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**Board and auditor interlocks and voluntary
disclosure in annual reports**

Geert Braam

Lex Borghans

Nijmegen Center for Economics (NiCE)

Institute for Management Research

Radboud University Nijmegen

P.O. Box 9108, 6500 HK Nijmegen, The Netherlands

<http://www.ru.nl/nice/workingpapers>

Abstract

This paper explores the role of the interlock ties of the board of directors and the external auditors in facilitating cross-firm diffusion of voluntary disclosure practices. Using data from 149 companies listed on the Dutch stock exchange, we investigated the relationship between a firm's voluntary disclosure of financial and non-financial performance measures in its annual report and the incidence of disclosure of these performance indicators in annual reports of other companies to which the firm is related via the interlock ties of the executive and supervisory board members and its auditor. To cover a firm's financial and non-financial aspects of performance, we classified the incidence in the annual report of the different performance measurement items within the four Balanced Scorecard perspectives of Kaplan and Norton (1992 and 1996). Our results suggest that firms with board members who also sit on the boards of directors of other firms have a higher probability of voluntarily reporting similar financial and non-financial disclosures in their companies' annual reports. The experience of the CEO is relevant for information disclosure about customers, while members of the supervisory board, especially the chairman, seem to promote additional information about learning and growth. Finally, the experience of the auditor matters for disclosure of financial performance indicators in the annual report.

Geert Braam, Nijmegen Center for Economics (NiCE), Institute for Management Research,
Radboud University Nijmegen, P.O. Box 9108, 6500 HK Nijmegen, The Netherlands,
g.braam@fm.ru.nl

Lex Borghans, Department of Economics, Faculty of Economics and Business Administration
Maastricht University, P.O. Box 616, 6200 MD Maastricht, The Netherlands,
lex.borghans@algec.unimaas.nl

Introduction

The concern that traditional financial reports do not adequately represent the multiple dimensions of corporate value today has resulted in a search for new financial metrics (Rappaport, 1998; Steward, 1999), and/or additional non-financial performance measures (Kaplan and Norton, 1992 and 1996; Sveiby, 1997). Associated with these developments has been a growing tendency for companies to voluntarily disclose financial and non-financial performance measures in their annual reports. However, it is unclear whether this information helps firms to gain competitive advantage and improve company performance. Performance disclosures over and above mandatory requirements may positively influence capital providers and other stakeholders in their resource allocation decisions, but may also potentially damage the firm, for instance if they result in increased competition (proprietary costs) or additional regulation. To adequately respond to external expectations and pressures, a firm's board of directors may need information that advances their knowledge about the economic consequences of voluntary performance disclosure and its implications for the firm's legitimacy. The question arises as to which sources of information help a firm to deal with uncertainty and constraint associated with their voluntary disclosure decisions.

In this paper we explore the role of the interlock ties of board members and external auditors in facilitating cross-firm diffusion of voluntary disclosure practices. Directors and auditors often work for several firms, which allows them to bring experience from one firm to another (Conyon and Muldoon, 2006). We investigate the relationship between a firm's voluntary disclosure of performance measures in its annual report and the incidence of disclosure of these performance indicators in annual reports of other companies to which the firm is related via the interlock ties of the executive and supervisory board members and its auditor. The existence of board and auditor interlocks creates information exchange channels between organisations which can help firms to reduce uncertainties and share information about effective and acceptable corporate disclosure practices. From an informational perspective, these social networks are influential in corporate decision-making and control relative to other sources of information because of the trustworthy, credible and, consequently, persuasive nature of the information they convey (Useem, 1984; Haunschild, 1993; Davis, 1996; Geletkanycz and Hambrick, 1997; Carpenter and Westphal, 2001; Rogers, 2003). The idea of this paper is to identify the cross-firm diffusion of voluntary annual reporting practices using information from the interlocks of firms' boards of directors and their external auditors. We applied this approach to companies in a small region, i.e. Dutch

firms, since relatively small communities are characterised by a high degree of interlocking relationships ((Mizruchi, 1996; Carroll and Fennema, 2002; Heemskerk and Fennema, 2009). We used cross-sectional data from 149 non-financial companies listed on the Dutch stock market in 2004 to identify interlocking directorates and auditors in a two-tier system, and to assess these firms' voluntary disclosure of performance measures in their annual reports. To cover a firm's financial and non-financial aspects of performance, we classified the incidence of the different performance measurement items within the four Balanced Scorecard perspectives of Kaplan and Norton (1992 and 1996), i.e. financial, customer, internal business processes, and learning and growth.

Our results show that director and auditor interlocks mattered for voluntary disclosure. Experiences of board members with similar corporate disclosure decisions in other companies were related to a firm's incidence of disclosing financial and non-financial measures in the annual report. More specifically, our results suggest that the experience of the CEO was relevant for information disclosure about customers, while members of the supervisory board, especially the chairman, seemed to promote additional information about innovation. The experience of the chairman also mattered for the disclosure of information on internal business processes. Finally, the interlock ties of the external auditors increased the likelihood of disclosing information on financial aspects, while the experience of the members of the supervisory board, excluding its chairman, seemed to reduce this likelihood. These results suggest that companies tend to learn from and model their voluntary disclosure of financial and non-financial performance measures in the annual reports on the best annual reporting practices of organisations to which they are interconnected via their board and auditor interlocks

This study contributes to the literature in several ways. First, the literature on voluntary disclosure studies empirically to what extent voluntary disclosure in annual reports is related to corporate characteristics and other determinants. Findings have consistently shown a significant and positive association between corporate size and foreign listing status and the extent of voluntary disclosure in annual reports (Cooke, 1989 and 1992; Wallace et al., 1994; Hossain et al., 1994; Depoers, 2000; Raffournier, 2005; Boesso and Kumar, 2007). In addition, empirical studies show a positive association between board independence and voluntary disclosure in countries in which investor protection rights are high (Eng and Mak, 2003; Cheng and Courtenay, 2006; Lim et al., 2007; García-Meca and Sánchez-Ballesta, 2010). Moreover, executive and non-executive board members may have different incentives to voluntarily report different types of disclosure in their companies' annual reports (Lim et

al., 2007). This study adds to this literature by examining the association between board interlocks and the incidence of voluntary disclosure of financial and non-financial performance measures in annual reports and the differences in the association between the interlock ties of executive and supervisory board members in a two-tier system and this voluntary disclosure.

Second, the literature on the measurement of voluntary disclosure in annual reports uses a variety of frameworks to measure voluntary disclosure of financial and non-financial performance measures in published reports (Wallace et al., 1994; Ahmed and Courtis, 1999; Watson et al., 2002). In the absence of a generally accepted model for classifying the financial and non-financial disclosure items, in this study we used the four measurement perspectives of the Balanced Scorecard described by Kaplan and Norton, i.e. 'financial', 'customer', 'internal business', and 'learning and growth' (1992 and 1996) to assess the comprehensiveness of firms' voluntary disclosure on financial and non-financial aspects of performance in their annual reports.

Third, in the literature on board interlocks, from a network perspective, board and auditor interlock ties to other firms are a form of social capital that provides access to information that flows through the network social networks in management (e.g. Mizruchi, 1996; Borgatti and Foster, 2003). Board interlocks have been found to influence many organisational practices, including CEO compensation (Hallock, 1997; Geletkanycz, Boyd and Finkelstein, 2001), governance practices (Davis, 1991), mergers and acquisitions (Haunschild, 1993), organisational structures (Palmer, Jennings and Zhou, 1993), ISO quality systems (Chua and Petty, 1999) and joint venture formation (Gulati and Westphal, 1999). This study contributes to this literature by exploring whether and how board and auditor interlock ties facilitate the inter-organisational diffusion of voluntary disclosure practices in annual reports.

Finally, in spite of the fact that interlock research mainly focuses on the effects of direct network ties, empirical evidence suggests that indirect network ties influence and constrain the effects of direct ties (Gulati and Westphal, 1999). In this paper we explore the role of the interlock ties of external auditors in facilitating cross-firm diffusion of voluntary disclosure practices. Literature suggests that the contents of annual reports are not only audited but also influenced by auditors (Wallace et al., 1994). Specifically, audit firms perceived as offering 'high quality' services may likely incite firms to disclose more information in annual reports (Firth, 1979; Hossain et al., 1994; Raffournier, 2005). However, empirical support for the relationship between audit firm size and the level of voluntary

disclosure is inconclusive (Wallace et al., 1994; Ahmad and Courtis, 1999). This study adds to this literature by investigating the relationship between a firm's voluntary disclosure of performance measures in its annual report and the disclosure of financial performance indicators in annual reports of other companies to which the firm is related via its auditor.

The remainder of the article is structured as follows. First, we review related literature and develop hypotheses regarding the relationship between board and auditor interlocks and voluntary disclosure of financial and non-financial measures in annual reports. Next the research method is described, and the results are presented and discussed. Finally, we draw conclusions, discuss limitations of our study, and point out directions for further research.

Literature review and hypotheses development

There is growing agreement that traditional financial reports do not adequately represent the multiple dimensions of corporate value today. Organisations increasingly rely on intangibles and intellectual assets in their value creation process rather than on traditional production factors such as physical and financial capital. However, mandatory information disclosure on intangible assets in annual reports is limited.¹ Nevertheless, agency, signalling and legitimacy theory suggest that organisations may have incentives to voluntarily disclose financial and non-financial performance information that is deemed relevant to the decision needs of capital providers and other stakeholders (Ahmad and Courtis, 1999; Watson et al., 2002). For instance, organisations that compete with each other for funds in capital markets may reveal financial and non-financial performance measures in their annual reports over and above those that are mandatory. Such disclosures may reduce uncertainty, thereby lowering the cost of capital. On the other hand, voluntary information disclosure may also potentially damage the firm, if it were to result in increased competition or additional regulation (Wallace et al., 1994; Meek et al., 1995; Verrechia, 2001; Healy and Palepu, 2001).

In uncertain and competitive environments, new institutional sociology suggests that organisations are more likely to imitate other organisations in their field that they perceive to

¹ Traditional financial reports have to provide for the recognition and measurement of physical and financial capital, while the financial statements only have to report on intangibles such as brand equity, patents and goodwill when they meet stringent recognition criteria. However, it is not mandatory to report information about the valuation of a company's intangible and intellectual assets, such customer relationships, employee competencies, new products and services, and responsive and effective internal processes.

be more successful or legitimate (DiMaggio and Powell, 1983; Powell and DiMaggio, 1991).² Driven by the need to gain organisational effectiveness and/or social legitimacy, organisations tend to learn and model themselves on other organisations (Oliver, 1991). As a consequence, processes of inter-organisational imitation – or mimetic isomorphism – lead to cross-firm diffusion of innovative organisational practices and ideas making organisations more similar. This inter-organisational imitation should help to deal rationally with uncertainty and constraint. In addition, normative pressures and professional networks also lead to processes of mimetic isomorphism. DiMaggio and Powell (1991) propose that mimetic isomorphism may be affected through change agents like interlocking directorates and consultants.

An interlocking directorate occurs when a person affiliated with one organisation sits on the board of directors of another organisation (Mizruchi, 1996). Interlock literature emphasises the role of board interlocks as an important source of inter-organisational information exchange about potentially effective innovative corporate practices (Useem, 1984; Davis, 1996; Carpenter and Westphal, 2001; Borgatti and Foster, 2003; Rogers, 2003). Board interlocks provide opportunities to share strategic information and learn about innovations that might help to create sustainable competitive advantage (Geletkanycz and Hambrick, 1997; Haunschild and Beckman, 1998; Gulati and Westphal, 1999; Carpenter and Westphal, 2001). They enable board members to achieve a ‘business scan’ of latest business practices, observing innovative practices in other firms, and witnessing firsthand the consequences of those practices (Useem, 1984). Moreover, direct contact with an innovator may help to clarify whether and how a specific innovation might fit unique organisational needs and opportunities. Especially in uncertain environments, interlocks are important to reduce the uncertainty and risks associated with the innovation (Haunschild, 1993; Carpenter and Westphal, 2001). From an informational perspective, interlocks are considered as influential in corporate decision-making and control relative to other sources of information, because of the trustworthy, credible and, consequently, persuasive nature of the information they convey (Borgatti and Foster, 2003). For these reasons, network research in management suggests that interlocking directorates are key antecedents to consider when explaining the

² DiMaggio and Powell (1983, 1991) identify three mechanisms other than competition to explain why isomorphic organisational change occurs: coercive isomorphism that stems from political influence and the problem of legitimacy; mimetic isomorphism resulting from the standard response to uncertainty; and normative isomorphism associated with professionalism. These mechanisms are analytically distinguishable yet not necessarily empirical (DiMaggio and Powell, 1983: 150). This paper focuses on the influence of mimetic and normative processes.

inter-organisational diffusion of voluntary disclosure practices, i.e. copying best annual reporting practices. Given this, we proposed the following hypothesis:

H1: Voluntary disclosure of performance measures in a firm's annual report is positively related to voluntary disclosure of performance measures in annual reports of other companies to which the firm is related via their board interlocks.

In empirical research on board interlocks, all interlock ties are generally treated as equal connections that facilitate the exchange of information between firms (Gulati and Westphal, 1999). However, interlocks may not affect outcomes uniformly (e.g. Haunschild and Beckman, 1998; Carpenter and Westphal, 2001; Borgatti and Foster, 2003). In a two-tier structure, executive board members, who are responsible for the administration of the firm, may use their experience in other firms in different ways from the supervisory members, who are formally independent from management and have to oversee and advise the executive board on behalf of the shareholders' interests. As representatives of owners, the supervisory board members, and particularly the members of the audit committee, are charged with oversight of financial reporting and disclosure to monitor managers' behavior and reduce the information asymmetry between managers and shareholders. Consequently, they may have different incentives to voluntarily report financial and non-financial disclosure in their companies' annual reports than executive board members (Lim et al., 2007).

Empirical studies show a positive association between board independence and voluntary disclosure in annual reports in countries in which investor protection rights are high, suggesting that the composition of the board affects voluntary disclosure in annual reports (Eng and Mak, 2003; Cheng and Courtenay, 2006; Lim et al., 2007; Li et al., 2008; García-Meca and Sánchez-Ballesta, 2010). Lim et al. (2007) suggest that boards composed of largely non-executive and independent directors provide more voluntary disclosure of forward looking and strategic information in annual reports than inside directors to protect their reputation as experts in decision control and to reduce their exposure to litigation risk from managers' poor management and from inside directors providing misleading information. Consistently, we expect that the heterogeneity among board members may also affect the extent to which they use their experience with voluntary reporting practices in other firms to convey information and influence corporate disclosure decisions. Hence:

H2: The positive correlation of voluntary disclosure of performance measures in a firm's annual report with the voluntary disclosure of performance measures in annual reports of other companies to which the firm is related via their board interlocks depends on the positions of members on the board.

Finally, interlock research focuses on the effects of direct network ties. However, empirical evidence suggests that indirect network ties – or third-party ties – can influence or condition the effects of direct ties on various organisational practices. As a consequence, modelling the influence of indirect network ties on a firm’s decision-making can contribute to understanding the effects of interlocks (Gulati and Westphal, 1999). In this paper we examine the association between the interlock ties of the external auditors and voluntary disclosure of financial and non-financial performance measures in corporate annual reports. Auditors often work for several firms, which allow them to bring experience from one firm to another. They may thus use their experience with annual reporting practices in other firms to influence and constrain the company’s executive and supervisory board members’ decision-making processes on voluntary corporate annual disclosure, and help them to deal with related uncertainty. For normative reasons, their main focus will be on disclosure of information on the financial position, performance, and changes in the financial position of a reporting firm. Hence:

H3: Voluntary disclosure of performance measures in a firm’s annual report on its financial position, performance, and changes in financial position, is positively related to voluntary disclosure of similar performance measures in annual reports of other companies to which the firm is related via their external auditor.

Research method

Data

The data used in this paper were collected from different sources. First general firm data and information about the interlock ties of the boards of directors and the auditors were collected from Osiris and Amadeus. Osiris is a comprehensive database of listed companies, banks and insurance companies around the world covering more than 190 countries and containing information on over 57 thousand companies. The Amadeus database contains financial information on over 11 million public and private companies in 41 European countries. Second, data on disclosure of financial and non-financial performance measures in the companies’ annual reports were collected from Company.info. Company.info is a database that contains comprehensive information about more than 2 million public Dutch firms. Two independent raters with an accounting background used content analysis to analyse the information disclosed in the annual reports. Subsequently, these data were merged yielding a complete data set.

We used data from Dutch companies, since the Netherlands is a small country that is characterised by a high degree of interlocking relationships (Carroll and Fennema, 2002; Heemskerk and Fennema, 2009). An additional advantage of using companies from the same small country is that they have to meet the same institutional requirements, and face the same set of environmental conditions. As a consequence, they are subject to similar coercive pressures (DiMaggio and Powell, 1983). The companies that we selected were publicly listed on the NYSE Euronext Amsterdam in 2004 with their headquarters in the Netherlands. The Netherlands is a small, internationally oriented country with a codified system of law and a strong equity market (Nobes, 1998). Nobes and Parker (1995) classify the Netherlands at the extreme of the classification structure, i.e. micro-based and influenced by business economics theory. At the same time, the Netherlands has a strong equity market with a relatively large number of multinational corporations (Nobes, 1998). In addition, Dutch financial reporting practices are relatively close to UK and USA accounting practices (Weetman and Gray, 1991; Camfferman and Cooke, 2002). Our sample comprised 149 Dutch companies. All these companies had a two-tier structure. Table 1, panel A presents the distribution of the sample firms across industry – using the 2-digit SIC codes – and size.

[Insert Table 1]

Measurement of variables

Dependent variables

To measure the incidence of voluntary disclosure of financial and non-financial performance measures in the annual reports, we used an index of comprehensive disclosure. In the absence of a generally accepted model for classifying the financial and non-financial disclosure items (Marston and Shrivies, 1991; Wallace et al., 1994; Ahmed and Courtis, 1999; Watson et al., 2002), we used the four measurement perspectives of the Balanced Scorecard described by Kaplan and Norton, i.e. 'financial', 'customer', 'internal business', and 'learning and growth' (1992 and 1996).³ This measurement framework aims to provide a comprehensive set of financial and non-financial information on a firm's performance. It includes financial measures that tell the results of actions already taken. And it complements the financial

³ Please note that many measurement frameworks use the same broad categories. For instance, the balanced scorecard (Kaplan and Norton, 1992 and 1996) and the intangible asset monitor (IAM) (Sveiby, 1997) both classify intangibles in three categories. The categories 'external structure', 'internal structure' and 'competence of personnel' of the intangible asset monitor are closely related to the balanced scorecard perspectives 'customer', 'internal business', and 'learning and growth' (Petty and Guthrie, 2000).

measures with operational measures on customer satisfaction, internal processes, and the organisation's innovation and improvement activities' (Kaplan and Norton, 1992:71). We used 20, 17, 12 and 19 performance measurement items to cover these scorecard perspectives. The disclosure items were based on items used in earlier studies (Firth, 1979; Hossain et al., 1994; Meek et al., 1995; Depoers, 2000; Guthrie, 2001; Olson and Slater, 2002; Maltz et al., 2003; Eng and Mak, 2003; Guthrie et al., 2006; Lim et al., 2007; Boesso and Kumar, 2007; Li et al., 2008;). In addition, the list of items was restricted to items that were relevant for all sample firms, so as not to penalize firms for not disclosing any item (Cooke, 1989; Wallace et al., 1994). Appendix A presents a full overview of the performance measurement items used. The items are classified per scorecard perspective.

The approach to scoring items was dichotomous in which an item scores 1 if disclosed and 0 if not disclosed (Cooke, 1989, 1992). Using the Company.info database, two independent raters with an accounting background examined the entire contents of the corporate annual reports to assess the disclosure scores using both the quantitative and qualitative information. To control for subjectivity during these content analyses, in the event of differences in judgment between the raters, the best interpretation was discussed in a meeting of the raters and the authors of this paper. Subsequently, for each company we calculated a disclosure index for each measurement perspective. To compute these indices, the scores of the individual items in a specific scorecard perspective were added and divided by the maximum number of items. Consequently the scores ranged from 0 to 1. Subsequently, for each corporate annual report a disclosure index was calculated. This measure of the overall incidence of voluntary disclosure of performance measures in the annual report was calculated by dividing the sum score on the four separate disclosure perspectives by four. An issue of some importance was weighting of disclosure items. Consistent with prior research (Cooke, 1989, 1992; Camfferman and Cooke, 2002), we assumed that each disclosure item and each measurement perspective was equally valuable.

Independent variables

To identify the interlocking directorates we used the Osires database which provides the names of all board members in the sample firm, with their function within the firm. After correcting differences in spelling of the name of the same person, we matched each board member within a firm to all the other firms in which this person was also a board member (Davis, 1991; Haunschild, 1993; Palmer, Jennings and Zhou, 1993; Conyon and Muldoon, 2006). Based on these relationships, we calculated the average and maximum disclosure

scores on the performance measurement items on the four perspectives for each member in each of his/her related firms, thus excluding the focal firm. These numbers therefore indicated the average and highest outside experience of the board members with disclosure of financial and non-financial measures in annual reports of their related firms (e.g. Carpenter and Westphal, 2001). Theories about the diffusion of information acknowledge that both a best example (i.e. the maximum) and the frequency of observed use can influence others (Rogers, 2003).

To aggregate these outside experiences of all individual board members to figures at firm level, we clustered the functions of the board member into five categories: 1. CEO; 2. CFO; 3. other member of the executive board; 4. chairman of the supervisory board; and 5. other member of the supervisory board. Per firm, we assessed the average and maximum disclosure scores for all these categories. Subsequently, we computed the average or the maximum scores for board members in the executive board (1.–3.) versus members of the supervisory board (4.–5.). Finally, we assessed the average and maximum experiences for the board of directors as a whole (1.–5.). We used a similar approach to measure the interlock disclosure scores related to a firm's external auditor.

Control variables

We included the natural logarithm of total employees and/or total assets, and industry dummies as control variables. The natural logarithm of total employees or total assets was included to proxy for the size of the company. Agency, signalling and legitimacy theory suggests that larger companies have to provide more financial and non-financial information to meet the requirements and expectations of their interested parties than their smaller counterparts (Ahmed and Courtis, 1999; Watson et al., 2002). For larger firms the relative costs of extensive information collection are also smaller. The industry dummies were included to control for industry effects on corporate disclosure practices.

Analysis

Our hypotheses were tested using linear regression models. The regression models estimated the relationships between the incidence of disclosure of financial and non-financial measures in a firm's annual report and the disclosure of performance indicators in annual reports of other companies to which the firm is related via the interlock ties of the executive and supervisory board members and its auditor. Before explaining the results of the regression analysis, the model was tested for linearity, homoscedasticity, multicollinearity and normally

distributed data. The scatter plots of the residuals show a random array of dots, indicating linearity and homoscedasticity. The variance inflation factor (VIF) was smaller than 2 for each of the variables in each of the regression models, which indicates the absence of multicollinearity. Finally, all variables were normally distributed. Table 2 presents the correlation between total scores on information disclosure and the sub scores in the specific measurement perspectives with and without correction for size effects. The correlations between the total disclosure score and the sub scores with and without correction for size effects ranged from 0.512 and 0.439 for the financial perspective to 0.846 and 0.830 for the learning and growth perspective, indicating acceptable internal levels of consistency.

[Insert Table 2]

Since a firm's board members or its external auditor do not always have interlocks, some data on the outside experience of the board members and the auditors with voluntary disclosure in annual reports of related firms were missing. To eliminate potential biases caused by these missing variables, we used the dummy variable adjustment method or missing-indicator method (Allison, 2001). This method creates dummy variables to use all the information that is available about the missing data. To produce optimal estimates for the missing predictors in a regression analysis, the dummy variables are equal to 1 if the specific group of board members or the external auditor of the focal firm do not have interlocks, otherwise they are 0. The dummy coefficients indicate the effects of not having experience with disclosure of performance measures in related firms on a firm's corporate annual disclosure. In the same regression, the average and maximum interlock (sub) scores for the companies with interlocks in related firms indicate the outside experience of the board members and the auditors in their related firms with disclosure of performance measures in annual reports.

For reasons of robustness we performed similar regression analyses with different measures for the experience of board members who did have interlock ties, i.e. the maximum and average interlock scores. In most cases we report the results using the measure based on averages only, but in all cases the results for the maximum scores were quantitatively the same.

Results

Table 3, panel A and B report the results of the regression analyses for the hypothesized positive relationship between voluntary disclosure of performance measures in a firm's

annual report and the voluntary disclosure of performance measures in annual reports of other companies to which the firm is related via their board interlocks. In Table 3, panel A we used the average scores on disclosure of performance indicators in related firms as the measures of the experience of a firm's interlocking board members. Panel A, models 1-3 explained 21–24% of the variation of the scores on information disclosure in the focal firms' annual reports while using different control variables (model 1: adj. $R^2 = 0.24$, $F = 4.9$, $p < 0.01$; model 2: adj. $R^2 = 0.21$, $F = 9.1$, $p < 0.01$; model 3: adj. $R^2 = 0.21$, $F = 7.5$, $p < 0.01$). Furthermore, as anticipated, the experience of board members with corporate information disclosure in other firms they are associated with consistently had a positive and significant relationship with disclosure of performance measures in the firm's annual report. The effects were strong (model 1–3: $\beta = 0.34$; $\beta = 0.34$; $\beta = 0.35$, $p < 0.05$ respectively). The impact of not having board interlock ties on disclosure of performance indicators in a firm's annual report was also significant, but this effect was relatively small (both model 1–3: $\beta = 0.15$, $p < 0.01$ respectively). These results suggest that companies copy the best annual reporting practices of organisations to which they are related via their board interlocks, suggesting that interfirm network ties of board members positively facilitate cross-firm diffusion of disclosure of performance measures in annual reports. This provides support for H1.

In Table 3, panel B we tested the robustness of our results by performing the same regression analyses but using the maximum scores on voluntary disclosure of performance measures in related firms as the independent variables that reflect the experience of a firm's interlocking board members. A comparison of the results in panels A and B showed that the relationships between a firm's voluntary disclosure of performance measures in its annual report, and the average and maximum experiences of the board members with voluntary information disclosure in related firms were consistently positive and significant, and thus robust. In addition, and also for reasons of robustness, we performed similar regression analyses with different measures for company size and with and without controlling for industry effects. The results in panels A and B, models 1–3 showed no quantitative differences when different measures of size were used and industry effects were controlled for or not. In the remainder of this paper, in the Tables 4–5 we report the average scores on disclosure of performance measures in related firms as the measures of the outside experience of the board members, while using the natural logarithm of total employees and industry dummies as control variables. Additional analysis showed that the results in the Tables 4–5 would not be substantially different with other indicators for size and/or voluntary disclosure practices in other firms or without industry dummies.

[Insert Table 3]

To further explore the findings of Table 3, panel A, model 1, in Table 4 we also used the disclosure scores on the four measurement perspectives of the Balanced Scorecard as dependent variables. The additional analyses in Table 4 show strong and positive significant relationships between experience of board members with voluntary disclosure of performance measures on the 'customer' and 'learning and growth' perspectives in the annual reports of related firms, and disclosure of performance measures in these measurement perspectives in the focal firm's annual report ($\beta = 0.271$, $p < 0.10$; $\beta = 0.379$, $p < 0.01$ respectively). These findings show that firms with board members who also sit on the board of directors of other firms have a higher probability of voluntarily disclosing specific performance measures in annual reports than firms whose board members do not have interlocks. These results suggest that board members with interlock ties put more emphasis on disclosure of specific performance information than board members who do not have interlocks. The findings provide additional support for H1.

[Insert Table 4]

Table 5 reports the regression results to test whether the positive correlation of voluntary disclosure of financial and non-financial performance measures in a firm's annual report with the voluntary disclosure of performance indicators in annual reports of other companies to which the firm is related via their board interlocks depends on the positions of members on the board. In Table 5 we classified the positions of a firm's board members into five categories, i.e. the CEO, the CFO, the other executive board members, chairman of the supervisory board and the other supervisory board members. The findings in Table 5 show that firms whose CEO and supervisory board members had interlock ties, had a higher likelihood of disclosing non-financial performance measures in specific measurement perspectives. That is, experience of the CEO was relevant for information disclosure about customers ($\beta = 0.42$, $p < 0.05$), whereas the chairman of the supervisory board seemed to promote additional information about learning and growth and internal business processes ($\beta = 0.47$, $p < 0.01$; $\beta = 0.31$, $p < 0.10$ respectively). Experience of the other members of the supervisory board also increased the likelihood of information being disclosed on the learning and growth perspective ($\beta = 0.27$, $p < 0.10$). These findings suggest that some interlock ties may promote the voluntary disclosure of performance measures in specific measurement perspectives. However, experience of the other members of the supervisory board was negatively related to the provision of information on financial aspects. Although this effect was small ($\beta = -0.02$, $p < 0.05$), this finding suggests that interlock ties can also reduce the

likelihood of disclosing performance indicators in specific measurement perspectives. Finally, no significant relationship was found between the board interlock ties of the CFO and the other members of the executive board and specific disclosure of performance measures in the annual reports. These results suggest that the interlock ties of board members with different positions can have different effects on firms' voluntary annual reporting practices. Some board members may use their experience in related firms in different ways from other board members to promote or reduce the likelihood of disclosing specific performance information. The findings therefore provided support for H2.

[Insert Table 5]

Tables 4 and 5 also show support for H3, which predicts a positive and significant relationship between the disclosure in a firm's annual report of performance measures in the financial perspective and the disclosure of performance measures about the economic position and performance in annual reports of other companies to which the firm is related via their external auditor. The effects were strong (Table 4: $\beta = 0.28$, $p < 0.05$; Table 5: $\beta = 0.26$, $p < 0.05$). The impact of not having auditor network ties on disclosure in the firms' annual reports of performance measures in the financial perspective was also significant, but this effect was relatively small (Table 4: $\beta = 0.02$, $p < 0.05$; Table 5: $\beta = 0.02$, $p < 0.05$). In addition, the results in Tables 4 and 5 show no significant relationships between voluntary disclosure of performance measures in the measurement perspectives 'customer', 'internal business' and 'learning and growth' in a firm's annual report and voluntary disclosure of these performance measures in annual reports of other companies to which the firm is related via the interlock ties of the auditor. These findings suggest that the interlock ties of the external auditors matter for provision of information on financial aspects in annual reports. The auditors may use their experience with annual reporting practices in other firms to condition or influence the company's annual reporting practices on financial aspects.

Conclusion and Discussion

This paper investigated the role of the interlock ties of executive and supervisory board members and external auditors in facilitating cross-firm diffusion of voluntary corporate disclosure practices in annual reports. To adequately respond to external expectations and pressures, a firm's board of directors may need information that advances their knowledge about the economic consequences of voluntary performance disclosure and its implications for the firm's legitimacy. Our theoretical framework suggests that in uncertain and

competitive environments, organisations are more likely to copy the best annual reporting practices of organisations to which they are connected via their board and auditor interlocks. Consistent with our general expectations, the results show that firms with board members who also sit on the board of directors of other firms had a higher probability of reporting similar financial and non-financial disclosures in their companies' annual reports. The experience of the CEO was relevant for information disclosure about customers, while members of the supervisory board, especially the chairman, seemed to promote additional information about innovation. The chairman's experience also mattered for provision of information on internal business processes. The interlock ties of the external auditors increased the likelihood of disclosing information on the financial perspective. However, the findings also show that the experience of the members of the supervisory board, excluding its chairman, reduced the likelihood of disclosing information on financial aspects. These results suggest that the interlock ties of the board members and the auditors provide access to intra-organisational information that is important in driving change of corporate disclosure practices. The networks of relationships in which firms were embedded profoundly influenced their disclosure of performance measures in the annual reports. As a consequence, the results stress the importance of paying attention to the influence of intra-organisational and interpersonal relations as well as corporate characteristics in explaining corporate disclosure practices.

This study has several limitations. Two of these limitations are the use of cross-sectional data from annual reports of a small community which limits the generalisability of our findings, and the assumption made in the empirical part of paper that the members of the board of directors uniformly affect the decisions to disclose performance information in the annual report. Regarding the latter, the expertise of non-executive board members may influence a firm's corporate disclosure practices (Hoitash et al., 2009). In addition, powerful actors on the board may form dominant coalitions which control the decision-making processes at strategic level (Zajac and Westphal, 1996; Carpenter and Westphal, 2001; Golden and Zajac, 2001). Consequently, the experience of some members of the board could be more influential than the experience of other interlock partners (Finkelstein, 1992). Another limitation of this paper is its focus on the inter-organisational social networks of the board of directors, ignoring the contributions of other actors via intra-organisational ties on the voluntary disclosure of financial and non-financial measures in corporate reports (DiMaggio and Powell, 1991). In addition, staff members and managers at business and departmental levels may also influence corporate disclosure practices.

This study, which was exploratory in nature, leaves ample scope for further research. First, future research could test and expand the research model using larger national and international samples to provide further insight into the external validity of the findings. In addition, this study focused on voluntary disclosure in annual reports. Further research could extend this by examining the association between the interlock ties of the board of directors and the external auditors with other forms of voluntary disclosure, such as press releases and management forecasts. Second, further studies could look at the extent to which the board interlocks of board members with expertise may affect corporate disclosure practices. In addition, future research could investigate whether dominant coalitions within the board of directors use their power and authority to influence accounting and governance practices. Finally, the analysis performed in this study could be complemented with the moderator effects of network ties of other groups of actors which could potentially influence and condition the diffusion of particular annual reporting practices. Increased understanding of the roles of both inter-organisational and intra-organisational social networks of the firm's key decision-makers may increase insight into the factors that facilitate the cross-firm diffusion of corporate disclosure practices.

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Table 1 Sample characteristics**Panel A: Firm characteristics**

Industry	Number of firms	Company size			
		No of employees		Assets per employee	
		Mean	Std. dev.	Mean	Std. dev.
Mining and construction	9	24875	37994	274	403
Manufacturing	66	12896	38581	221	223
Transportation and communication	17	16472	39050	4804	11119
Wholesale trade	15	10661	13941	185	220
Retail trade	10	25292	45473	3983	3099
Finance and Insurance	32	11501	39340	260	734
Total	149	14252	37147	962	3923

Panel B: Number of positions of the executive and supervisory board members at own and other firms they are associated with

Position in the board of directors	Number of board positions at own firm	Number of board positions at other firms			
		1	2	3	≥ 4
CEO	156	20	3	2	2
CFO	145	4	0	0	0
Other member of the executive board	284	9	1	0	0
Chairman of the supervisory board	150	21	16	11	0
Other member of the supervisory board	337	74	43	23	3
Total	1072	128	63	36	5

Table 2

Correlation between total scores on disclosure of performance measures and the sub scores on the four perspectives, with and without correction for size effects

Panel A: Pearson correlation coefficients without correction for size effects

	Total	Customer	Internal business	Learning and growth	Financial
Total	1.000				
Customer	.731***	1.000			
Internal processes	.722***	.374***	1.000		
Learning and growth	.846***	.449***	.636***	1.000	
Financial	.512***	.201**	.035	.266***	1.000

Panel B: Pearson correlation coefficients with correction for size effects

	Total	Customer	Internal business	Learning and growth	Financial
Total	1.000				
Customer	.688***	1.000			
Internal processes	.710***	.323***	1.000		
Learning and growth	.830***	.382***	.610***	1.000	
Financial	.439***	.101	-.041	.185**	1.000

***, ** and * indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

Table 3**Regression results based on the average and maximum experience of the board members and the external auditors****Panel A: Regression results based on average experience**

$$DC_i = \beta_0 + \beta_1 EXPBODAV_i + \beta_2 NOBOD_i + \beta_3 EXPAUDAV_i + \beta_4 NOAUD_i + \beta_5 LNEMP_i (+ \beta_6 LNTA_i) (+ \beta_7 IND_i) + \varepsilon_t$$

Variables	Model 1	Model 2	Model 3
	Base model	Base model excluding industry dummy controls	Base model excluding industry dummy controls plus additional size control
	Coef. Estimate (t-statistic)	Coef. Estimate (t-statistic)	Coef. Estimate (t-statistic)
Intercept	.127 (1.070)	.083 (.795)	.095 (0.855)
EXPBODAV	.336*** (2.633)	.339*** (2.631)	.345*** (2.642)
NOBOD	.150** (2.191)	.149** (2.173)	.152** (2.190)
EXPAUDAV	.219 (1.126)	.189 (.972)	.189 (0.972)
NOAUD	.073 (.723)	.049 (.493)	.051 (0.508)
LNEMP	.020*** (4.178)	.019*** (3.909)	.021*** (2.724)
LNTA			-.002 (-0.323)
Industry dummies	Included	Not included	Not included
F-statistic	4.895***	9.053***	7.515***
Adj. R ²	.240	.214	.209
N	149	149	149

Table 3 (Continued)

Panel B: Regression results based on maximum experience

$$DC_i = \beta_0 + \beta_1 \text{EXPBODMAX}_i + \beta_2 \text{NOBOD}_i + \beta_3 \text{EXPAUDMAX}_i + \beta_4 \text{NOAUD}_i + \beta_5 \text{LNEMP}_i + \beta_6 \text{LNTA}_i + \beta_7 \text{IND}_i + \varepsilon_i$$

Independent variables	Model 1	Model 2	Model 3
	Base model	Base model excluding industry dummy controls	Base model excluding industry dummy controls plus additional size control
	Coef. Estimate (t-statistic)	Coef. Estimate (t-statistic)	Coef. Estimate (t-statistic)
Intercept	.162 (1.465)	.128 (1.351)	.142 (1.389)
EXPBODMAX	.279*** (2.681)	.264** (2.521)	.271** (2.540)
NOBOD	.129** (2.147)	.122** (1.993)	.125** (2.018)
EXPAUDMAX	.203 (1.070)	.162 (.854)	.164 (.857)
NOAUD	.065 (.660)	.038 (.387)	.040 (.408)
LNEMP	.019*** (3.873)	.018*** (3.650)	.020*** (2.638)
LNTA			-.003 (-.373)
Industry dummies	Included	Not included	Not included
F-statistic	4.939***	8.935***	7.424***
Adj. R ²	.242	.211	.207
N	149	149	149

***, ** and * indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

Explanation of the variables

Dependent variable: DC = Disclosure score on the performance measures.

Independent variables: EXPBODAV = Average experience of board members in related firms. EXPBODMAX = Maximum experience of board members in related firms. NOBOD = No experience of board members in other firms. EXPAUDAV = Average experience of external auditor in related firms. EXPAUDMAX = Maximum experience of external auditor in related firms. NOAUD = No experience of external auditor in other firms. LNEMP = Natural logarithm of total employees. LNTA = Natural logarithm of total assets. IND = a vector of industry dummies based on the Standard Industrial Classification System two-digit code for industry sector. Results on the two-digit industry dummies are not reported for parsimony.

Table 4**Regression results using the total disclosure scores and the scores in the specific measurement perspectives**

$$DC_{i,j} = \beta_0 + \beta_1 \text{EXPBODAV}_i + \beta_2 \text{NOBOD}_i + \beta_3 \text{EXPAUDAV}_i + \beta_4 \text{NOAUD}_i + \beta_5 \text{LNEMP}_i + \beta_6 \text{IND}_i + \varepsilon_t$$

with j = Total, Customer, Internal Business, Learning and Growth and Financial

Independent variables	Total disclosure score [#]	Disclosure scores in the specific measurement perspectives			
		Customer	Internal Business	Learning and Growth	Financial
		Coef. Estimate (t-statistic)	Coef. Estimate (t-statistic)	Coef. Estimate (t-statistic)	Coef. Estimate (t-statistic)
Intercept	.127 (1.070)	.096 (.918)	.203* (1.703)	.065 (.478)	.211* (1.754)
EXPBODAV	.336*** (2.633)	.271* (1.947)	.070 (.557)	.379*** (2.862)	.003 (.363)
NOBOD	.150** (2.191)	.097 (1.532)	.016 (.248)	.202** (2.383)	-.024 (-.261)
EXPAUDAV	.219 (1.126)	-.208 (-1.931)	.206 (.865)	.206 (.945)	.284** (2.491)
NOAUD	.073 (.723)	-.035 (-.380)	.007 (.062)	-.016 (-.119)	.023** (2.365)
LNEMP	.020*** (4.178)	.030*** (4.159)	.014** (2.142)	.021*** (2.763)	.013** (1.990)
Industry dummies	Included	Included	Included	Included	Included
F-statistic	4.895***	5.237***	2.509**	6.611***	5.376***
Adj. R ²	.240	.125	.049	.159	.129
N	149	149	149	149	149

***, ** and * indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

Explanation of the variables

Dependent variables: DC = Disclosure score on the performance measures. The Total disclosure score on the performance measures is the average across the disclosure scores on the performance measures in the perspectives Customer, Internal Business, Learning and Growth and Financial.

Independent variables: EXPBODAV = Average experience of board members in related firms. NOBOD = No experience of board members in other firms. EXPAUDAV = Average experience of external auditor in related firms. NOAUD = No experience of external auditor in other firms. LNEMP = Natural logarithm of total employees. IND = a vector of industry dummies based on the Standard Industrial Classification System two-digit code for industry sector. Results on the two-digit industry dummies are not reported for parsimony.

[#] Findings as in Table 3, panel A, model 1.

Table 5**Regression results based on the average experience of executive and supervisory board members and the external auditors**

$$DC_{i,j} = \beta_0 + \beta_1 EXPCEOAV_i + \beta_2 EXPCFOAV_i + \beta_3 EXPEBOAV_i + \beta_4 EXPSBCAV_i + \beta_5 EXPSBOAV_i + \beta_6 NOCEO_i + \beta_7 NOCFO_i + \beta_8 NOEBO_i + \beta_9 NOSBC_i + \beta_{10} NOSBO_i + \beta_{11} EXPAUDAV_i + \beta_{12} NOAUD_i + \beta_{13} LNEMP_i + \beta_{14} IND_i + \varepsilon_i$$

with j = Total, Customer, Internal Business, Learning and Growth and Financial

Independent variables	Total disclosure score	Disclosure scores in the specific measurement perspectives			
		Customer	Internal Business	Learning and growth	Financial
	Coef. Estimate (t-statistic)	Coef. Estimate (t-statistic)	Coef. Estimate (t-statistic)	Coef. Estimate (t-statistic)	Coef. Estimate (t-statistic)
Intercept	-.414 (-1.345)	-.250 (-.808)	.051 (.109)	-.457 (-1.813)	.118 (.297)
EXPCEOAV	.293 (1.245)	.416** (1.968)	.210 (.904)	.093 (.418)	.000 (.007)
EXPCFOAV	.643 (.880)	.135 (.079)	.544 (.353)	.391 (.352)	.027 (.876)
EXPEBOAV	-.111 (-.421)	.009 (.030)	-.245 (-.799)	.283 (1.146)	.006 (.446)
EXPSBCAV	.360** (2.391)	.072 (.383)	.306* (1.912)	.469*** (2.955)	.003 (.441)
EXPSBOAV	.196 (1.359)	.210 (1.392)	-.214 (-1.554)	.272* (1.789)	-.020** (-2.233)
NOCEO	.139 (1.112)	.182* (1.875)	-.031 (-.293)	.063 (.443)	.014 (.062)
NOCFO	.324 (1.151)	.164 (.623)	.342 (.765)	.110 (.194)	.245 (.714)
NOEBO	-.025 (-.188)	.044 (.374)	-.108 (-.0799)	.223 (1.430)	.106 (.650)
NOSBC	.170** (2.131)	.026 (.324)	.138* (1.821)	.244** (2.398)	.010 (.095)
NOSBO	.060 (.778)	.017 (.250)	-.115* (-1.658)	.127 (1.337)	-.303** (-2.412)
EXPAUDAV	.144 (.743)	-.218 (-.955)	.188 (.773)	.111 (.458)	.264** (2.249)
NOAUD	.029 (.287)	-.024 (-.250)	.002 (.017)	-.081 (-1.552)	.021** (2.031)
LNEMP	.018*** (3.439)	.029*** (3.658)	.006 (.830)	.021*** (2.595)	.017** (2.372)
Industry dummies	Included	Included	Included	Included	Included
F-statistic	4.375***	2.668***	2.443***	3.190***	2.950***
Adj. R ²	.229	.128	.112	.161	.146
N	149	149	149	149	149

***, ** and * indicate statistical significance at the 1 percent, 5 percent, and 10 percent levels (two-tailed), respectively.

Explanation of the variables

Dependent variables: DC = Disclosure score on the performance measures. The Total disclosure score on the performance measures is the average across the disclosure scores on the performance measures in the perspectives Customer, Internal Business, Learning and Growth and Financial.

Independent variables: EXPCEOAV = Average experience of the CEO in related firms. EXPCFOAV = Average experience of the CFO in related firms. EXPEBOAV = Average experience of other executive board members in related firms. EXPSBCAV = Average experience of the chairman of supervisory board in related firms. EXPSBOAV = Average experience of the other supervisory board members in related firms. NOCEO = No experience of the CEO in other firms. NOCFO = No experience of the CFO in other firms. NOEBO = No experience of the other executive board members in other firms. NOSBC = No experience of the chairman of supervisory board in other firms. NOSBO = No experience of

other supervisory board members in other firms. EXPAUDAV = Average experience of external auditor in related firms. NOAUD = No experience of external auditor in other firms. LNEMP = Natural logarithm of total employees. IND = a vector of industry dummies based on the Standard Industrial Classification System two-digit code for industry sector. Results on the two-digit industry dummies are not reported for parsimony.

Appendix A Overview of performance measurement items

Customer perspective

- 1 Market share
- 2 Turnover segmentation to market segments
- 3 Market share growth related to sales growth
- 4 Marketing activities
- 5 Sales growth related to marketing activities
- 6 Corporate image or reputation
- 7 New customers or clients acquired
- 8 Customer satisfaction
- 9 Customer retention
- 10 Number of customer complaints
- 11 Average customer size
- 12 After-sales service and support
- 13 Warranty repair cost
- 14 Service/product quality
- 15 Number of orders or contracts acquired
- 16 On-time delivery
- 17 Percentage shipment returned due to poor quality

Internal business perspective

- 1 Order-delivery time
- 2 Time from order to delivery
- 3 Manufacturing lead time
- 4 Labour efficiency variance
- 5 Material efficiency variance
- 6 Ratio of good output to total output
- 7 Stock-out %
- 8 Cost reduction of operational processes
- 9 Efficiency of logistics
- 10 Percentage defective products shipped
- 11 Use of quality control systems (like TQM)
- 12 Safety requirements

Learning and growth perspective

- 1 Investment in research and development
- 2 Introduction of new products or services
- 3 Number of new patents or licenses
- 4 Time to market of new products
- 5 Investment in new market development
- 6 Investment in new technology development
- 7 Qualified leadership programs
- 8 Retention of top employees
- 9 Competency management
- 10 Employee satisfaction
- 11 Sickness and absence policy
- 12 Average employee tenure
- 13 Employee growth
- 14 Employee segmentation
- 15 Employee skills training programs
- 16 Employee remuneration policy
- 17 Employee suggestions and new ideas
- 18 Use of interactive control systems
- 19 Use of knowledge-sharing systems

Financial perspective

- 1 Sales growth
- 2 Return on sales
- 3 Assets turnover
- 4 Return on equity (ROE)
- 5 EBIT(DA)
- 6 Return on total assets (ROTA)
- 7 Return on capital employed (ROCE)
- 8 Gearing ratio
- 9 Solvency ratio
- 10 Interest cover
- 11 Tax growth or decline
- 12 Earnings per share
- 13 Price earnings ratio
- 14 Pay-out ratio
- 15 Dividend yield
- 16 Shareholders' equity per share
- 17 Market capitalisation
- 18 Development of shares
- 19 Remuneration to the board of directors
- 20 Profit per employee