

EXPLORING BOARD INTERLOCKING BEHAVIOUR BETWEEN NONPROFIT ORGANIZATIONS

by

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ABSTRACT: *Directors on boards of nonprofit organizations can have additional director positions in other nonprofit organizations. When several of these interlocking directors exist for a group of nonprofit organizations, a board network is formed. We investigate to what extent similarity between organizations in terms of size, funding structure and operational activities relates to the presence of shared board members between organizations. For a network of 610 organizations we test and confirm that board networks are not formed at random, but that similarity of organizational characteristics explains interlocking behaviour, and that clusters of similar organizations exist within the overall nonprofit sector. Given this observation we propose three areas for further research. In particular we discuss opportunities regarding potential effects of network clustering, the causal direction of the relationship found, and the complementarity of the board network to other social networks in the nonprofit sector.*

Keywords: nonprofit boards, interlocking directors, network analysis, similarity, clustering

Untersuchung des Verhaltens Vernetzter Gremien Zwischen Nonprofit-Organisationen

Aufsichtsratsmitglieder von Nonprofit-Organisationen können zusätzlich Aufsichtsratsmandate in anderen Nonprofit-Organisationen wahrnehmen. Wenn mehrere dieser vernetzten Aufsichtsratsmitglieder für eine Gruppe von Nonprofit-Organisationen existieren, entsteht ein Gremiennetzwerk. Wir untersuchen, in welchem Umfang sich Gemeinsamkeiten zwischen den Nonprofit-Organisationen in Bezug auf Größe, Finanzierungsstruktur und operative Tätigkeiten auf die Anwesenheit von gemeinsamen Aufsichtsratsmitgliedern zwischen Organisationen beziehen. Für ein Netzwerk von 610 Organisationen testen und bestätigen wir, dass Gremiennetzwerke nicht zufällig gebildet werden, aber dass Gemeinsamkeiten der organisationalen

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Merkmale vernetztes Verhalten erklären und dass Gruppen („clusters“) ähnlicher Organisationen im gesamten Nonprofit-Sektor existieren. Angesichts dieser Beobachtung schlagen wir drei weitere Forschungsbereiche vor. Insbesondere diskutieren wir Chancen in Bezug auf mögliche Effekte des Netzwerk-Clustering, die kausale Richtung der gefundenen Beziehung sowie die Komplementarität des Gremiennetzwerkes zu anderen sozialen Netzwerken im Nonprofit-Sektor.

Encuesta sobre los miembros de los consejos de administración en el seno de las organizaciones sin fines lucrativos

Los miembros de los consejos de administración de las organizaciones sin fines lucrativos pueden pertenecer a varios consejos. Ello da lugar a una red de consejos. Los autores examinan en qué medida la similitud entre las organizaciones en términos de dimensión, de estructura financiera y de actividades operativas está ligada a la presencia de miembros de consejos compartidos entre las organizaciones. En un conjunto de 610 organizaciones, los autores comprueban y confirman que las redes de consejos no están formadas al azar, sino que las organizaciones de una red tienen rasgos comunes y que estos grupos suelen existir en el ámbito del sector no lucrativo. A partir de estas observaciones, los autores proponen tres líneas de investigación: los efectos potenciales de la formación de estas redes, la causalidad de su relación y la complementariedad de las mismas con otras redes sociales en el sector no lucrativo.

Une enquête sur les membres communs des conseils d'administration d'organisations sans but lucratif

Les membres de conseils d'administration d'organisations sans but lucratif peuvent siéger dans plusieurs conseils. Cela donne naissance à des réseaux de conseils. Les auteurs examinent ces réseaux en termes de dimension, ressources financières et activités opérationnelles sur un échantillon de 610 organisations belges.

La formation des réseaux s'avère non aléatoire; les organisations dans un réseau se ressemblent, et plusieurs réseaux sont en place.

Sur base de ces observations, les auteurs proposent trois pistes de recherches possibles: analyser les effets de l'existence des réseaux, la direction de causalité de ces effets, et la complémentarité de ces réseaux avec d'autres réseaux sociaux dans le secteur sans but lucratif.

1 Introduction

When selecting candidates as new board members for nonprofit boards, the balance between *representation* and *expertise* should be carefully considered (Cornforth 2003). This means that directors are supposed to act in the interests of the different stakeholder groups, while at the same time, sufficient management and governance expertise is required from them. As it is hard to assess the potential director's true motivation and expertise, organizations often have to rely on substitutive information, such as personal reputation and/or past experiences (Westphal and Milton 2000, Berry et al. 2004). Occupying a board position in another organization signals on the one hand the intention of candidates to act in the interest of particular stakeholder groups

(representation), and on the other hand their relevant experience for doing similar work (expertise) (McPherson and Smith-Lovin 1987).

When a person is a board member of at least two organizations, he or she interlocks these organizations (Dooley 1969). As a consequence, when multiple of these interlocking directors exist for a set of organizations, a board-of-directors network is formed. Such networks have been studied mainly in for-profit contexts, as this can assist in broadening management knowledge on effectiveness of collaboration (Kogut and Walker 2001, Koliba, Mills, Russel and Zia 2011), diffusion of knowledge (Non and Franses 2007, Crispeels et al. 2015), and use of power structures (Davis and Mizuchi 1999, Davis et al. 2003, Burt 2004). Given the growing attention in the nonprofit literature for similar topics, the formation and configuration of nonprofit board-of-director networks deserve more attention, and could offer insights for important contemporary nonprofit research challenges. Some of these challenges are (1) how governance practices in nonprofit boards are influenced by other organizations (Paarlberg and Varda 2009, Paarlberg and Meinhold 2011); (2) how strategic partnerships between organizations can be managed and what their effectiveness is (Provan et al. 2004, Koliba et al. 2011); (3) how networked organizations can adjust their own goals and tactics to the broader cause in which they are active (Willems and Jegers 2012a); and (4) how networks can be beneficial for gaining access to resources (Eng et al. 2012).

We aim to reveal organizational characteristics that explain the existence of interlocking directors. In particular, we hypothesize how the existence of interlocking directors relates to the similarity of interlocked organizations, and we discuss how interlocking behaviour can lead to clustering among similar organizations. From these insights we formulate avenues for further research.

2 Hypotheses

Stakeholder theory assumes that organizations should be responsible to many groups in society rather than just the organization's owners (Donaldson and Preston 1995). As different stakeholder groups may have different interests, the main role of the board is to negotiate and resolve these potentially conflicting interests (Cornforth 2003). Rowley (1997) advances stakeholder theory by applying social network analysis to model the simultaneous influence of multiple stakeholders on organizations' behaviour. Balser and McClusky (2005), for example, argue that nonprofit stakeholder groups are not isolated from one another, but embedded in a network where they can communicate directly or indirectly with each other, without the nonprofit organization itself acting as a gatekeeper of that communication. In contrast, Gazley et al. (2010) use a multi-theoretic view incorporating agency, resource dependence, and stakeholder perspectives to test the cumulative impact of board characteristics and inter-organizational relationships on organizational outcomes. Using a sample of public and nonprofit US community mediation centres, they find that an organization's collaborative capacity depends on several kinds of boundary spanning activities, including network ties, revenue sources, and the number of stakeholder groups represented on the board.

We extend this literature by exploring board interlocking behavior between non-profit organizations. In particular, we are interested in how the existence of interlocking directors is related to similarity in organizational characteristics. The underlying idea is that nonprofit organizations require directors that (1) have the expertise to deal with the specific governance and managerial challenges, and (2) are genuinely motivated to advance the interests of the organization's primary stakeholders (Callen et al. 2003, Cornforth 2003). As the objective assessment of both expertise and motivation can be difficult, substitute information about potential directors might be used, and therefore a director position in a similar organization can be considered as an indication that a particular person has relevant experience and motivation.

We approximate the extent to which required motivation and expertise of board members are similar for different organizations by looking at three organizational characteristics. The organizational characteristics that we use are its operational activities, funding structure and size. As specific operational activities are directed towards particular types of stakeholders, managing them requires a particular interest and expertise about the stakeholders. Therefore, when new board members are selected, experience in another organization with similar stakeholders and/or operational activities might be a strong selection criterion. Likewise, the funding structure of an organization can signal a particular set of skills and type of motivation of its board members to deal with particular managerial challenges. The funding structure of a nonprofit organization can be *donative*, meaning that most financial means are donated, or *commercial*, meaning that income is generally obtained by services delivered (Hansmann 1987). As a result, the funding structure relates to the price at which services are delivered to the stakeholders (beneficiaries), and how these services are funded (donors and funders). Furthermore, different funding structures relate to varying expertise profiles required in the board, as boards are considered to play a crucial role in the attraction and allocation of resources (Eng et al. 2011), the monitoring of the organization's financial vulnerability (Tuckman and Chang 1991, Greenlee and Trussel 2000), the choice and extent of formal collaboration with other organizations in the field (Galaskiewicz et al. 2006, Guo and Acar 2005), and strategic decisions on output price setting (Daponte and Bade 2007). Finally, organizational size also relates to the level of management formalization and professionalization, which in turn relates to the type of practices applied by managers and directors (McClusky 2002, Callen et al. 2003).

Moreover, a board position is only filled when both the organization and the individual agree on a suitable match. Hence, we can assume that (potential) directors combine positions in multiple boards when such additional board positions meet their personal motivation and skills.

In sum, we expect that interlocking directors in particular exist between organizations that are similar in activities, size and funding structure:

- Hypothesis 1: *Organizations that deploy similar operational activities are more likely to share at least one interlocking director.*
- Hypothesis 2: *Organizations that have similar sizes are more likely to share at least one interlocking director.*
- Hypothesis 3: *Organizations that have similar funding structures are more likely to share at least one interlocking director.*

3 Data and analysis

We analyze the board-of-directors network of formal nonprofit organizations in Belgium to test our hypotheses. The nonprofit sector in Belgium, as in most continental European countries (Defourny and Pestoff 2008), relies strongly on government funding and includes mainly social service organizations. Similarly to many other countries these organizations have been confronted during the last two decades with a growing pressure to professionalize their governance and management practices in the context of new public policies (Dewaelheyns et al. 2009, Cornforth 2003). Furthermore, the historical development of the nonprofit sector in Belgium was closely linked with the development of the cooperative movement, which was until a few decades ago typified by strong internal differentiation based on various ideologies (Defourny and Pestoff 2008, Van de Poel 2010). Intuitively, such ideological differentiation might (have) effect(ed) the extent to which organizations are interlocked. Given similar types of historical developments in other European countries during the previous century (Defourny and Pestoff 2008), the Belgian interlocking board network data could serve as an example for other western European countries, but caution is warranted when comparisons are made with other countries. In addition, due to the small geographical size of Belgium and the high level of urbanization, physical distance might, compared to other and larger countries, not be a strong restricting factor for becoming a member of a board of a similar organization in another city. As a result, generalizability of the findings herein is probably more appropriate to large metropolitan areas with similar levels of urbanization rather than to other countries in general.

Data are retrieved from the Belgian National Bank (BNB). The organizations in the sample have either more than 100 FTE employees, or meet at least two of the following conditions: (1) more than 50 FTE employees; (2) more than 6,250,000 EUR yearly operational revenues; or (3) total assets exceeding 3,125,000 EUR (www.nbb.be, Feb 2009). Data from these organizations are audited by independent auditors, and tests for arithmetical and logical consistency are performed by the BNB for each of the financial statements, ensuring high quality data. Given the available data, grassroots and informal organizations are not included. Despite this potential limitation, working with this selection of formalized organizations results in a workable sample from which organizational data is reliable and comparable (a condition to test the hypotheses) (Hanneman and Riddle 2005). We build on the cross-sectional sample of data available for 2007.

The final sample of 898 organizations comprises 8,700 board positions, taken up by 7,192 directors. The average number of board members on a board is 9.69, while the average number of directorships that a director has, is 1.21. About 87.60 percent of the directors occupy only one directorship, 8.09 percent two directorships, 1.99 percent three directorships and 2.32 percent four or more. The maximum number of directorships within the sample is 9. About 25% of all directors are women. The minimum board size reported is 1, the maximum is 34, with a median of 8. The 25- and 75-percentiles of the number of board members in a board are respectively 5 and 12. In total, 610 organizations are connected with at least one other organization, which means that we observe 288 isolated organizations in the network (32.1%).

Table 1 displays the sample descriptives regarding size and funding structure. Funding structure is operationalized on the one hand by debt over total assets, and

Table 1 – Sample descriptives of organizational size and funding structure

	Mean	Std Dev	Median	Min	Max
<i>Size</i>					
Total assets (in €1.000)	18,284.0	60,587.4	5,546.4	60.6	123,5707.6
Number of employees (in FTEs)	161.2	444.3	70.9	0.0	8071.3
<i>Funding structure</i>					
Total debt / Total assets	47.6%	58.5%	41.1%	0.0%	100%
Financial debt / Total assets	15.0%	20.1%	4.8%	0.0%	100%
Commercial revenues / Total revenues	42.9%	37.5%	33.1%	0.0%	100%
Membership fees / Total revenues	2.4%	12.3%	0.0%	0.0%	98.3%
Gifts / Total revenues	2.4%	12.2%	0.0%	0.0%	100%
Subsidies / Total revenues	33.9%	38.3%	14.6%	0.0%	100%

on the other hand by expressing several types of income streams as a percentage of total revenues. Furthermore, a diversity index is calculated. This metric gives an indication of the differentiation regarding income streams based on the Herfindahl-Hirschman concentration index (see also Tuckman and Chang 1991). While a nonprofit organization with revenues from a single source will have a concentration index of one, a nonprofit organization with equal revenues from many sources will have an index close to zero. As such, with the combination of these various metrics we get an insight in whether organizations (1) are more donative versus commercial, (2) rely on debts to finance their activities and (3) have a diversified portfolio of income streams.

Activities of organizations are captured based on five-digit NACE-codes, used in the European Union (Statistical Classification of Economic Activities in the European Community – From the original French name: *Nomenclature Statistique des activités économiques dans la Communauté européenne*). These codes are constructed in such a way that the first two digits refer to the general industry, such as health care, social services or education. Subsequent digits refer to specific types of activities within industries such as ‘activities of midwifery’, or ‘promotion of arts events’. In the sample, a total of 180 different five-digit codes are mentioned, in 52 two-digit industries. Organizations can have multiple NACE codes. The most often used codes, grouped per industry, are (with sample proportions): human services delivery including housing: e.g. nursery houses (22.50%), human services delivery without housing (17.10%), education (16.86%), healthcare (10.40%), and associations (7.50%), from which about a quarter are trade and industry organizations. Other associations are active in international development, environmental protection and lobbying, or as a youth movement. In addition, because Belgian hospitals have a separate accounting system, they are not included in this sample.

For Hypothesis 1, we investigate the probability of having an interlocking director when two organizations have at least one five-digit activity code in common, by means of a traditional chi-square test. The unit of analysis is the combination of two organizations (Hanneman and Riddle 2005), and the test verifies whether a significant probability exists of having at least one interlocking director between two organizations when these organizations also have at least one NACE-code in common.

We use the Moran’s I metric (Hanneman and Riddle 2005) to measure similarity between interlocked organizations with respect to funding and size (continuous

variables, Hypotheses 2 and 3). Positive values indicate that interlocked organizations are more likely to have similar values and negative values indicate dissimilar values (with the magnitude of the index indicating the strength of the (dis)similarity). In order to assess the statistical significance of the metric we rely on a bootstrapping procedure. In such a procedure a large set of potential alternative networks are generated, and the observed values of the actual network are compared to the distribution of values of the generated networks (Conyon and Muldoon 2006). Simulating a set of alternative options is a recommended practice for network analysis (Hanneman and Riddle 2005), as observations from the actual network cannot be considered independent from each other (due to the network structure studied), which is an important assumption of 'traditional' significance testing.

In order to complement the interpretation of our results we have also performed a descriptive analysis regarding clustering of the board network (based on Robins and Alexander 2004 and Willems and Jegers 2012b). The details of this analysis are given in the Appendix. In short, in this additional analysis we report on various measures of network clustering. These descriptives provide important additional insights useful for the interpretation of our hypotheses.

4 Results

For the test of independence regarding the similarity of activities, the number of co-occurrence (i.e. having an interlocking director and the same type of activity in common) is significantly higher than expected ($\chi^2_S(222.91) \gg \chi^2_{df=1, \alpha=0.005}(7.879)$). The odds ratio is 1.97, meaning that the probability of sharing a director is almost twice as large when two organizations deploy the same activities. As a result Hypothesis 1 is supported. Table 2 gives an overview of (1) Moran's I metrics calculated for the actual network, (2) the mean and standard deviation of the distribution based on the set of simulated reference networks, and (3) a Z-score to compare the actual metrics with the expected value of the simulated distribution. For size, we expect that the Moran's I statistic is positive and significantly larger than the mean of the generated distribution. This is the case for total assets, but not for the number of employees. As a result, Hypothesis 2 is only partially supported. In a similar way, we interpret the values for funding structure. Moran's I statistics for all funding characteristics are significant, and Hypothesis 3 is thus supported.

5 Discussion and avenues for further research

Our analysis shows that nonprofit organizations that are similar with respect to size of assets, funding structure and types of activities are more likely to share at least one director in their boards. This means that board of director networks are not formed randomly but that the managerial challenges and stakeholder types may relate to the formation of these networks. As a result, we can assume that clusters of similar organizations exist within the board network of nonprofit organizations. This is supported by various metrics reported in the Appendix, as clustering within the network is significantly higher than when the network would be formed totally at random.

Table 2 – Metrics for the actual network compared to the expected value for the simulated random distribution: Moran's I similarity statistics

	Actual Moran's I	Bootstrap distribution		
		Mean	Std Dev	Z-score
<i>Size</i>				
Log of total assets	0.24	0.10	0.03	4.47***
Log of number of employees	0.03	0.02	0.02	0.59
<i>Funding structure</i>				
Total debt / Total assets	0.06	0.02	0.02	2.43**
Financial debt / Total assets	0.44	0.13	0.05	6.13***
Commercial revenues / Total revenues	0.32	0.11	0.03	6.10***
Membership fees / Total revenues	0.16	0.09	0.03	2.15**
Gifts / Total revenues	0.13	0.06	0.02	2.92***
Subsidies / Total revenues	0.32	0.10	0.03	6.08***
Diversity index	0.16	0.06	0.02	4.35***

Counts, for the actual network and for the reference networks are given for the network infrastructure (Robins & Alexander, 2004). The network infrastructure is the set of directors with at least two board positions, and the set of organizations in which these directors are board member. As a result, directors with only one position and boards that only have directors with one position are not reported, as they have no impact on the network structure as a whole.

*p < 0.10, **p < 0.05, ***p < 0.01.

Furthermore, Figure 1 gives a representation of the largest connected component of the board-director network in Belgium. A component is a part of a network where every node is at least connected to any other node in that component, but is not connected to a node of another component. This largest component comprises in total 442 boards (squares) and 693 directors that have at least two board positions (rounds). Furthermore, the total network also includes 47 other but much smaller components. Looking at the example of this largest component, and combining it with the findings of a higher likeliness of observing an interlocking director when organizations are similar, clarifies how organizations can be different regarding clustering. Some organizations are highly connected to many other organizations, while others are only peripherally connected through a single string of boards and directors to the core group of organizations. As a result, the observation can be made that organizations tend to cluster based on organizational similarity, but that this happens to a varying and gradual extent.

From this observation we derive three areas for further research, mainly to refine these findings, and to point out how focusing on nonprofit board networks can offer answers for various contemporary challenges. We discuss three subthemes: (1) consequences of different degrees of clustering, (2) causality in the observed relationships, and (3) complementarity of the board network to other types of networks.

5.1 The consequences of clustering: 'good' and/or 'bad' effects?

Nonprofit organizations share goals with other organizations. Therefore, the effectiveness of one organization often depends on the effectiveness of other organizations

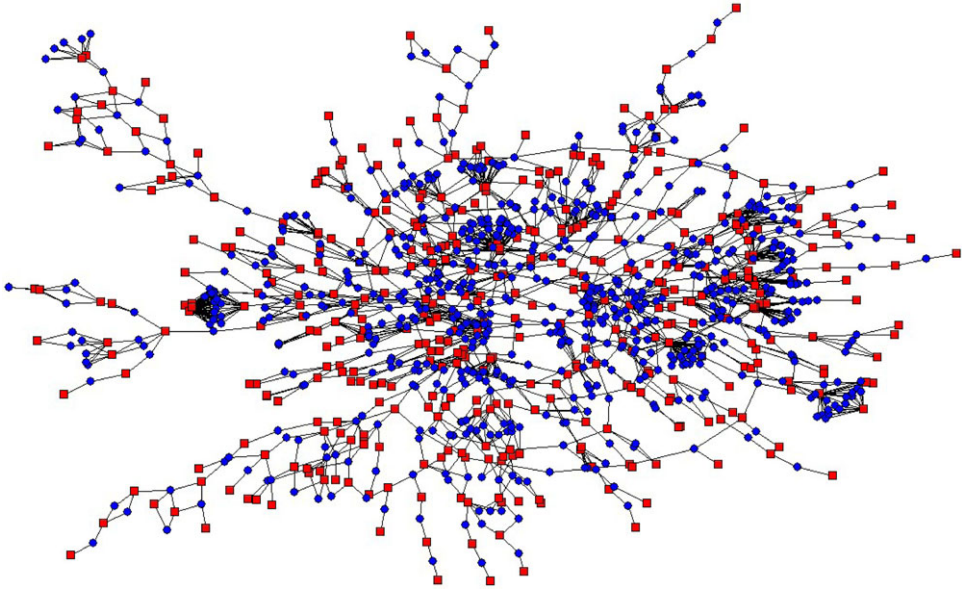


Figure 1 – Largest component of network infrastructure of the Belgian nonprofit board-of-directors network.

(Provan and Kenis 2007, Chen and Graddy 2010, Willems et al. 2014). Within this context, clusters of similar organizations at the board level (where strategic and governance decisions are taken) can improve the mutual alignment of organizational approaches in reaching shared goals. In addition, organizations at a central network position can take a leading role in coordinating the various efforts regarding a particular goal (Provan et al. 2004, Provan and Kenis 2007). However, a too strong clustering, or ‘oligarchic’ situations where few directors have large impact on decisions in many different organizations, could undermine the democratic nature of the nonprofit sector (Davis and Mizruchi 1999, Non and Franses 2007). In such cases, too strong clustering in a group of similar organizations could centralize power, which reduces a network of multiple partner organizations to a single hierarchy around one or few organizations and/or individuals (Willems and Jegers 2012a). In such a hierarchically structured network the organizations involved are induced to implement incremental but marginal changes (Voss and Sherman 2000), and therefore, such a situation could substantially hamper innovation within these clusters (Newman and Dale 2005).

As a result, a challenge for further research is to identify the relevant outcomes of different degrees of clustering, such as mutual adjustment of goals and governance practices, overall sector effectiveness, power centralization and sector innovation. In addition to examining the relationship of the degree of network clustering and potential outcomes, research could focus on determining optimal degrees of clustering and on the contextual factors (moderators) influencing these optimal degrees.

Table 3 – Summary of clustering network characteristics

Clustering	
C_4	The number of times a configuration exists in the network infrastructure ⁶ (NI) in which two directors are member of two same boards. An example is give in Figure 2 (Directors a and b and organizations 1 and 3). The higher this metric, the higher the clustering in the board-of-directors network (Robins and Alexander, 2004).
C_{A6}	The number of times a configuration exists in the NI in which three directors are member of two same boards. An example is give in Figure 2 (Directors e, f and g, and organizations 7 and 8). The higher this metric, the higher the clustering in the board-of-directors network (Willems and Jegers, 2012b).
C_{P6}	The number of times a configuration exists in the NI in which two directors are member of three same boards. The higher this metric, the higher the clustering in the board-of-directors network (Willems and Jegers, 2012b).
ML_A	Ratio of C_{A6} over C_4 . Values above one indicate strong multiple linking of various directors between few boards, and point out strong strategic linking between two boards (Willems and Jegers, 2012b).
CE_P	Ratio of C_{P6} over C_4 . Values above 1 indicate strong co-engagements of few directors in many boards, meaning that these few directors have at the same time input in multiple organizations (Willems and Jegers, 2012b).
C_A	Clustering coefficient of interlocked organizations (Conyon & Muldoon, 2006). Ratio of times that three boards each share at least one interlocking director (triangle) compared to the number of times that any three organizations are interlocked (three organizations connected in a line through shared directorships). The higher this metric, the higher the clustering in the observed network at the organizational level.
C_P	Clustering coefficient of interlocking directors (Conyon and Muldoon, 2006). Ratio of times that three directors are in the same board(s) (triangle) compared to the number of times that any three directors are connected in a line through shared memberships. The higher this metric, the higher the clustering in the observed network at the individual level.

⁶The network infrastructure is the set of directors with at least two board positions, and the set of organizations in which these directors are board member. As a result, directors with only one position and boards that only have directors with one position are not reported, as they have no impact on the network structure as a whole (Robins and Alexander 2004).

5.2 Directions of causality: Selection of directors and organizations or alignment of practices?

The causal relationship between similarities of organizations and having interlocking directors is an important aspect in this research field. Our hypotheses departed from characteristics of the organizations involved. However, similarity among organizations could also be the result of interlocking directors influencing organizations in a standardized way, resulting in more similarity between interlocked organizations (Chen and Graddy 2010). Given the organizational characteristics that we used for our analysis – and for which we assumed that they are in general less variable over time compared to the appointment of new board members – we considered organizational similarity as the explanatory variable to examine whether or not an interlocking director is more likely to be observed. As such, we focused mainly on an explanation that is based on the selection of candidates, given organizational characteristics. However, an equally valid explanation may be that given the fact that organizations are networked, there will be growing similarities between these organizations, in line with the institutional theory and isomorphic processes (DiMaggio and Powell 1983, Frumkin and Galaskiewicz 2004).

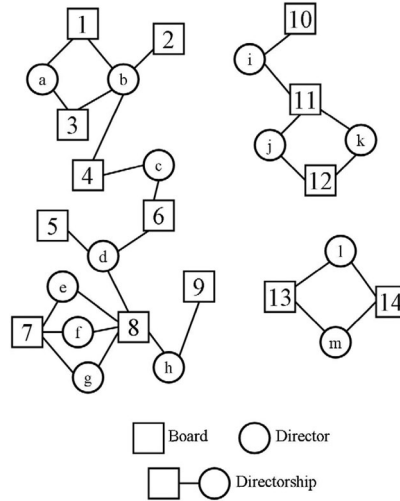


Figure 2 – Example of a board-of-directors network (three components).

Table 4 – Metrics for the actual network compared to the expected value for the simulated random distribution: clustering

	Actual count	Bootstrap distribution		
		Mean	Std Dev	Z-score
<i>Clustering</i>				
C_4	6695	1080.57	581.39	9.66***
C_{A6}	47060	3709.00	3523.33	12.30***
C_{P6}	9040	267.03	626.36	14.01***
ML_A	7.03	3.16	0.59	6.58***
CE_P	1.35	0.18	0.14	8.43***
C_A	0.48	0.24	0.03	8.34***
C_P	0.76	0.54	0.04	5.29***

Counts, for the actual network and for the reference networks are given for the network infrastructure (Robins and Alexander, 2004).

*p < 0.10, **p < 0.05, ***p < 0.01.

From this perspective, new practices are introduced by interlocking directors that make the involved organizations more similar.

Similar to previous literature on knowledge diffusion in (for-profit) board-of-directors networks (Kogut and Walker 2001, Davis et al. 2003), we suggest, based on our findings, that the board network can also facilitate the diffusion of governance practices in a nonprofit context. In networks with dense clustering knowledge and information on strategic opportunities can easily flow to all network actors (Davis et al. 2003). Through board connections, organizations could thus become more similar in terms of their practices. In our sample this could imply that organizations became more alike regarding a more diversified income portfolio because shared directors transfer this ‘good practice’ from one organization to the other.

However, for the network under study, the intense clustering among similar organizations (see the Appendix) could have important consequences on the type of opportunities that exist for information and knowledge exchange. Within groups of very similar organizations, absorption capacity is higher for context-specific knowledge (for example in the context of particular operations, programs or goals) (Giuliani and Bell 2005). In contrast, opportunities for sector-wide exchanges across the overall nonprofit sector might be limited due to the existence of ‘homogeneous islands’ (strong clusters of similar organization, with few links to other clusters of organizations (Jackson and Rogers 2005)).

As both causal directions between clustering and organizational characteristics can be supported, we could assume that similarity between interlocked organizations is due to both selection and adaptation. Therefore, further research could scrutinize the proportions of the relationship found that are respectively explained by each perspective. However, from a practical point of view it seems important to examine the particular benefits, for each organization or for a group of clustered organizations, of being linked and/or becoming more similar. In this context, further research projects could focus on the particular criteria that are considered to select board members of other organizations, and what type of knowledge transfers are enabled by different types of clustering.

5.3 Complementarity of board network to other networks?

The board-of-directors network is a formalized structure of strong ties that are based on intense and recurrent contacts (Davis et al. 2003, Robins and Alexander 2004). Furthermore, board members are intensively involved in high-level and strategic decisions on the core nature of an organization. Therefore, board networks are substantially different from more informal and spontaneous social networks (Galaskiewicz and Wasserman 1989, Daponte and Bade 2006, Paarlberg and Varda 2009). These informal structures are often composed of a large number of weak ties between many different actors, and derive their strength from the number of ties rather than from their intensity (Granovetter 1973). Such networks have been argued to be supportive for the identification of collaboration initiatives, attracting resources and the quick diffusion of general information (Galaskiewicz and Wasserman 1989, Daponte and Bade 2006, Paarlberg and Varda 2009, Crispeels et al. 2013).

Given the different nature of a board network, further research could dig into the complementarity of the board-of-director network with other types of organizational networks. In particular, the higher formality of the relationships and the more advanced content of the relationship (at least from a strategic point of view), may compensate for the low amount of ties in board networks. Furthermore, the coexistence of different types of networks, for example a strong board network on-top of a wide spread interpersonal and informal network based on collective identity (Bayat 1997, Polleta 1999), could have different types of ‘good’ or ‘bad’ outcomes (as discussed above). As a result, the interaction or combination with other types of networks could be investigated as additional factors to the potential outcomes of board network clustering.

6 Conclusion

We examined whether nonprofit organizations are more likely to share one or more directors in their boards when they are more similar in terms of their (1) operational activities, (2) size, and (3) funding structure. In general, we can conclude that similar organizations indeed are more likely to interlock, and that groups of similar organizations tend to cluster. This leads us to three areas in which further research in this domain can be developed. In particular we propose further research avenues relating to the potential advantages and disadvantages of network clustering, the causality of the relationship found, and the complementarity of the board network with other social networks.

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Appendix

In this appendix we report on an extra descriptive analysis on several clustering metrics in the board network that we studied. These metrics are described in full detail in Willems and Jegers (2012b). A summary of the metrics is given in Table 3, while Figure 2 is built on to explain the different metrics.

From a practical point of view, clustering of organizations (or directors) offers an understanding of the number of different options for two boards (or two directors) in a network to get in touch with each other (Robins and Alexander 2004). As a consequence, when clustering is high, information and knowledge can flow between organizations and directors through different ways and is therefore less dependent on the ability and/or cooperation of particular directors and/or organizations in the network.

Analogous to the metrics that we used for similarity of interlocked organizations (Moran's I statistics), we have generated a set of reference networks to make an assessment of the strength of the clustering possible (bootstrapping). Therefore, the actual observed metrics for clustering are compared to a distribution of a simulated set of alternative networks. Table 4 gives the results of this comparison. In general, we can conclude that clustering is higher than what is expected if interlocking directorships would emerge randomly, and would not be related to similarity between organizations.