Investigating the relationship between director's profile, board interlocks and corporate social responsibility

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Abstract

Purpose – The purpose of this paper is to discuss a research model that presents three metrics of corporate social performance (CSP): board interlocks, director's profile and corporate social responsibility (CSR).

Design/methodology/approach – Based on social network theories, the authors argue the possible relationships between the three variables. The authors conduct the study on 255 directorships in the boards of 20 listed companies in France, which participate in Carbon Disclosure Project (CDP) for 2010.

Findings – The results show that director's background and nationality diversity in the board are the most relevant attributes to discerning firms with high CSR scores. However, the relationship between board interlocks and CSR is not consistent. Some explanations are reported and discussed.

Research limitations/implications – The research contributes to recognize the most influential variables in board composition for firms with high CSR scores, although it is based on a conceptual development and an explorative analysis. It could constitute the basis for future research which integrates modeling and multivariate analysis.

Practical implications – Diversity in the board could be an effective tool to guide management for more CSR decisions.

Social implications – The paper highlights the importance of diversifying the recruitment base when integrating new board members. This implies opening board networks to new profiles, in order to better meet stakeholders' expectations regarding CSR.

Originality/value – The paper contributes to board literature by highlighting the importance of combining individual attributes (director) with corporate ones (board of directors) to better assess the role of board of directors in the adoption of CSR' practices.

Keywords Corporate governance, Network organization, Management research, Environment, Dynamic organizations, Group dynamics

Paper type Research paper

Introduction

Large companies need to apply more rigor in their non-financial information disclosure. In France, since 2001, "NRE" law obliges French listed companies to create a yearly corporate social responsibility (CSR) report. Recently[1], Boards of directors (BoD) have been demanded to improve the quality of information disclosed in their annual report and sustainability reports. Besides non-financial information disclosure, BoD has to check this information and provide retrospective and prospective visions. Thus, societal data provided in these reports have become enforceable and directors' liability may be incurred. Otherwise, they should integrate CSR risks into the company's strategy.

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Within the BoD literature, two research groups deal with CSR. The first one focuses on the relationship between the BoD's composition and CSR (Coffey and Wang, 1998; Villiers *et al.*, 2011; Hafsi and Turgut, 2013). The second one investigates the link between board interlocks, directors' characteristics, and the spreading of CSR practices (Robins and Alexander, 2004; Shropshire, 2010). The first research group is mostly based on agency theory and focuses on the control role of the board (Fama and Jensen, 1983; Ferris *et al.*, 2003; Monks and Minow, 1996; Perry and Peyer, 2005; Villiers *et al.*, 2011). The second research group mainly builds on identity, social network, and resources theories: researchers linger on the cognitive and behavioral dimensions of the board. In fact, they highlight the consultation role of the board. Research considers the inclusion of CSR on the agenda of the board as an enrichment of the directors' role, and not only as an additional responsibility (e.g. Hafsi and Turgut, 2013; Boulouta, 2013; Matten and Moon, 2004; Hung, 2011). Moreover, it contributes to organizational value creation, ensuring ethical practices within the top management and helping directors to improve the company's strategies. In order to better fulfil these new responsibilities, directors are encouraged to learn and train on specific issues and to quickly react to evolving business. In fact, a continuous training and a conscious commitment of directors to CSR partly depend on board interlocks and on directors' profile (Shropshire, 2010).

Previous research dealing with board interlocks use network theories to explore the powerful effects of boards' configurations, such as for instance, the degree of connectivity or centrality of a board member's cluster. Based on algorithm methods, these studies should not be considered an end per se within the whole research process (Alder and Kwon, 2002, p. 35). Moreover, most of these studies focus on financial performance as a dependent variable (Hafsi and Turgut, 2013); and only few of them deal with CSR (Hillman *et al.*, 2001; Johnson and Greening, 1999).

The objective of this paper is to contribute to literature on the functioning of BoD, by investigating the impact of the directors' profile and board interlocks on CSR. This paper has merit in that it attempts to improve the understanding of the complex mechanisms that drive CSR-activities. While, in the prior literature, the research questions on directors' characteristics and board interlocks lack originality, the binary approach of the research model is novel. Much of the early literature on CSR might be criticized for narrowly focusing on either boards as an instrument of control, or boards as a platform for knowledge transfer. This research does bring value in introducing a three-dimensional inter-organizational approach to account for CSR dynamics.

The structure of the paper is as follows. First, we introduce the conceptual framework. Second, we debate our propositions and present the research model. Third, we describe data, variables measurements, and our methodology. Finally, we present our results, discuss our findings, and conclude.

Conceptual framework

CSR: new stakes of contemporary corporate governance (CG)

Articulated by Aguinis (2011, p. 855) and adopted by others (e.g. Rupp, 2011; Rupp *et al.*, 2011; Aguinis and Glavas, 2012), CSR is defined as the: "context-specific organizational actions and policies that take into account stakeholders' expectations and the triple bottom line of economic, social, and environmental performance." This definition takes into account the complexity and the contingency of the concept (Henderson, 2001; Waddock, 2004). In fact, this complexity is reflected, first, through the conceptualization deficit (Dupuis, 2008; Aras and Crowther, 2008) and, second, by the evolution of this concept over time. CSR is initially limited to purely environmental

issues; it reflects today's sustainability issues and the way a corporate culture is established in large listed companies (Money and Schepers, 2007). Furthermore, Saulquin and Schier (2005) consider that CSR is the result of a social co-construction between the company and its stakeholders. This trend can also be observed through the institutional framework. For example, in 2011, the European Commission (EC) 2011 presents CSR as an obligation and not as a company's spontaneous action. Thus, it considers CSR as "a corporate responsibility towards the effects it has on society."

In recent years, CSR has become one of the privileged challenges of CG. Companies and their boards are expected to integrate CSR into their overall approach (Jamali *et al.*, 2008). In fact, CG is currently more stakeholder-oriented, and does converge better with CSR issues (Ayuso and Argandona, 2007). Besides, Dupuis (2008, p. 68) argues that "CSR practices are not limited to convey a stakeholder governance model. They also participate, equally and even more, to the emergence of networks governance." He emphasizes the ability of flexible firms, operating in a network, to adopt CSR practices beyond an imposed regulatory framework.

In contemporary CG, board interlocks can help stimulate the reflection and adoption of CSR (Shropshire, 2010).

BoD's involvement in CSR

The evolution of the conceptual framework of governance has led to greater commitment of boards in CSR. In fact, the shareholder theory restricts to the control role of the board of directors. However, the stakeholder theory extends the analysis of BoD (Ayuso and Argandona, 2007; Petrovic, 2008). Concerning the board composition, the stakeholder theory suggests a normative approach and an instrumental one. The normative approach emphasizes on stakeholders' representation within the board (employee directors, independent directors, executive directors, etc.). The instrumental approach focuses on board diversity as a social capital (Hillman and Dalziel, 2003; Hafsi and Turgut, 2013).

Regarding BoD and their involvement in CSR, we highlight two points in the following development. First, we are interested in the impact of board inter-connections in spreading CSR practices. Second, we investigate the individual dimension of boards. Indeed, we consider the impact of the directors' profile (gender, experience, background, etc.) in the adoption of CSR practices.

Board interlocks and the adoption of CSR practices. Board interlocks are a privileged channel for knowledge transfer in CSR and could play an important role in the adoption of governance practices (Del Vecchio, 2010). Thus, according to Davis and Greve (1997), changes in governance practices within the board of directors may be due to a process of adaptation to practices observed in other boards on which the directors sit. By comparing data on BoD from three countries (USA, Great Britain and Germany), Conyon and Muldon (2006) underlines the importance of the graph theory to better understand the functioning of BoD. They investigate both the connectivity between boards and between directors. In fact, by studying social networks and their impact on firms' strategy, socio-strategic theories provide a better understanding of CG practices. This provides insight into the link between boards and firms' performance, and especially corporate social performance (CSP). CSP is defined as "a business organization's configuration of principles of social responsibility, processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's societal relationships" (Wood, 1991, p. 693).

Henceforth, the board is a place for learning and a provider of cognitive resources (Charreaux and Wirtz, 2007). Del Vecchio (2010) confirms in the French context that board interlocks are a way of acquiring knowledge and skills. She adds that the density

of relations and their concentration around a node are key parameters to improve network efficiency.

Moreover, within the management literature, the network is an ideal vehicle for acquiring new knowledge. Companies that develop consistent strategies or belong to the same industry tend to adopt the same practices. They aim to acquire a legitimization among the most influential stakeholders, as stipulated by the institutional theory (DiMaggio and Powell, 1983) or to imitate others companies (homophily phenomenon).

However, the relationship between social networks and performance is not still positive. Stuart and Yim (2010) show that still public firms with board interlocks are much more likely to become targets in change-of-control transactions. Moreover, some previous research raised the non-linearity of the possible relationship that may exist between social networking and performance (Barnett and Salomon, 2006; Kim, 2005). For instance, findings by Lechner *et al.* (2010) show inverted U-shaped relationships between performance, relational and structural dimensions of networks. Kim (2005) suggests that "a moderate level of network board density enhances firm value, while too cohesive a board network destroys it."

Hence, based on the above discussion, we present a first proposition:

P1. There is a link between board interlocks and the adoption of CSR practices.

The diffusion of CSR' practices may also be affected by the directors' individual characteristics such as their competences, background, and motivation, which consist of their individual attributes.

Directors' profile and board interlocks. Directors' motivations to transfer CSR practices on the one hand, and the degree of influence that they can exert on the board on the other, are very crucial. Directors could be driven by "instrumental motivation" (Adler and Kwon, 2002) or "normative commitment" (Carroll, 1999; Adler and Kwon, 2002). Normative commitment implies that they contribute to CSR through their personal conviction. Concerning the instrumental motivation, the following figures can be considered. Recognition gained as "good" directors among the market and the opportunity to sit on others boards are one of their main motivations (Hillman and Dalziel, 2003; Westphal and Khanna, 2003). In fact, they often cultivate and exploit social networks in order to advance their careers. This may lead to an attitude of complacency with interpersonal behaviors between different directors. Westphal and Stern (2007) give the following example: being in favor of certain decisions in order to validate other ones or to gain directorships in other companies. Moreover, directors who sit on many boards do so in the company of other directors who sit on many boards. Board members, whose services are in high demand, serve on boards with similar directors (Conyon and Muldon, 2006). Boards have usually been considered as homogeneous groups of elites who have similar views on the appropriate business practices (Useem, 1986). Moreover, a director's personal linkages to a variety of stakeholders and situations provide the firm with "access to channels of information […] preferential access to resources and legitimacy" (Hillman *et al.*, 2009, p. 1408).

In line with social network theories, we put forward a second proposition:

P2. There is a relationship between the directors' profile and their opportunity to be involved in many boards.

Directors' profile and CSR practices. CSR practices may depend on the directors' profile. For example, PricewaterhouseCoopers (2007) conducted a survey involving directors of

companies listed on the CAC 40 index. According to this study, employed directors are mainly sensitive to the internal environment (working conditions, relations with NGOs, solidarity actions, etc.). However, chairmen pay more attention to long-term business economic development components. For independent directors, the company' policy and ethics are the most meaningful ones.

Directors' profile can be considered as one of the important criteria to be reflected when evaluating the dissemination of CSR practices.

The directors' experience and business expertise may strengthen their ability to contribute to board tasks (Finkelstein and Mooney, 2003). Their experience can be measured, not only through the number of seats held on other boards, but also through their precise mission: Are they executive directors, members or chairmen of board committees? Nonetheless, the responsiveness of boards to directors' experience may decrease due to their heavy presence on other boards; board attention may be shared between all its experienced directors. In fact, boards' composition and diversity may harm the decision making process (e.g. CSR practices). To summarize, boards' experience diversity presents both advantages and limitations in terms of quick decisions, quality of debate, and tangible results of such discussions (Harrison *et al.*, 2002).

Demographic board diversity may also have an impact on CSP. The divergence of ideas among the minority and information flows may both lead to innovative decisions (Zajac and Westphal, 1996). Ethnically diverse directors may influence board decisions on CRS issues and reaching better CSP. Giving cultural specificities, such diversity helps align the firm strategy with stakeholders' expectations.

Furthermore, directors' gender is one of the most important signals of diversity in corporate boards (Hillman *et al.*, 2007). In fact, female directors can influence board decisions (Bilimoria, 2000; Rosener, 1990, 1995; Selby, 2000; Huse *et al.*, 2009). The presence of women within the board improves qualitative decisions, as for instance CSR controls (Nielsen and Huse, 2010). This is usually due to the fact that they provide different perspectives and guide boards towards open conversations on CSR issues. Hafsi and Turgut (2013, p. 466) advance that "female directors add experience sets and values that are dissimilar to those of their male colleagues." They thus validate that the presence of female directors improve CSP. Therefore:

P3. There is a relationship between directors' profile and their aptitude to participate in the adoption of CSR.

Our research model sums up the propositions already presented: it is three-dimensional and contributes to achieving CSP (Figure 1).

We clarify that the present research is not interested in CSP as a final outcome or as a measure to assess CSR practices. It is focused on studying the process leading to this outcome. Wood (1991) emphasizes the ambiguity of the CSP concept through the

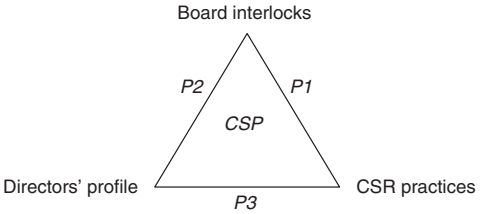

Figure 1.
Research model

various definitions and models presented in the literature. Therefore, she proposes that the institutional, organizational and individual levels should be taken into account. This is captured in our research model through the choice of the three following variables: board interlocks (organizational level), directors' profile (individual level) and CSR practices (institutional and organizational levels).

Empirical analysis

Sample and data

The study sample consists of French listed firms which are voluntarily involved to the Carbon Disclosure Project (CDP)[2]. The CDP supply chain program (2010) allows us to evaluate the extent to which CSR practices are adopted by firms. A CDP supply chain survey covers a range of relevant information about managing environmental questions. Information available in this request document is an indicator of how firms adopt CSR best practices and of how they integrate them into their strategic and operational decisions. Our final sample consists of 20 companies[3] (255 directorships), most of which from the manufacturing sector and listed on the Euronext (SBF 120).

Measurement of variables and method

Directors' profile. A rather extended empirical literature focuses upon directors' readily measurable attributes: director gender, nationality, age, experience (diplomas, careers, executive/non-executive functions, etc.), and seniority in the board. Hafsi and Turgut (2013) developed two indexes to measure both the diversity of the board (duality, board size, independence, ownership) and the diversity in the board (age, gender, experience, tenure, ethnicity). Although this method has the advantage of measuring a qualitative variable (directors' profile) from a set of items, it has the drawback of subjectivity in the weighting given to each item and in the discussion of result findings. We thus opt to take into account the individual effect of each "directors' profile" attribute. The aim is not to identify various directors' profile categories, but to highlight the most significant attributes in the adoption of CSR practices and/or board interlocks (Appendix 1).

CSR practices. As mentioned, we exclusively focus on firms that voluntarily participated in the CDP. This allows to pre-select those that are more sensitive to CSR issues. Joining a voluntary program does not necessarily imply that companies commit to CSR in the same way. The risk of sample selection bias that can taint the relationship between CSR and the other two variables in our research model can be circumvented by integrating a double measure of the adoption of CSR practices. Indeed, besides the disclosure score (DISTRAT) calculated within the CDP, we estimated a CSR score from CDP supply chain responses (see Appendix 1). This score aggregates three important items: environmental policy, governance structure, and environmental impact. This helps better identify the different companies' environmental behaviors and establish whether these behaviors are homogeneous.

Board interlocks. Previous research demonstrates that network connectivity has important consequences. For instance, boards that are "interlocked" facilitate the diffusion of executive compensation practices (Hallock, 1997 quoted by Conyon and Muldon, 2006; Fracassi and Geoffrey, 2012). By analogy, board interlocks may promote the dissemination of CSR practices. Conyon and Muldon (2006) argue that a board of directors could be considered as "the basic unit of analysis and form a graph whose vertices represent boards and whose edges represent shared directors." The authors affirm that ambiguity in the representation of interlocks is due to the choice between

directors and boards within the graph. In the present paper, we chose the second one (BoD). In a non-valued graph, nodes represent boards, and links between nodes denote the presence or absence of connections between two boards through a binary matrix: a 1 value indicates the presence of connections between two boards; a 0 value, their absence. Three centrality measures proposed by Freeman (1979) are calculated through this matrix (Appendix 1).

Results

Board interlocks and CSR practices

Board centrality. Three measures are considered.

The centrality scores of each node are provided in Appendix 2. We note that Air France-KLM and Total are assigned very high values in the first three indices. Air France-KLM is a gatekeeper for Alcatel-Lucent. This result is confirmed by the "betweenness flow score" that takes into account all the independent paths through which information can flow:

- Degree centrality: The index takes a positive value when boards are connected and zero otherwise (Appendix 2). A board of directors which is connected to boundary boards is much less central than a board which is linked to nodes that themselves are central. To solve this problem, we calculate for each node a relative or normalized centrality index by dividing the absolute centrality score by the maximum possible centrality for the graph. In our particular case, similar results are obtained. As for degree centrality, eight boards appear to have the most direct connections (more than three connections). Among these companies, three have high CSP score (Air France-KLM, Axa, Schneider), two a medium one (Veolia and Air Liquide) and three a low performance (Total, Valeo and Vivendi).
- Closeness centrality: is the inverse of the sum of geodesic distances from one board to all the other boards. It is calculated by adding all the geodesic distances to other nodes. The higher the index, the more central the board and the closer to the set of all other boards. This refers to the idea of a board being independent and autonomous or, in other words, to its potential impact and ability to obtain information. A board is considered influential if it is relatively close to all the other boards. Concerning closeness centrality measures, the results lead to the same conclusions presented above considering the centrality degree. Air France-KLM and Total are the most central actors in the network. We can expect them to be the more active in the transfer of CSR practices to other boards in the network. However, their CSR scores are not among the best. Their polluting activities may lead them to voluntarily limit the quality of information to be disseminated, or require more efforts to be among the best performing companies.
- Betweenness centrality: The "betweenness centrality" and the "betweenness centrality flow" enable to assess the possible information flow by boards, and the respective contribution of each node position (board of directors) to the knowledge transfer within CSR. We report the following conclusions. Air France-KLM, Total, Vivendi, and Valeo boards appear to be relatively a good bit more powerful than others. Clearly, there is a structural basis for these actors to perceive that they are "different" from others in the population. The flow approach to centrality expands the notion of "betweenness centrality." It assumes that actors will use all pathways that connect them, proportionally to the length of the pathways.

By this more complete measure of "betweenness centrality," Air France-KLM, Veolia and Vivendi are undoubtedly the most important mediators. Total, which is fairly important when only considering geodesic flows, appears here to be rather less important.

According to such measurements, the link between CSR and centrality is ambiguous (*P1*). For example, Valeo, which shows a low CSR score, centralizes the second maximum possible information flow rate among all members of the network. The same applies to Vivendi and Total. BoD network mapping (Figure 2) shows that some less central actors in the network structure have high CSR scores. Thus, CSR practices can be made from peripherals members to central ones (see GDF-Suez). To summarize, results are somewhat mitigated and do not foresee any relationships between both variables (board interlocks and CSR) as regards our first proposition.

Further checks. Mixed results regarding the relationship between CSR and board interlocks lead us to question its nature. Indeed, if such relationship is not linear, its underlying thresholds might be discussed. We present the Pearson correlation matrix in order to complete the data analysis method chosen and test the robustness of results obtained through social network mapping (Figure 2). Yet, a correlation matrix only gives tangible results if the relationship between variables is linear. Otherwise, the method is not appropriate and may underestimate the relationship between variables.

Based on scatterplots, which underscore the non-linearity of CSR scores and other social network items, we conclude that except for closeness centrality and CSRPRA, the correlation matrix (Table I) is consistent with previous outcomes from mapping (Figure 2).

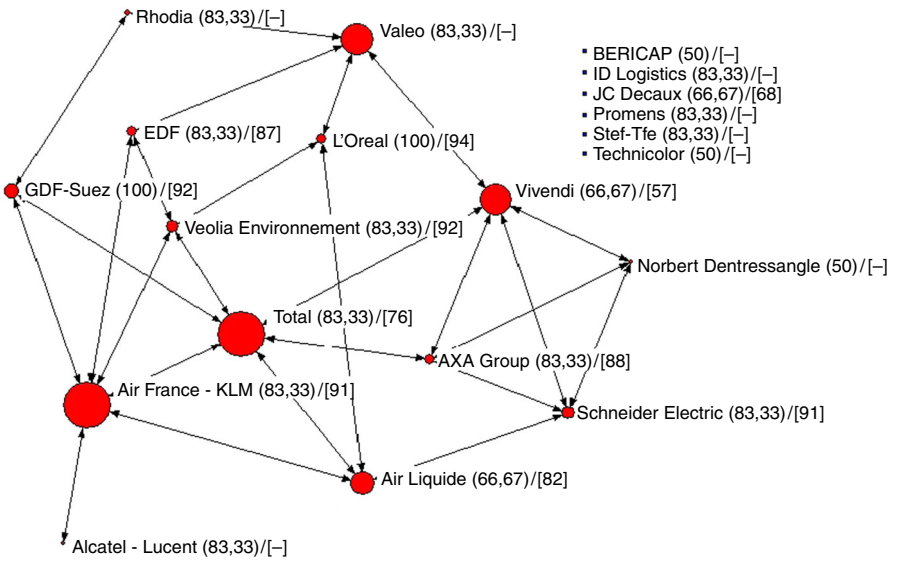

Figure 2.
Board interlocks and CSR practices

Notes: […] Ratio disclosure by CDP; (…) CSRPRA: Score calculated from CDP supply chain responses; ▪ Unconnected firms; The size of the nodes depends on the betweenness centrality (Appendix 2)

Directors' profile and board interlocks

Table II shows directors' attributes, including the number of directorships held in other boards. A "connected director" is one who holds at least one seat in another board. The sample is composed of 228 directors: 203 directors hold one seat, 23 of them holds two seats and just two of them holds three seats ($203+23\times2+2\times3=255$ directorships). We have two sub-samples: connected directors (52 directorships) and unconnected directors (203 directorships). The mean Comparison Tests[4] validate that connected directors are significantly older ($p<0.05$) and more independent ($p<0.01$). This result is consistent with our *P2*, namely the relationship between directors' profile and the ability to be involved in other BoD.

Table III represents the same statistics but with the firm's dimension "board of directors" (20 boards). We point out that a board of directors (denoted X) is connected if at least one director seats in another board (Y) of our study sample. So in Table III, the average age, for example, is calculated by selecting all the directors involving the Board X (identified above as connected) even if the remaining directors do not sit on other

	Firm level					
	Mean	SD	(1)	(2)	(3)	(4)
(1) Degree centrality	13.68	10.98				
(2) Closeness centrality	9.13	6.14	0.85**			
(3) Betweeness centrality	2.60	3.46	0.83**	0.53**		
(4) CDP	83.54	15.38	0.06	0.40	−0.24	
(5) CRSPRA	78.33	11.90	0.28	0.38*	0.16	0.77**

Notes: *,**Correlation is significant at the 0.05 and 0.01 level, respectively

Table I.
Pairwise correlation board interlocks and CSR scores

	Connected directors ($n_1=52$)		Unconnected directors ($n_2=203$)		All directorships ($n=255$)	
	Mean	SD	Mean	SD	Mean	SD
Age	61.47	7.37	59.02	9.31	59.56	9.01
Gender	11.67	0.32	14.21	0.35	13.72	0.34
Independent	60.78	0.49	43.13	0.49	46.66	0.49
Background[a]	43.13	0.50	45.09	0.49	44.70	0.49
Nationality	19.60	0.40	19.21	0.39	19.29	0.39

Note: [a]Financial background

Table II.
Director's profile: the individual level

	Connected firms ($n_1=14$)		Unconnected firms ($n_2=6$)		All firms ($n=20$)	
	Mean	SD	Mean	SD	Mean	SD
Age	59.75	8.74	58.76	10.32	59.65	9.00
Gender	14.83	0.35	7.69	0.26	13.72	0.34
Independent	50.47	0.50	25.00	0.43	46.66	0.49
Background[a]	41.98	0.49	57.69	0.49	44.70	0.49
Nationality	22.48	0.41	5.88	0.23	19.29	0.39

Note: [a]Financial background

Table III.
Director's profile: the firm level

boards. These two ways of presenting director's characteristics in Table II and 2 (connected/disconnected directors or connected/disconnected board of directors) will let us investigate our propositions and assess the impact of the two dimensions (individual and firm level) and board interlocks.

The mean comparison tests confirm that connected BoD show more diversity within their boards (foreigners ($p < 0.00$), women ($p < 0.05$)) and less seniority in the board. These boards are also composed by more independent directors ($p < 0.00$) but fewer directors with financial background ($p < 0.05$). This can be explained by the larger size of these connected BoD ($p < 0.00$). This opens these more dynamic BoD to more diverse directors' profiles.

This board diversity is more in line with the standards of "good" CSR practices. Although this result is consistent with our *P2*, it is in part at variance with the weak link evidenced between centrality and CSR scores (*P1*).

Directors' profile and CSR practices

To address the limitations of one or other of both CSR scores, we chose to classify firms from the different groups, only if both scores (by firms) were above or below a certain threshold (Table IV). We distinguish between three groups of companies according to

	Age	Independent	Background	Board size	Gender	Nationality	Seniority
Panel (A): Firms with high performance (CSRP & DISTR) > 80%							
5 companies							
Mean	60.11	50.63	43.03	16.62	15.18	25.31	6.02
SD	9.18	0.50	0.49	2.72	.36	0.43	5.89
(Observations)	(79)	(79)	(79)	(79)	(79)	(79)	(79)
Panel (B): Firms with medium performance (65% < (CSRP & DISTR) < 80%)							
3 companies							
Mean	62.05	45.94	45.94	13.43	0.102	16.21	6.59
SD	8.99	0.50	0.50	3.35	0.13	0.37	4.95
(Observations)	(37)	(37)	(37)	(37)	(37)	(37)	(37)
Panel C: Firms with low performance (CSRP & DISTR < 60%)							
12 companies							
Mean	58.38	44.60	41.72	12.94	12.94	16.67	4.50
SD	8.75	0.49	0.49	3.82	0.33	0.37	2.71
(Observations)	(116)	(139)	(139)	(139)	(139)	(138)	(115)
Mean Comparison Tests	*Wilcoxon-Mann-Whitney test* H_0: $u_1 = u_2$	*Student t test* $H_{a:Diff} \neq 0$					
A and B	0.21	0.63	*0.10*	*0.00*	0.81	0.25	0.58
A and C	0.31	0.65	0.85	*0.00*	0.65	*0.14*	*0.05*
B and C	*0.03*	0.88	*0.05*	0.79	0.92	0.94	*0.02*

Table IV. Directors' attributes by CSR rankings

Notes: The figures presented in the Mean Comparison tests are the *p*-value; We carried simultaneous bilateral tests ($H_{a:Diff} > 0; H_{a:Diff} < 0$). For simplification. we present only the values for $H_{a:Diff} \neq 0$ and H_0: $u_1 = u_2$

their scores: high, medium, and low performance. Table IV indicates that firms with high CSR scores (panel A) have a larger boards compared to firms in panel B and C ($p < 0.00$). BoD in panel A and B stand also by directors with more seniority on the board ($p < 0.05$) and ($p < 0.02$). Panel A and C have less directors with financial background in comparison with firms in panel B ($p < 0.10$) and ($p < 0.05$). However, the tests do not distinguish differences in the criteria of gender and independence. In fact, the presence of independent directors in the board appears to be responding to institutional requests (financial markets, governance codes, etc.) rather than to CSR issues. Indeed, firms with diffuse ownership show a strong presence of independent directors (e.g. Alcatel-Lucent).

The presence of other nationalities within the board is positively associated to the adoption of CSR practices (panel A in comparison with panel C). Firms with high performance show a "presence of foreigners in the boards" rate of at least 25%. Choi *et al.* (2012) argue that foreign outside directors provide expertise and independent monitoring over management in Korean firms.

Board size is higher in most best performing firms (panels A and B, Table IV). We suggest two possible explanations: board size is often correlated with firm size, and large firms have more resources to hire more directors in the board and to implement CSR practices.

Although based on descriptive analysis, this result is in line with previous research, and confirms our *P3* (Wang and Coffey, 1992; Stanwick and Stanwick, 1998 quoted by Jia and Zhang, 2012).

Overall, our descriptive statistics show that director's background, seniority on the board and nationality are the most discriminating variables for CSP, which confirms *P3*. Future research using more sophisticated statistical methods and a larger sample would be instructive and would help validate these first findings concerning the French context.

Discussions and conclusion

The contribution of the research is twofold

First, we propose a three-dimensional model to study CSP: directors' profile, board interlocks, and adoption of CSR practices. Most of previous research suggests a linear model where the dependent variable is the CSP, and the explanatory variables are boards' characteristics. We argue that it is important to cross the board level with individual one (directors) to better understand the relationship between board composition and the adoption of CSR practices. Our purpose was not to provide an empirical validation of boards' impact to CSR, but rather to propose a research model that takes into account the difficulty of measuring board diversity and diversity within boards. "This challenge is not only technical, but also conceptual" (Hafsi and Turgut, 2013, p. 475).

Second, the inter-organizational approach overcomes the institutional approach in assessing the contribution of a director within the board. Being solely based on individuals, and not on organizations within social board networks, inter-organizational strategies have an impact on the behavior of individuals belonging to such networks, and on the practices of the organizations in which they operate (McPherson *et al.*, 2001; Harrison *et al.*, 2002).

Beyond its theoretical and empirical implications, this research is useful for both practitioners and civil society. Research urges managers to revise the composition of their BoD, integrating more diversity especially directors backgrounds and nationality. Gender does not seem to be an influential parameter in improving CSP. The French Copée-Zimmerman Law (2011) imposes a minimum quota (40 percent by 2017) for

women in the BoD of listed companies. This law is driven from a societal perspective and has less evidence with improving a board or companies performance. This does not preclude that Female directors could gain their positions because of their skills and experience (Background) not because of their gender nor a quota system.

Regarding possible societal impacts, our study highlights the importance of diversifying the recruitment base when integrating new members. This implies opening board networks to new profiles, in order to better meet stakeholders' expectations regarding CSR.

In spite of some several relevant contributions, we are aware that the current study has some limitations. First, the choice of our specific sample may restrict the generalizability of our findings. Unlike most previous research, we do not refer to sustainable development reports – the publication of such reports is mandatory in the French legal context – to assess their commitments in CSR practices beyond mere compliance with law.

Second, choosing firms which follow the CDP project means assessing only the environmental performance of firms. To overcome this limit, we consider two CSR scores: we calculate CSR score from firms' responses and also consider the score disclosed by the CDP.

Third, other factors should be taking into account regarding BoD's involvement in CSR issues. Indeed, contingency or contextual parameters can also intervene (turbulence in the environment, degree of compliance within the organization, firm's sector or size). Moreover, CEOs' power (duality, motivation, and entrenchment) may play an overall role in setting strategic firms' decisions and BoD's composition. Furthermore, corporate and business strategy could help better understand choices made in the adoption of CSR practices (e.g. Moura-Leite *et al.*, 2012).

Beyond these limitations, our research helps acknowledge the most influential variables regarding CSR practices within French board of directors. It suggests that, next to the well-established fact that board members' characteristics influence CSR activities, board interlocks might explain how such practices are being transferred to other companies. Additionally, these interlocks – and therefore their mediating role in CSR - might themselves be influenced by board members' characteristics (seniority, nationality, background). This research might be a basis for future studies which would integrate modeling and multivariate analysis, thus corroborating these first findings.

Notes

1. French Grenelle II Act, 2010.
2. The CDP is a global independent not-for-profit organization that works to prevent dangerous climate change and protect natural resources such as water through the efficient allocation of capital in order to create long-term prosperity. Working closely with investors, business, cities and governments, CDP provides a transformative global system for thousands of organizations around the world to measure, disclose, manage and share environmental information and reduce their energy consumption, carbon emissions and water use. Four programs are presented: CDP New Initiatives, CDP Public Procurement, CDP Water Disclosure and CDP Institutional Investors (source: www.cdp.net, consulted on April 9, 2014).
3. Scoring is applied to most company responses within the CDP, which are assessed for disclosure and performance. A high carbon disclosure score would indicate a comprehensive response. The response would tend to show clear consideration of business-specific risks and potential opportunities related to climate change and good internal data management

practices for understanding greenhouse gas (GHG) emissions. However, the disclosure score does not reflect a company's actions on climate change mitigation.

4. We used two tests depending on the distribution of the selected variables: the parametrical Student *t* test and Wilcoxon-Mann-Whitney test.

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Appendix 1

Variables	Code	Proxies	Source
Director's profile			
Age	Age	Age of director	Annual Report (AR)
		Average age of the board	AR
Gender	Gender	1 if a woman, 0 otherwise	AR
		% of women in the board	AR
		Number of seats holds by director in others boards	AR
		Director's Background: Three categories are identified: (1) financial directors (2) engineers and scientists (3) lawyers, economists, and other literary and philosophical occupations	
Nationality	BODIV	% of foreign directors	AR
Seniority	BODSN	Average of years passed in the board	AR
		Number of years in position by director	AR
CSR practices(CSRP) CSRP score = (ENVPOL +GOVST+ENVIMP)/6			
Environmental policy	ENVPOL	Planning: identification and delimitation of business objectives, targets and environmental programs	CDP
(score: 0-3)		Monitoring and explanations: informing about the progress toward goals or historical changes and corrections	(Supply chain responses)
Each item (planning, monitoring and compliance) is a dummy variable.		Compliance: Reporting about its commitment to compliance with the laws and regulations in force and/or other requirements to which it subscribes	
Governance structure	GOVST	1 if there is a person or a committee in charge with environmental and ethics topics, 0 otherwise	CDP
(score: 0-1)			
Environmental impact	ENVIMP	Risks: Information on accident risk to human health or financial company incur or may incur by activity (classified sites or activities), and the recognition of provisions	CDP
(score: 0-2)		Pollutions: information on emissions and impacts on landscapes and biodiversity	
Disclosure rating	DISRAT	From 0 to 100	CDP
Board Interlocks			
Centrality		Degree: The sum of all direct valued links that each firm has with other companies in the network, divided by the number of companies in the network	Ucinet software
		Betweenness: The number of shortest paths linking any two companies in the network that pass through a firm	
		Closeness: The eigenvector centrality is a measure of the relative importance of a node in the network	

Table AI. Variables measurements

Appendix 2

Freeman centrality measures ($n = 20$ firms)	Degree	Normalized degree	Normalized closeness	Normalized betweenness	Normalized betweenness flow
Air France-KLM	6	*31.579*	*13.475*	*10.585*	*12.329*
Air Liquide	4	21.053	13.287	4.971	4.113
Alcatel-Lucent	1	5.263	12.418	0.000	0.000
AXA group	4	21.053	13.014	1.725	3.558
EDF	3	15.789	13.014	1.608	2.018
GDF-Suez	3	15.789	13.014	2.729	4.357
L'Oréal	3	15.789	12.925	1.530	2.632
Norbert Dentressangle	3	15.789	12.583	0.000	1.901
Rhodia	2	10.526	12.667	0.702	3.168
Schneider Electric	4	21.053	12.925	1.998	4.142
Total	6	*31.579*	*13.571*	*10.331*	8.821
Valeo Sa	4	21.053	13.287	6.793	10.234
Veolia Environment	4	21.053	13.103	2.037	3.821
Vivendi	5	26.316	13.380	7.037	6.774
BERICAP	0	0	0	0	0
Technicolor	0	0	0	0	0
Promens	0	0	0	0	0
ID logistics	0	0	0	0	0
JC Decaux	0	0	0	0	0
Stef-Tfe	0	0	0	0	0

Notes: Degree, Actor-level degree centrality is simply each actor's number of degrees in a non-directed graph; Normalized Degree. To standardize or normalize the degree centrality index, we divide it by the maximum possible indegrees ($=g-1$ nodes if everyone is directly connected to i), and express the result as either a proportion or percentage); Normalized Closeness, Actor closeness centrality is the inverse of the sum of geodesic distances from actor (i) to the $g-1$ other actors (i.e., the reciprocal of its "farness" score); We normalize a closeness index by dividing by a maximum possible distance expressed as a proportion or percentage; An actor is considered important if he/she is relatively close to all other actors; Normalized Betweenness, Betweenness centrality counts the number of shortest paths between i and k that actor j resides on; Actor betweenness centrality for actor (i) is the sum of the proportions, for all pairs of actors (j) and (k), in which actor (i) is involved in a pair's geodesic(s); We can normalize the betweenness centrality scores by dividing them by the maximum possible betweenness, expressed as proportion or percentage; Normalized Betweenness flow, A person who lies on communication paths can control communication flow, and is thus important.

Table AII.
Freeman centrality measures

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