e. an edge is drawn only when a delegate supported another on average once a year). However, all statistics reported and all information (i.e. node size, coloring etc.) in the plots is derived from the full networks.

6.1 The SPD network

FIGURE 7: The SPD network

6.1.1 Structure of the SPD network

The network of the SPD party group consists of 154 nodes and has a strongly star-like structure with three different types of nodes clearly standing out (Figure 7). The three different types of nodes make up three approximately concentric circles in the visualization (at the level of filtering for the plot, 29 delegates do not appear at all because they are so loosely tied to others that they become isolates when lightweight edges are discarded). An outer circle contains 64 delegates with only outgoing edges. These delegates have never drafted an interpellation themselves but only supported others.

In the dead center of the graph there is a small cluster of five nodes with mostly outgoing edges (circles in light grey). These delegates are the already mentioned group of party chair Frank-Walter Steinmeier and four of the five party whips who signed in varying combinations on all party group MIs. The fifth whip is absent from the center and – given that he has supported just six MIs – seems to have a different field of activity. Given that all central members in the network are in the group's leadership, the star-like structure is most likely a function of the groups organization although it is unclear whether

leadership either endorses all outgoing MIs or whether only those are issued which have found the leaderships consent. The latter interpretation would be quite in line with Robert Michels "Iron Law of Oligarchy" (1911) and fit the observation that the SPD party group underwent a strong increase in centralized control during the SPD-Greens coalition government formed in 1998 under Chancellor Gerhard Schröder. This centralization was mainly driven by then-chairman Franz Müntefering who was heavily criticized by pundits for turning the party into a machine at the disposal of government.[10] Yet, centralization in terms of MIs does not extend to the whole party elite since group's vice chairs are not involved in this specific aspect of party activity – their average writing and supporting activity is below the mean of all Social Democrats.

The third group of nodes, located in the plot in the middle concentric circle is responsible for the bulk of SPD interpellations. These parliamentarians receive support from both directions: on the one hand from the party group leadership and on the other hand from the nodes at the edge. Selecting all 90 nodes with a non-zero in-degree, we find that 43 of them either were speaker or vice-speaker of a working group in the party (or both) and that their average number of MIs launched lies at 6.5 (compared to 3.5 for the remaining 47 delegates). This suggests that their activity is related to their working-group membership. Indeed, the role of the working groups can be seen by shading edges according to the extent they focus on a single topic (see the smaller plots in Figure 6 for the matters of traffic, health, and defense; the darker the shading, the more an edge deals with the respective topic). All three plots clearly single out the respective working groups, e.g. "Traffic, construction, and urban development" which appear as a tightly interlinked cluster in the lower right quadrant of the plot and which – judging from edge weights – is one of the most active groups in the SPD.[11] We have only plotted three exemplary topics, but for virtually all of the DIP-categories the pattern repeats that only a small number of the stronger edges is concerned with the topic. These edges usually cluster in a single region of the network and most often all point towards one or at most very few delegates that seem to take care of the matter on behalf of the party group while the rest of the network stays inactive. In some cases working group chairs (square nodes) occupy these central positions (e.g. Rainer Arnold for "defense"), in other cases they are more remote like Karl Lauterbach, the chair of the working group

"health", letting one of the backbenchers in the working group organize the interpellation business.

6.1.2 Homophily in the SPD network

So far we have found the structure of working groups to be very important for the SPD network. Can we isolate other structural properties? To determine whether the network might be driven by homophily, we counted the number of edges going within and between the groups of our covariates (gender, region of origin, direct/list candidates, and freshmen/veterans) and ran permutation[12] tests to determine whether edges show significant homophily in terms of a given attribute. These tests proceed by comparing the observed edge distribution between two or more classes of nodes (e.g. between all female parliamentarians) to a null model in which characteristics and structure are independent.[13] Testing for our four covariates turned up no significant tendencies of homophily. It seems, that for the social democrats, the main determinant of its network structure are the institutional patterns of the working groups and party leadership, giving the network a vertical and task-related structure, whereas horizontal elements based on social alikeness are less relevant.

6.2 The Greens' network

FIGURE 8: The Greens' network

6.2.1 Structure of the Greens' network

The Greens' network (Figure 8) is again highly structured but not in the star shaped, centralized way that we observed for SPD. From a bird's eye view the network of 75 nodes appears instead more horizontally organized, consisting of five densely knit regions, two of which are smaller and less interconnected than the others. Between the regions are a few individuals which are tied to multiple of the clusters. Overall, the Greens' network is the densest one and the one with the highest degree. Looking at the role of formal leadership indicates that higher ranked delegates seem not to be as heavily involved in coordinating the writing of MIs as in the SPD. Both group chairs, Jürgen Trittin and Renate Künast, are marginalized, having never issued an inquiry themselves while only supporting one and six interpellations, respectively. Of the two party chairs, only Claudia Roth captured a seat in the Bundestag. She is somewhat more enmeshed with an in-degree of 20 and an out-degree of 31 – yet, her position is based mainly on her active role as a supporter (she signed 233 MIs and issued only four).

Similarly, the party whips seem to be in principle involved in writing MIs, but they are located mainly in the two dense clusters on the right and thus far from the central role they play among social democrats when it comes to signatures. Looking at the working groups, however, we find that each of the five working group chairs locates in one of the clusters – although they are not strongly set apart from the other members in terms of degree, publications, and support – suggesting that the working groups play an important role in this network, too.

In order to validate the idea that the clusters are indeed working groups we aggregated the topics across edges to mirror the fields of expertise of the Greens' five working groups and plotted them separately (see Fig. 8, small insets). The very consistent results, strongly separating out topic- and thus working-group-based sub-clusters, confirm that working groups are indeed the basic organizing principle of the network. Thus, while the Greens rely on working groups too for structuring their interpellation process, too, they do not follow the SPD in terms of hierarchical active coordination through the whips. Greens use a decentralized but obviously in terms of output no less effective means of control which in addition also supports the specialization within the party group.[14]

Looking at the best connected individuals among Greens we find that most of the delegates high in both in- and out-degree do not play an official role in the party group hierarchy. In terms of specialization, we find that the top five specialists from the Greens spend around 80 per cent of their MI mass on a single topic. Of these, Anton Hofreiter who succeeded Jürgen Trittin in October 2013 as party group chair, is clearly most prominent as three of the most focused support relations also target him. Since he has been chair of the Bundestag committee on traffic, construction, and urban development since 2011, it is hardly surprising that this reflects in his field of expertise.

6.2.2 Homophily in the Greens' network

As for the SPD, there are no significant signs of homophily or other groups preferences in the number of ties between groups. For all three covariates (we did not test for mode of candidacy since all but one delegate are list candidates) we did not find significant tendencies to form edges to nodes from the same class. Indeed, except for possibly a slight tendency of East German delegates to form fewer edges to West German delegates (198 observed vs. 256.5 expected edges; the border of the 5%-significance

interval was estimated at 185.0), all observed values remained fairly close to the simulated averages, indicating that the network is only marginally dominated by homophily. This is also reflected in assortativity coefficients virtually indistinguishable from zero.

6.3 The Linke network

FIGURE 8: The Linke network

6.3.1 Structure of the Linke network

Already from a global perspective, the network within Linke differs visibly from the two party networks we have examined so far (Figure 9). It consists of 77 nodes and is again denser than SPD one. In terms of in-degree one delegate stands out: Ulla Jelpke has been supported by 71 different delegates meaning that she connects to 92.2 per cent of her party group. On the other hand, the number of delegates with no incoming links is again much lower than for the SPD which nicely illustrates that among the Linke (like before among the Greens), delegates are in general more involved in drafting MIs resulting in a very small periphery of support-only nodes.

For the plot we again drop edges with less than four signatures. The network of the Linke lacks both the star-like structure of the SPD and the visible clustering of the Greens. Instead, the only visible patterns are (except for Ulla Jelpke who is connected to almost every person) two regions of higher density in the upper and lower left quadrants of figure 9. Its degree assortativity of near-zero ($r = -.064$) indicates that the network lacks a vertical organization – neither do well-connected nodes prefer each other (= positive assortativity), nor do they mainly connect to peripheral nodes (= negative assortativity). Also, edges are more often reciprocated than within the SPD indicating a strong horizontal organization but not as strong as for the Greens (see table 2).

Searching for formal party group organization roles indicates only very few evidence that the network is driven by institutional party leadership. Party group chair Gregor Gysi is a rather isolated node in terms of the interpellation process and of the seven party group vice chairs, only two are above the average in term of in-degrees (three have no incoming links at all). In terms of out-degree, only three are connected to more delegates than average. Party whips are a bit more active, but still they definitely do not come close to their SPD counterparts. Taking a final look at the working group chairs (square

nodes) qualifies this picture only slightly: In terms of incoming and outgoing edges as well as written and signed MIs at least five out of the seven working group chairs are above the average Linke delegate, but they stand out less clearly than some of the very central working group chairs within the SPD network. Insofar, while the institutional role most clearly involved in the interpellation process appears to be working group chairs for the Linke as well, their role is more taken back. In summary, one can say that the party group leadership and the whips in the Linke do not remain outside the process of drafting interpellations, but they are not overly involved, either: leadership is not as visibly involved in writing and signing interpellations as among social democrats or Greens.

Looking at the individuals with highest specialization among those with 20 or more interpellations, we find that they are again relatively strongly focused with the most specialized delegates devoting around 80 per cent of their attention to a single topic. Yet, while on the individual level some parliamentarians strongly concentrate on a certain topic, it is more difficult to isolate the working groups or other thematically oriented clusters in the Linke network than it is for SPD and Greens. Matching the topics of the seven working groups to the classification of the DIP system indeed singles out regions in the graph in which edges mainly deal with the given subject area. Yet, these regions heavily bleed into one another[15], suggesting that support for MIs within the Linke does not stop at the institutional boundaries of the working groups. However, structure in terms of topics is not completely absent from the graph. If we aggregate topics into three broad classes, reflecting (1) work, health and social security, (2) matters of economy and environment, and (3) matters of international politics and security, we get a relatively good separation of areas in the network connected through the common interest in a subject area (see small insets in Figure 9) that cover 39.9 per cent, 17.7 per cent, and 35.5 per cent of the attention expressed in interpellations. It appears, that much of the attention the party signals in terms of minor interpellations follows this broad threefold classification that only partly can be fitted to the institutional working group structure. Yet, these three sub-groups are much more loosely knit than the sub-networks based on working groups of the Greens.

6.3.2 Homophily in the Linke network

Some of the difficulties in recovering the formal working group structure within the Linke might also

be explained in terms of homophily. Here, the Linke network is more revealing than connections among social democrats and Greens. While assortativity coefficients for our covariates remain at or below an absolute value of 0.1, the permutation tests (see Figure 10) indicate that within Linke, East German delegates have more edges among each other than might be expected by chance (511 vs. 406.8). Also, the observed number of edges between the groups seems to suggest that both East and West Germans may not have a strong preference for each other, although the results fall short of significance. Given that the Linke was formed from two separate parties less than a decade ago, one being the follow up party of the GDRs Socialist Unity Party mainly based in Eastern Germany (PDS) and one being a catch basin for leftists and trade unionists that was mainly based in Western Germany (WASG), this difference is not surprising.

A different pattern emerges for freshmen for which we observe more edges to veteran delegates than the null model suggests (619 vs. 535.1). Also, veterans record fewer edges towards delegates new to the Bundestag than we would expect if the attribute was randomly scattered across the network (457 vs. 535.3). For the mode of candidature (list vs. direct), no comparable findings emerge. Here, the number of edges between, and within different groups are quite close to what one would expect from a random distribution across the network. The largest deviation from the null model can be observed for gender. Female delegates have considerably more edges among each other than would be expected from a random distribution of attributes across the network (803 vs. 624.1). Conversely, male delegates have fewer edges among themselves suggesting a lower cohesiveness as a group (329 vs. 432.1). While the observed number of male to female edges does not depart significantly from a model of no association suggesting an average degree of support, women seem more reluctant to support men as they have significantly fewer edges to the other gender than we would expect by chance (435 vs.533.2). We cannot decide from our data but expect this difference to stem from the party group's unique institutional feature of a separate female-only assembly that was created in 2012 to explicitly foster female-only networks and that is officially allowed to veto any plenary decision taken by the parliamentary group.

7. Discussion and Conclusion

Even at a descriptive level, it is clear that minor interpellations (MIs) can serve as a valuable tool to gain

a new perspective on the internal working of the parliamentary opposition. While they only play a minor role for the cooperation among the opposition groups – and are virtually irrelevant for working patterns within the governing parties, answering our first research question in the affirmative – they clearly open up a window into how the different oppositional parliamentary groups work internally. Once taken to the level of party groups themselves, the supporting behavior of delegates aggregated over a complete legislative period reveals several things: First, we can peek into the internal organizational structure of the parliamentary group independent of whether this pattern in fact reflects the formal and institutional structure of the party or whether it emerges independent of it. Second, it also shows which individuals occupy which roles, which strategies they use to weight among their personal contacts and, third, which groups seek out or avoid each other. In sum, the network approach opens up interesting possibilities for the analysis of party groups and institutions in general.

Taken together, our analysis has found that the mode of intra-party organization is subject to considerable variation, representing different party group cultures and roles of leadership. The network of social democrats (SPD) has whips sitting at the dead center, signing onto all interpellations. Work is concentrated in working groups and usually rests with one or a few persons who write MIs that are then signed by the other members of the working group. All these signs indicate a considerable degree of specialization, centralization and vertical organization for the SPD. On the contrary, the role of formal leadership is much less visible among Linke and Greens. We find no star-shaped structure in their networks. Yet, at least for the Greens, there is another clear structural pattern observable. Their network consists of densely knit sub-networks without a clear center that represent the working groups. In this respect, social democrats and Greens represent very specialized networks of contacts that evolve along a clear institutional structure. Yet, while the whips in SPD are the prime suspects when it comes to the question who might organize (and possibly control) the writing of interpellations, Greens seem to have a different, more horizontally arranged party culture that may potentially be (if one takes into account the strong interconnection within the working groups) more cohesive.

The network for the Linke differs again considerably from these patterns: working groups are much more hazily defined and the thematic clusters in the network seem to follow them only loosely. Instead,

collaboration patterns show relatively clear signs of homophily and group boundaries – something we cannot observe for SPD and Greens – which may indicate a less institutionally but rather socially defined network. The stronger cooperation between Linke delegates from East Germany is an example for this claim. Alternatively, these patterns (e.g. the institutionally fostered creation of female-only networks in Linke) might also indicate that institutional structures that do not exist in the other party groups play a role.

Taken together, the answer to our second research question asking for the role of the institutional structure of the party groups seems to be that it plays a major role in determining the interpellation network of delegates, even though there might be other driving forces present as well. This is directly linked to our fourth question regarding the role of homophily – which we only found to be relevant for Linke, where like associated with like very much, but not for the other two parties.

The answer to our third research question whether the most important delegates are rank-and-file is less clear-cut. While the most central members indeed are without a formal role in party group leadership, they are not just little-known backbenchers either. For example, among social democrats, both the party group chair and four of the five whips are highly central in the network, indicating considerable involvement of at least part of the group leadership. Among Linke, the picture is closer to what we expected with mostly regular delegates forming the active nodes. The Greens line up somewhere in the middle with leadership members taking a part in the interpellation process, but not playing a central role.

Relating our findings back to work on legislative cosponsoring within the US congress that initially inspired our study, is somewhat difficult. The most obvious difference is that the characteristics of parliamentary systems directly relate to the structure of the network. While both houses of US congress are spanned by networks that connect government and opposition, the standards of a parliamentary system (but also the fact that we shifted from cosponsoring bills to signing MIs) are visible in both a strong divide between those in power and those without and nearly no visible activity on behalf of the governing parties. However, even if we may not completely separate how much of the difference is due to the system and how much is due to the means of spotting the network, we

corroborate the result from cosponsoring studies that institutional structures are a strong driver of the networks of legislators but we also find social characteristics to play a more important role in Germany than in the US.

One obvious limitation of the current study is that it only looks at opposition parties, covers a single legislative period and that our assessment of homophily is very crude. Subsequently, further work trying to expand our approach, should take care of these points. Also, since the possibility that the structuring patterns in legislators' networks may shift over time, tracing the development of a network across several sessions may be worthwhile. A third option is to compare two networks before and after a party was in government to see how the internal structure is affected. An especially telling case might be to compare the current structure of social democrats to that from before 1998 when Gerhard Schröder became chancellor. For all these questions the present study may pose a first starting point.

NOTES

[1] The rules of procedure (*Geschäftsordung des Deutschen Bundestages, GOBT*) can be found in an English translation at: https://www.btg-bestellservice.de/pdf/80060000.pdf

[2] In our period of investigation, several MIs showcase for how the instrument may drive media attention. For instance, in the wake of the Snowden leaks, the Linke (*Left Party*) filed MI 17/14722 (All official documents issued by the Bundestag (including MIs and their answers) are numbered consecutively) in which it criticized the inactivity of the BSI, a federal agency entrusted with matters of IT security. The party took several hazy phrases in BSI press releases as a cause for asking since when the agency had known of *XKeyscore*, a software used by the NSA for Internet surveillance that was discussed heavily at that time. The reply 17/14797 indicated that the agency had known about *XKeyscore* since 2011 when some of its employees had attended a presentation by the German foreign intelligence service to see whether the BSI could make use of the software. Quickly, the story was reported across most major German news outlets, causing substantial public outrage. Most media coverage explicitly cited the MI as their source of information and credited Linke.

[3] See Siegel (2011) for a review of network approaches within Comparative Politics and Hafner-Burton et al. (2009) for applications within International Relations.

[4] In some figures below we use the content of an edge to illustrate how individuals working on the same topic cluster in the network. In these cases, we have removed edges without any relevant content entirely from the visualization. The reason is that edges without any weight are still plotted at a minimum width by our analysis software, filling the plots with a high number of fine, light-gray lines. Deleting these edges completely enhances visibility tremendously.

[5] Just 21 MIs had only been signed by an entire parliamentary group (all by SPD) and not by any single individual(s). Those MIs will not be used in the following network analysis.

[6] At the beginning of the 17th legislature there were 239 parliamentarians member of the CDU/CSU, 146 SPD, 68 Greens, 76 Left party and 93 FDP members. All parliamentary groups therefore had the necessary number to sponsor an MI on their own without support from other parties.

[7] There was even one interpellation issued by Manuel Sarrazin (Greens) concerning the EU budget that did not find a single individual supporter (17/14045).

[8] These figures include delegates that left parliament or died before the end of the legislative term.

[9] The government component is rather small and has a perfect star-like structure. It consists of delegates from both CDU/CSU and FDP and came into being through a sequence of 39 MIs issued monthly by the same member, asking for statistics on political crimes. It describes a single-focus group in which most (but not all) members support all of the MIs. Due to its very simple structure, it seems of little interest and is ignored in the following.

[10] Kurt Kister, "Überraschungen im Leben eines Berechenbaren," *Süddeutsche Zeitung*, 16 January, 2010. Heribert Prantl, "Schröders Leibeigene," *Süddeutsche Zeitung*, 1 October, 2003.

[11] The two other square nodes in this cluster next to Uwe Beckmayer are his successor as chair for the working group on traffic and the working group chair for tourism. This shows that working groups linked in substance cooperate when it comes to MIs.

[12] See Christakis and Fowler 2013, 559.

[13] To derive the null model, we first randomly permute the distribution of the node attribute of interest while holding the network structure constant. We then count the number of edges between and among the different types of nodes and record them. This is repeated over and over until the distribution for the independent situation is sufficiently approximated (in our case 5000 times). The mean over all simulated values of the statistic yields the expected number of edges under independence. Taking the .025 and .975 percentile, we can also assess whether the observed values significantly depart from those generated by the null model. Note, that these tests are relatively simple and cannot control for other, possibly confounding variables or interactions so the results have to be interpreted with care.

[14] Indeed, a personal contact to a person working for a Greens delegate confirmed that within at least one working group there exists a form explicitly probing whether an MI was coordinated with the speaker of the working group concerned with the topic. Many thanks to the person who provided this piece of information.

[15] E.g. if one removes all edges that do not deal with a topic falling into the realm of the first working group ("Budget, East Germany, Urban Development, Agriculture & Consumer Protection, Petitions, Traffic and Municipal Policy, Tourism & Sport"), this yields a sub-network consisting of all but two of the delegates from the complete party group network. This means that, although some of the remaining edges concentrate in one region of the graph, this clustering is not very strong since virtually the complete parliamentary group is in the end involved in launching and signing interpellations concerning the working groups' topics.

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FIGURES

Figure 1: Example for our network structure

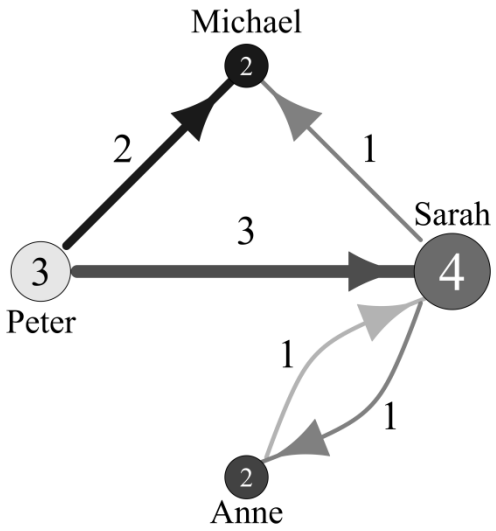


Figure 2: Fraction of MIs dealing with a given topic

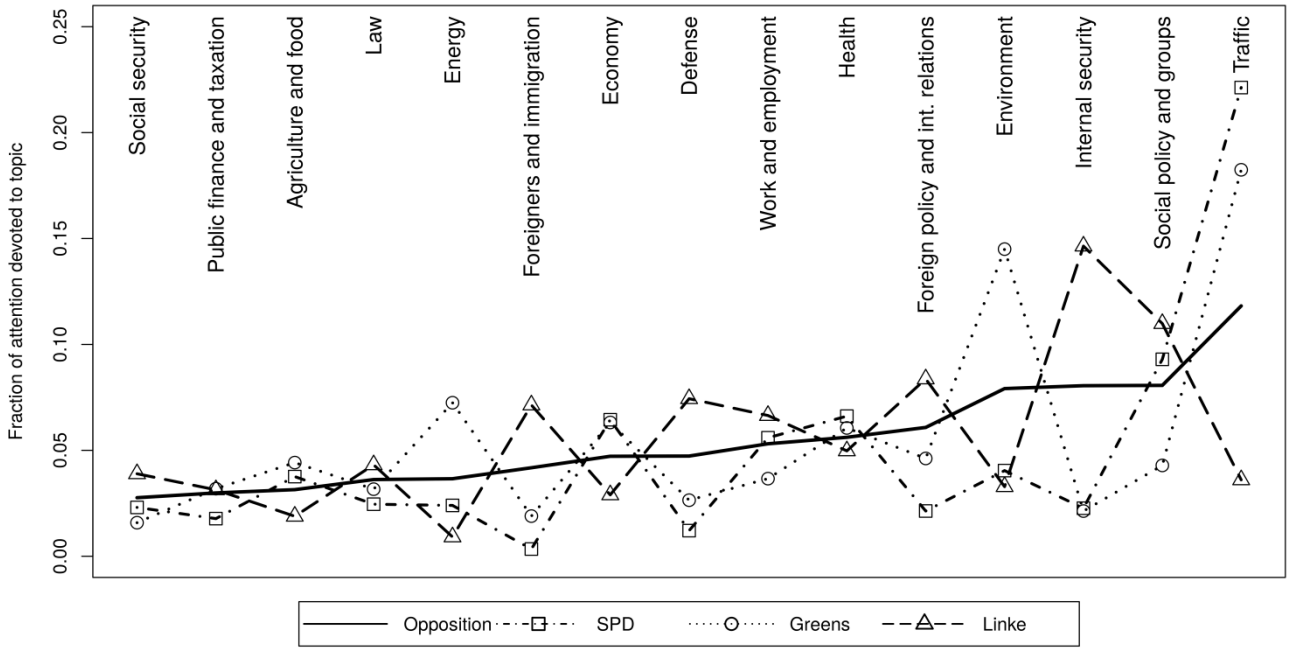


Figure 3: The complete opposition network

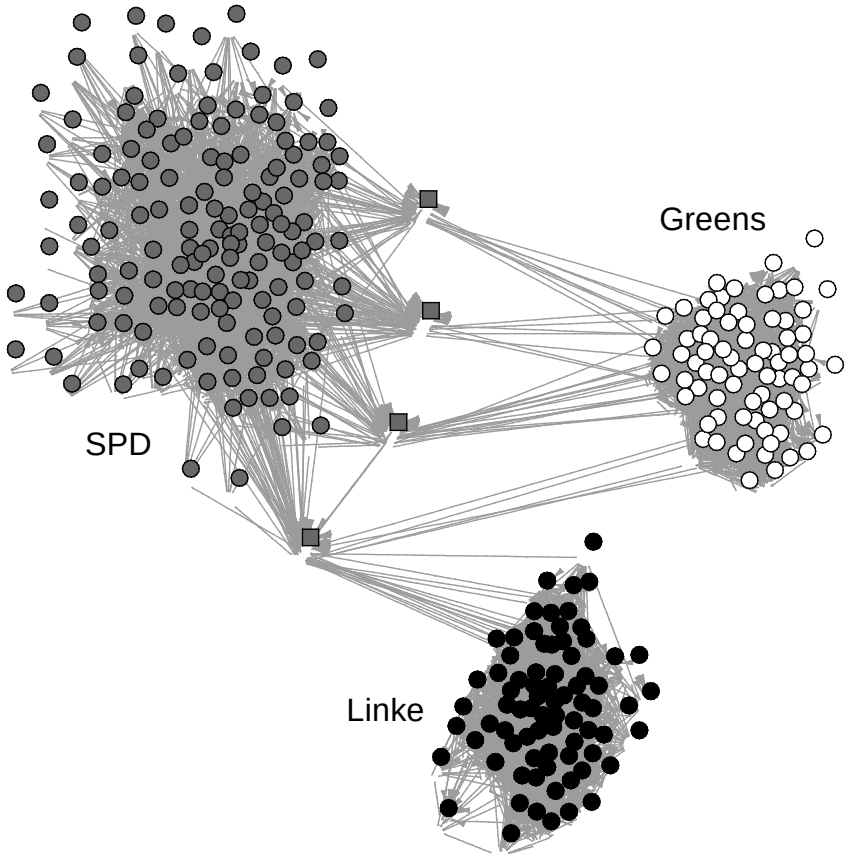


Figure 4: Degree distribution (Kernel Density Estimates)

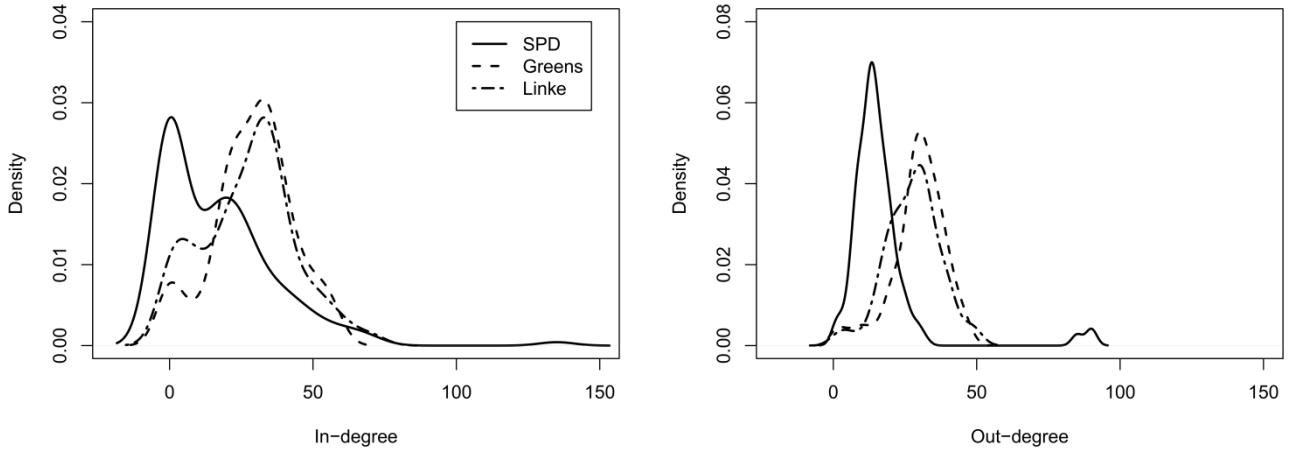


Figure 5: Distribution of edge weights (Hans-Joachim Hacker and Katja Keul)

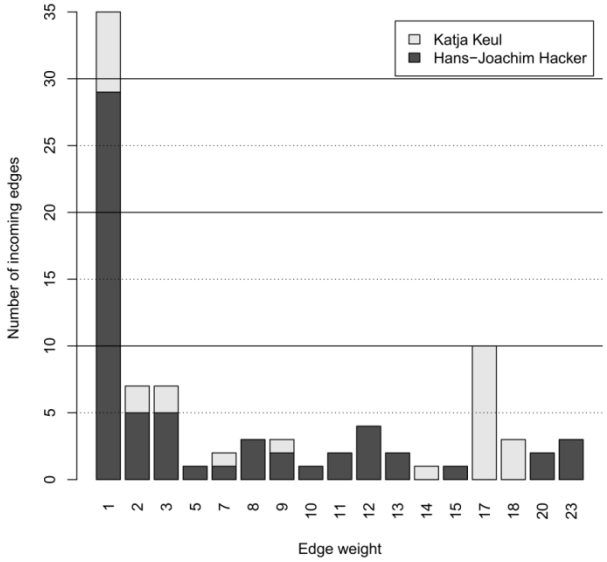


Figure 6: Distribution in expertise (Kernel density estimates)

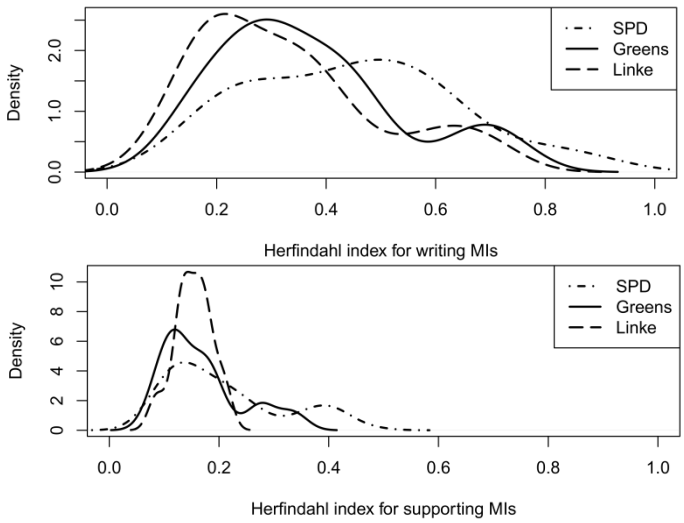


Figure 10: Homophily in the Linke network

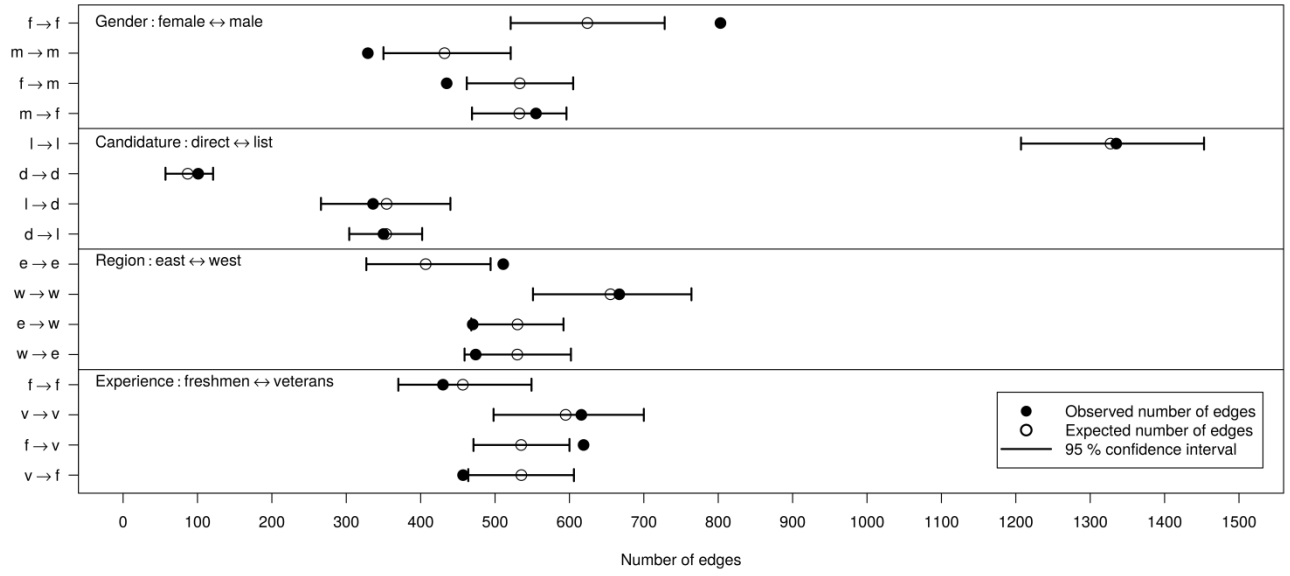
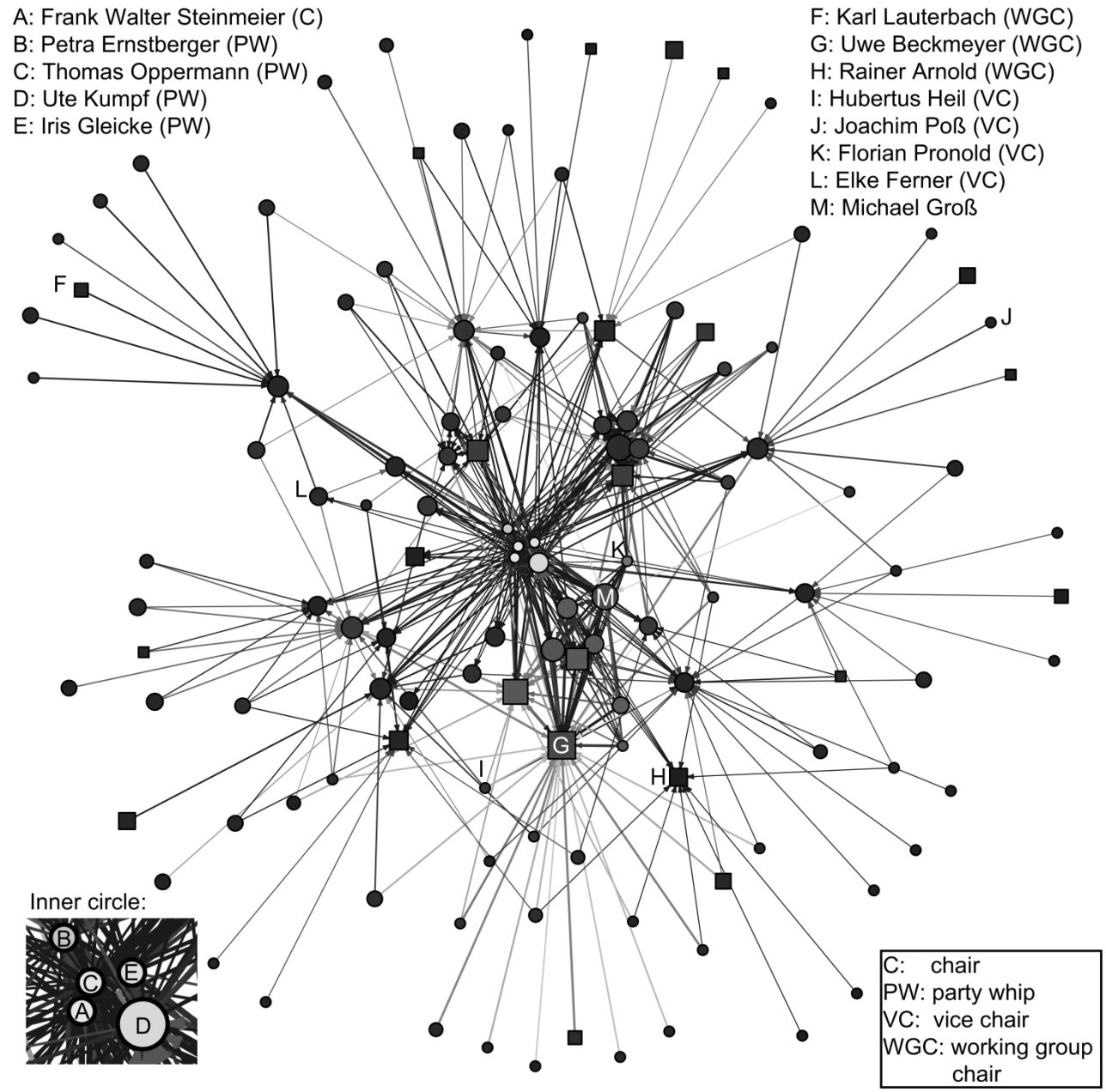
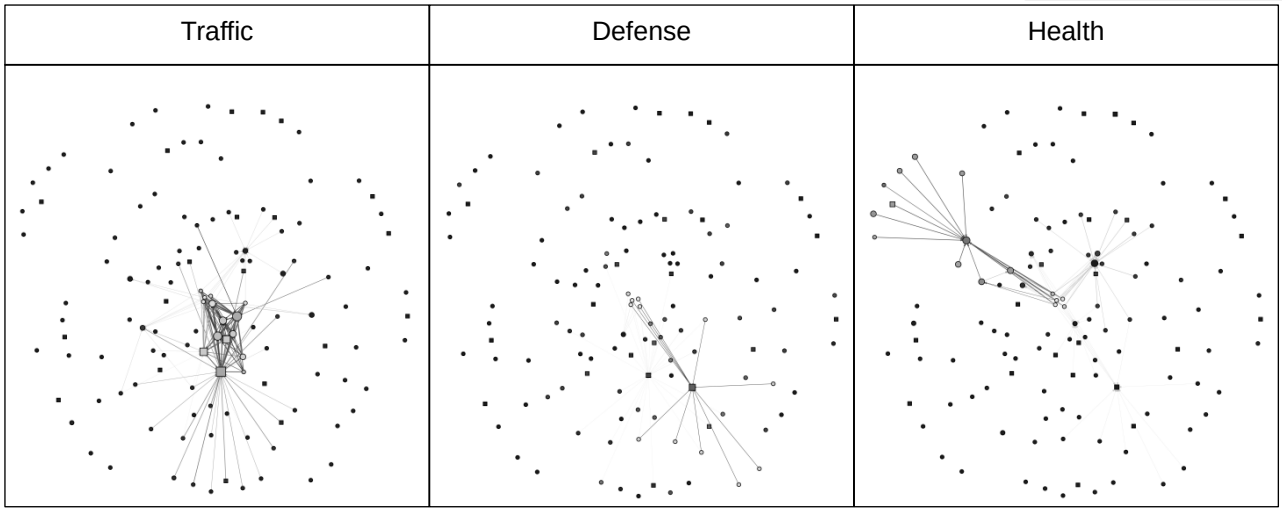


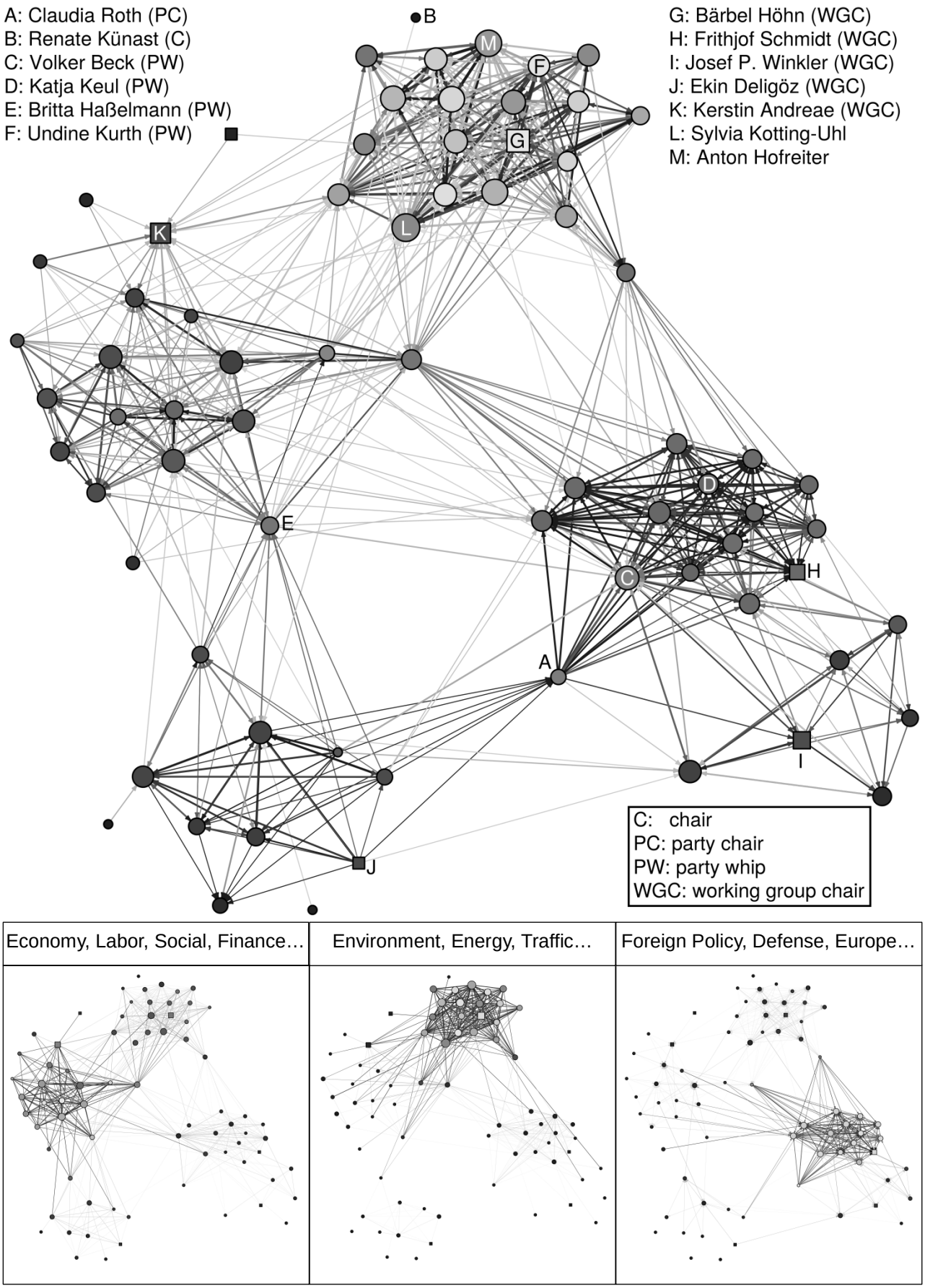
Figure 7: The SPD network





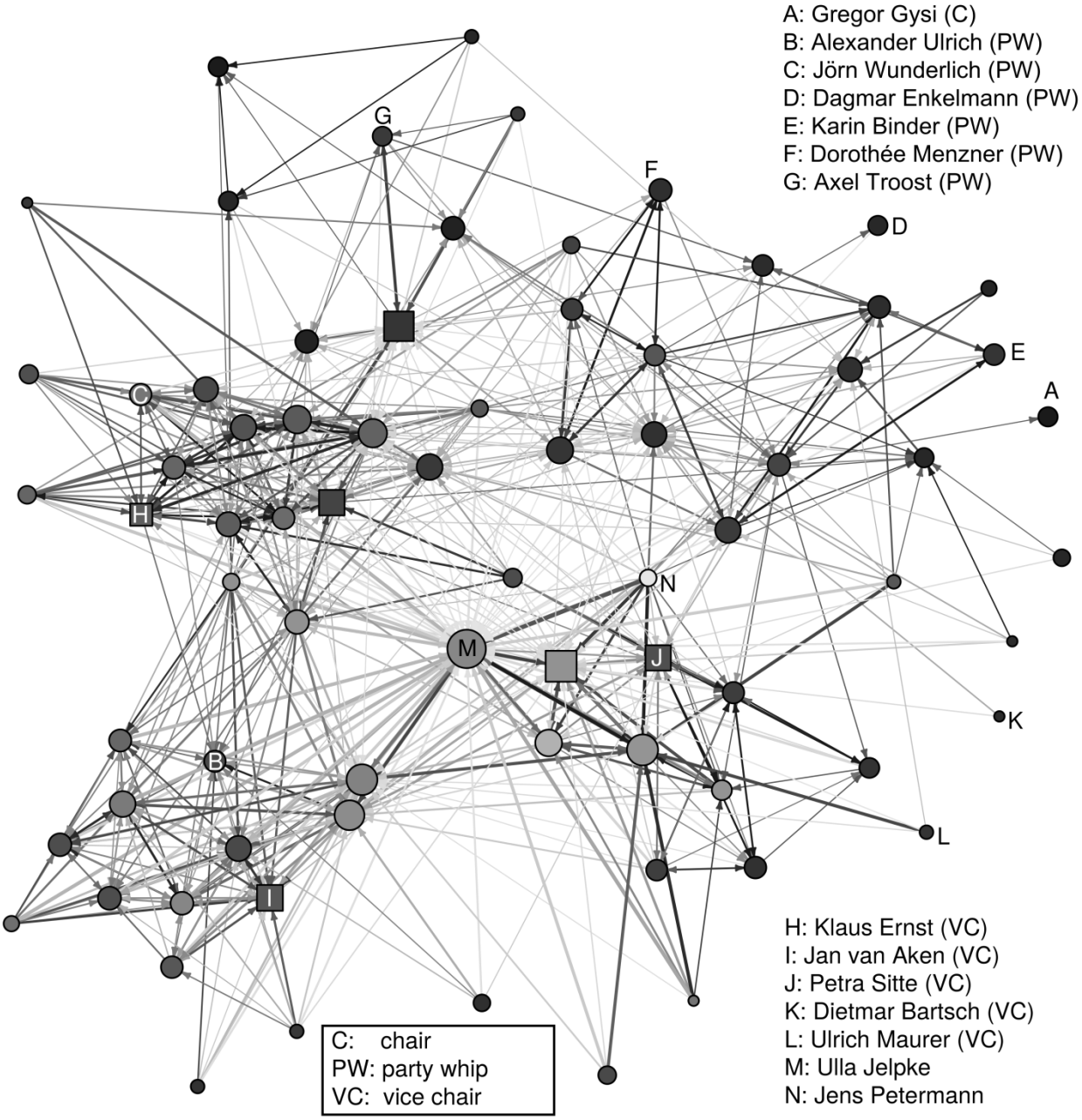
Size of nodes: number of MIs launched. Thickness of edges: number of times a delegate has signed another's MIs. Color of nodes: number of MIs supported by a delegate (the darker the more). Color of edges: stability of support-relationship (the darker the more stable).

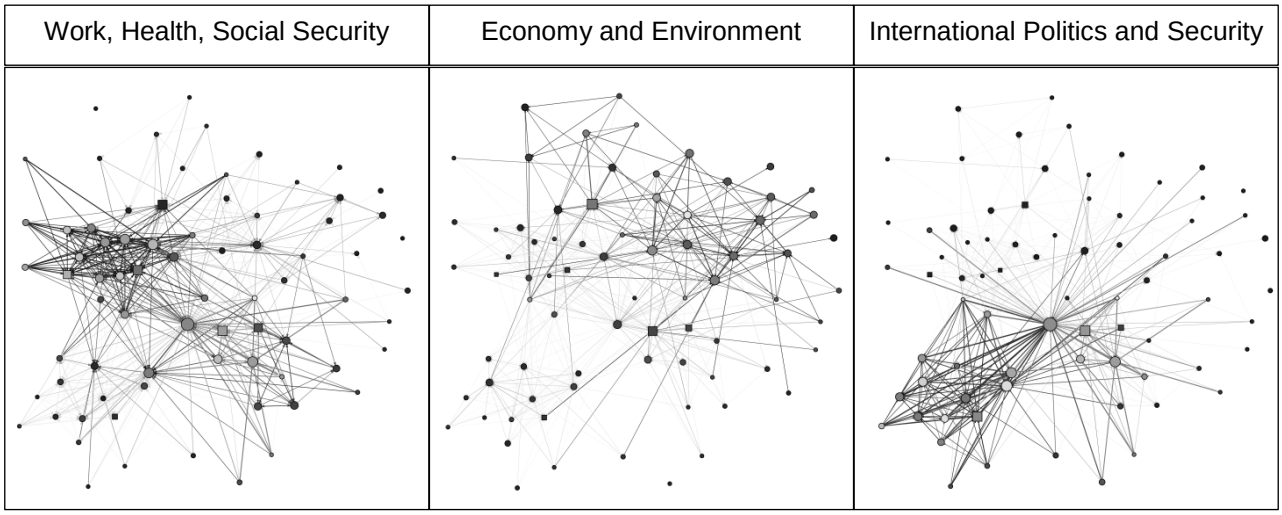
Figure 8: The Greens' network



Size of nodes: number of MIs launched. Thickness of edges: number of times a delegate has signed another's MIs. Color of nodes: number of MIs supported by a delegate (the darker the more). Color of edges: stability of support-relationship (the darker the more stable).

Figure 9: The Linke network





Size of nodes: number of MIs launched. Thickness of edges: number of times a delegate has signed another's MIs. Color of nodes: number of MIs supported by a delegate (the darker the more). Color of edges: stability of support-relationship (the darker the more stable).

TABLES

Table 1: Differences in the number of MIs (written/signed) according to covariates

	Writing MIs				Signing MIs			
Covariate	Opposition	SPD	Greens	Linke	Opposition	SPD	Greens	Linke
Gender (female : male)	15.4 : 9.0 p = .011	2.6 : 3.3 n.s.	20.4 : 20.3 n.s.	29.2 : 13.3 p = .028	131.5 : 105.5 p = .012	56.9 : 48.8 n.s.	208.1 : 179.8 n.s.	170.4 : 180.7 n.s.
Candidature (direct : list)	6.8 : 14.0 p < .001	3.8 : 2.4 n.s.	No test performed*	17.6 : 23.3 n.s.	86.3 : 129.4 p = .001	57.8 : 48.1 p = .045	No test performed*	188.4 : 171.4 n.s.
Region (east : west)	13.2 : 11.7 n.s.	2.7 : 3.0 n.s.	20.5 : 20.3 n.s.	18.2 : 25.2 n.s.	145.5 : 109.5 p =.064	74.7 : 47.9 n.s.	201.9 : 193.6 n.s.	176.7 : 173.6 n.s.
Experience (freshmen : veteran)	11.8 : 12.2 p = .004	4.0 : 2.8 n.s.	19.6 : 20.9 n.s.	11.4 : 31.6 n.s.	154.5 :100.2 p < .001	60.1 : 50.2 n.s.	195.8 : 194.0 n.s.	193.5 : 158.4 n.s.

* = Greens have only a single direct candidate.

Table 2: Characteristics of the three opposition networks

	SPD	Greens	Linke
MIs	445	1442	1682
Nodes	154	75	77
Density (percentage of all possible edges present)	10.9	39.4	36.3
Degree	16.7	29.2	27.6
Written MIs ∅ Min (number of delegates) Max (number of delegates)	2.9 0 (64) 43 (1)	19.2 0 (6) 125 (1)	21.8 / 0 (6) 456 (1)
Supported MIs ∅ Min (number of delegates) Max (number of delegates)	50.1 1 (3) 445 (1)	188.3 1 (1) 485 (1)	172.8 3 (1) 672 (1)
Average support (∅ weight of the edges)	3.0	6.4	6.3
Reciprocity	24.9	60.8	54.7

APPENDIX

Topic	German term	# of MI from opposition with topic	# of MI with topic from opposition, normalized	# of MI from SPD with topic	# of MI from SPD with topic normalized	# of MI from Greens with topic	# of MI from Greens with topic, normalized	# of MI from Linke with topic	# of MI from Linke with topic, normlaized
Work and employment	Arbeit und Beschäftigung	269	189.2	38	24.7	75	52.8	156	111.7
Foreigners and immigration	Ausländerpolitik, Zuwanderung	200	148.9	2	1.5	39	27.3	159	120.1
Foreign policy and international relations	Außenpolitik und internationale Beziehungen	402	216.8	18	9.4	130	66.6	254	140.8
Foreign economic relations	Außenwirtschaft	87	40.8	6	2.5	38	16.5	43	21.8
Education	Bildung und Erziehung	98	63.8	34	21.5	31	22.7	33	19.7
Bundestag	Bundestag	6	2.5	0	0	5	2.0	1	0.5
Energy	Energie	246	130.4	19	10.6	195	104.5	32	15.3
Development policy	Entwicklungspolitik	80	50.5	3	2.0	45	28.0	32	20.5
European policy and European Union	Europapolitik und Europäische Union	173	79.8	13	6.3	63	30.2	97	43.3
Social policy and groups	Gesellschaftspolitik, soziale Gruppen	469	287.6	57	41.0	96	61.8	316	184.7
Health	Gesundheit	269	200.2	42	29.2	116	87.3	111	83.7
Internal security	Innere Sicherheit	486	287.0	13	10.0	50	30.7	423	246.3
Culture	Kultur	45	29.2	10	7.3	14	9.8	21	12.0
Agriculture and food	Landwirtschaft und Ernährung	160	112.1	22	16.6	96	63.7	42	31.7
Media, communication, and information technology	Medien, Kommunikation und Informationstechnik	124	66.9	21	11.8	24	12.3	79	42.8
Eastern Germany	Neue Bundesländer	16	8.3	2	1.0	2	1.0	12	6.3
Public finance and taxation	Öffentliche Finanzen, Steuern und Abgaben	199	106.6	16	7.8	83	46.0	100	52.7
Political life and parties	Politisches Leben, Parteien	24	15.8	4	2.5	4	2.3	16	11.0
Spatial planning, construction, and housing	Raumordnung, Bau- und Wohnungswesen	101	62.8	21	13.4	55	32.2	25	17.2
Law	Recht	274	129.1	23	10.8	93	45.7	158	72.6
Social security	Soziale Sicherung	144	98.5	15	10.2	37	22.8	92	65.5
Sport, recreation, and tourism	Sport, Freizeit und Tourismus	62	43.1	20	13.8	21	14.4	21	14.8
State and administration	Staat und Verwaltung	139	81.3	15	7.7	61	34.7	63	39.0
Environment	Umwelt	458	282.2	29	17.8	341	209.1	88	55.2
Traffic	Verkehr	494	421.3	115	97.6	302	263.1	77	60.7
Defense	Verteidigung	258	168.6	9	5.3	64	38.2	185	125.1
Economy	Wirtschaft	304	168.2	46	28.4	164	91.1	94	48.7
Science, research, and technology	Wissenschaft, Forschung und Technologie	126	73.2	43	30.2	46	25.0	37	18.1

All numbers reported exclude four minor interpellations launched by SPD but supported by members of other opposition parties.