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Empirical Research on Corporate Distress: Assessing the Role of the Boards of Directors

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Abstract

Although still fragmented, the advancements within the empirical literature about the board-distress relationship have suggested that particular board features can have a role in enhancing the survival chances of distressed firms. This article aims at providing both the strategic management scholars and practitioners with the systematization of these advancements. The findings from the presented codification show that board independence tends to prevent crisis situations and to increase the survival chances of restructuring firms. Reinforcing board capabilities' heterogeneity might also help in preventing/resolving crises. Board turnover may have a positive effect, too, as suggested by the negative effect of board tenure. Also, it is evidenced that the heterogeneity of the statistical methods employed by the extant literature has increased proportionally to time and journal ranking.

Keywords: board of directors, corporate distress, empirical literature, systematic review, top management team.

* Corresponding Author. In 2010, earlier drafts of this paper were presented at the International Conference on “Corporate Governance and the Global Financial Crisis” (The Wharton School, Philadelphia, USA) and at the OCRI-ELAB Conference on “Entrepreneurship beyond Company Crisis: Value Creation through Corporate Restructuring” (Bergamo University, Italy).

EMPIRICAL RESEARCH ON CORPORATE DISTRESS: ASSESSING THE ROLE OF THE BOARDS OF DIRECTORS

INTRODUCTION

Can particular characteristics of the *board of directors*¹ positively affect the survival chances of distressed firms? How has the empirical research on this topic evolved over the years? How have the statistical techniques been developed?

This review article aims at providing both the scholars and practitioners within the strategic management field with reasoned observations as to where this kind of literature is and could be going, and as to what important questions and gaps can still exist in this research area.

It is a matter of fact that, at least over the last thirty years, *corporate distress* has been receiving an ever growing interest worldwide and both the management and finance scholars have published a number of articles related to this topic (e.g. Johnson, Hoskisson, and Hitt, 1993; Daily and Dalton, 1994a, 1995; Daily, 1996; Dowell, Shackell, and Stuart, 2011). This research area plays a pivotal role particularly to date and this is also due to the dramatic consequences recently inherited, both at macro, meso and micro level, from the global financial crisis.

Corporate *crisis* and *turnaround* have often been detected as the two most relevant sub-domains within the evolving research on corporate distress. On the one hand, although a unique definition of crisis is still missing in the literature to date,² there is a broad consensus on its meaning, which is a situation of continued negative profitability that puts firms at the risk of being selected out from their competitive environment. On the other hand, turnaround

¹ In this article, the term ‘board of directors’ is used also to conceptualize ‘top management teams’, although it is acknowledged that minor differences exist between these concepts. As these differences appear as not relevant to the aims of the article, the term ‘board of directors’ is preferred, in that it best fits the terminology used within most of the studies in the research dataset.

² For example, corporate crisis has been defined through various, but often convergent terms, such as failure, exit or bankruptcy.

has been defined in various ways, such as merely surviving or, differently, definitely regaining sustainable competitive advantage. Nonetheless, it is of common knowledge that both these research sub-domains have mainly been focusing on firms whose survival is significantly challenged. This is why, for the scope of this article, the term ‘corporate distress’ is used to embrace both.

Over the years, scholars have developed a plethora of heterogeneous research perspectives to investigate on distress related issues. Attention has been mainly given to studying its determinants and to planning interpretative models for its *ex ante* prevention (e.g. Altman, 1983; Argenti, 1976; Cameron, Sutton, and Whetten, 1988; Miller, 1990) or for its *ex post* recovery (e.g. Bibeault, 1982; Donaldson, 1994).

Along with the wider evolution of research on corporate governance, scholars have been also devoting increasing time to empirically exploring the relationship between distress and boards of directors. In the 1980s, for example, empirical analyses investigated on corporate distress mainly in relation to *board turnover* (D’Aveni, 1989; Schwartz and Menon, 1985).

In the early 1990s, some break-through articles (e.g. D’Aveni, 1990; D’Aveni and MacMillan, 1990) influenced future literature and the empirical research on this topic gained momentum. Most of the studies within this decade focused on data from the United States and used matching samples. As in the previous decade, the relationship between distress and board turnover continued to dominate the research agenda (Daily and Dalton, 1995; D’Aveni, 1990; Denis and Denis, 1995; Gales and Kesner, 1994; Gilson, 1990; Hambrick and D’Aveni, 1992; Muller and Barker III, 1997; Wiersema, 1995). At the same time, *board independence* (i.e. the presence of an appropriate amount of outside directors within the board), started to play a pivotal role (Daily, 1995; Daily and Dalton, 1994a, 1994b, 1995; Gales and Kesner, 1994; Hambrick and D’Aveni, 1992; Johnson *et al.*, 1993; Mueller and Barker III, 1997).

In the last decade (2000-2009), different research directions also emerged and the relationship between distress and *CEO turnover* became the topic most often investigated (Arthaud-Day *et al.*, 2006; Brockmann, Hoffman, and Dawley, 2006; Clapham, Schwenk, and Caldwell, 2005; Elloumi and Gueyié, 2001; Parker, Peters, and Turetsky, 2002), together with board independence (Berry, Page Fields, and Wilkins, 2006; Evans, Evans, and Loh, 2002; Fich and Slezak, 2008; Perry and Shivdasani, 2005). The United States continued to be the most sampled geographical area, but scholars also increased their inquiries within other contexts, such as Europe and Asia. Single samples of firms were basically preferred to matching samples.

In sum, the board-distress empirical debate seems mature enough to warrant a systemic discussion, as the advancements within this field have generally suggested that particular board features can have a role in enhancing the survival chances of distressed firms. Still, the extant empirical evidence appears currently fragmented and this is why systematizing its research results seems particularly relevant. Thus, this article aims at contributing to fill this gap through presenting the results from a systematic literature review (David and Han, 2004; Newbert, 2007) based on the codification of 40 well-regarded quantitative publications extrapolated from the *EBSCO-Host* and *JSTOR* databases through specific ‘fit for purpose’ inclusion/exclusion criteria.

Interesting results emerge from the analysis. First, the findings highlight that year of publication, authors’ primary research field, sample size, country, sector and observation period interact and influence the insights about the investigated topic. Second, the question whether specific board variables can enhance corporate survival chances still requires more research, with board independence constituting the sole exception. Third, the heterogeneity of statistical methods has increased proportionally to time and journal ranking.

The article is structured as follows: first, the review methodology is described. Second, the results are outputted with reference to year of publication, authors' primary research field, sample size, country, sector, observation's period and topic evolution over time. Third, these results are analyzed with reference to the clusters of arguments, as well as to their dependent and independent variables. Fourth, the statistical methods used in the selected publications are overviewed. The article is concluded by discussing the theoretical and practical implications of the findings, as well as some potential avenues for further research.

METHODOLOGY

By analyzing exclusively the extant empirical literature on the board-distress debate, this review substantially tries to address the following research questions:

1. *Can particular characteristics of the board of directors positively affect the survival chances of distressed firms?*
2. *How has the empirical research on this relationship evolved over the years?*
3. *How have the statistical techniques been developed?*

As the main goal of this research is to primarily address the *what* and *how* questions about the content of the evolving empirical literature on the board-distress debate, the specific research criteria basically conformed to those adopted by other recent systematic reviews published on in the strategic management field (David and Han, 2004; Newbert, 2007). In particular, the present review focused only on double peer-reviewed journal articles, regardless of their impact factor.³ The computer based research was performed in December 2009 by using the academic journals within the *EBSCO-Host* and *JSTOR* databases.

³ As it has been recently pointed out (David and Han, 2004; Newbert, 2007), restricting the search only to those articles published in double peer reviewed journals increases and enhances quality control. This is why it was

In the *first* phase, it was searched for all the publications containing the terms ‘distress’ OR ‘cris*’ OR ‘decline*’ OR ‘default*’ OR ‘restructur*’ OR ‘bankruptc*’ OR ‘turnaround*’ OR ‘surviv*’ as the primary key word in their abstract.⁴

In the *second* phase, the substantive relevance of the articles was ensured by requiring that the articles selected in the previous phase also contained at least one of the following key words (‘firm*’ OR ‘corporat*’ OR ‘enterprise*’) in their abstract.

In the *third* phase, the articles’ relevance was ensured by requiring that those articles selected in the second phase also contained at least one of the following seven keywords (‘board*’ OR ‘director*’ OR ‘entrepreneur*’ OR ‘top management team’ OR ‘CEO’ OR ‘Chief’ OR ‘TMT’) in their abstract.

In the *fourth* phase, in order to ensure the empirical content of the articles, it was decided to select only those articles that, from the third phase, contained at least one of the following methodological keywords in their abstract: ‘empirical’ OR ‘statistic*’ OR ‘quantitative’ OR ‘event history’. This criterion warrants additional discussion. It is evident that the keywords selected in this phase deliberately determined the exclusion of both conceptual articles (e.g. Castrogiovanni, Baliga, and Kidwell, 1992; Hoskisson and Turk, 1990; Khandwalla, 1983-1984) and case studies (e.g. Huse and Zattoni, 2008; Stopford and Baden-Fuller, 1990). The reason for their exclusion is similar: conceptual articles do not pertain to the empirical scope of the review. Similarly, case studies and qualitative analyses were both excluded because, as it has been recently observed (David and Han, 2004; Newbert, 2007) there is no systematic way to code the results of such studies in a way that is comparable to the results of quantitative analyses (i.e. statistical tests).

In the *fifth* phase, the articles selected in the fourth phase were further scanned by reading all their abstracts and texts for substantive context and empirical content, thus controlling

decided to exclude letters from editors, book reviews, conference proceedings and articles published in non peer reviewed journals.

their connection with the research topic. Two ‘fit for purpose’ criteria (Denyer, Tranfield, and van Aken, 2008) were specifically adopted for determining the final relevance of the articles, thus for deciding their inclusion/exclusion within/from the dataset. In particular, it was decided to include:

1. only those empirical articles in which a situation of corporate distress (crisis or turnaround) could be identifiable formally;
2. only those empirical articles that explicitly test the relationship between corporate distress and at least one among the most investigated corporate governance variables. As it has been recently observed (Aguilera and Jackson, 2010), these variables are: a) board size; b) board independence; c) board socio-demographic features; d) board turnover; e) CEO turnover; f) CEO duality. Thus, from the fourth phase articles all those articles that did not contemporary meet both these criteria were excluded (e.g. Hoskisson, Johnson, and Moesel, 1994).

In the *sixth* phase, the “snowballing” technique was adopted to support the results from the previous phases. The research phases and their related results are depicted in table 1.

INSERT TABLE 1 ABOUT HERE

It is worthnothing that, before submitting the present article, the same research methodology was performed in October 2011 for checking whether the dataset outputted in December 2009 was still uptodated or not. In this regard, the latest evidence supported the overall consistence of the 2009 dataset (from which the present analysis stems). In fact, *only* the article published

⁴ The asterisk at the end of a keyword allowed for different suffixes (e.g. ‘crisis’ or ‘crises’).

by Dowell *et al.* (2011) on the *Strategic Management Journal* could have been additionally considered as fitting the content of the review.

RESULTS

The final population consists of 40 quantitative articles published in 26 journals from 1985 to 2008.⁵ It can be noted that this population is larger than the populations used in several other recent reviews published in the field of strategic management (e.g. Campbell-Hunt, 2000 [N = 17]; Dalton *et al.*, 1998 [N = 31]; Ketchen *et al.*, 1997 [N = 33]; Stankovic and Luthans, 1997 [N = 19]).

Table II provides readers with an overview of the population according to three different decades of publication (Period 1: 1980-1989; Period 2: 1990-1999; Period 3: 2000-2009).

INSERT TABLE II ABOUT HERE

Twenty articles (50%) in the dataset constitute a single sample of firms that filed for bankruptcy, while 20 articles (50%) present matching samples. Most of the matching samples (N = 15, or 75%) are composed of bankrupt/non-bankrupt firms, followed by turnaround/non-turnaround firms (N = 3, or 15%).

Fifteen matching samples are completely equal according to the firm business sector, size and number of observations. In one matching sample (Lee and Yeh, 2004), the number of observations is different (45 bankrupt and 88 non-bankrupt firms), size and business sector being equal. Two matching samples (Clapham *et al.*, 2005; Sheppard, 1994) present the same number of observations but vary per firm size and business sector. Finally, in two samples

⁵ Please, contact the Authors for the full dataset.

(Davidson III, Worrell, and Dutia, 1993; Yawson, 2006), business sector, size and number of observations are different.

Declared in all the articles, the observation period is seven years on average. Based on the break-through article by D'Aveni (1989), other four articles use the same observation period, that is from 1972 to 1982 (Daily and Dalton, 1994b; D'Aveni, 1990; D'Aveni and MacMillan, 1990; Hambrick and D'Aveni, 1992). The longest observation period is 19 years (Clapham *et al.*, 2005), while the shortest is five months (Minichilli and Hansen, 2007).

As for geographic sources, 25 articles (64%) are based on American data (United States = 23, Canada = 1, Venezuela = 1), five articles use European data (Belgium = 1, Norway = 1, Germany = 1, UK = 2), two articles use Asian data (Japan = 1, Taiwan = 1) and one article focuses on data from Australia. Seven articles do not specify the country of analysis.

While most of the articles (N = 21, or 53%) do not specify the sample business sector, the other articles classify their sample as 'industry' (N = 15, or 37%) or 'service' (N = 4, or 10%). The industry label is quite always referred to manufacturing activities.

The articles are published irregularly between 1985 and 2008, with only two articles published between 1985 and 1989. Publications increase between 1990 and 1995, then decrease until 2004.

Period I (1980-1989)

The earliest article dates back to 1985 when empirical research on the role of boards in distress contexts is modest. Only two articles (5%) are published and this happens in the second half of the decade. Both these studies use matching samples, focus on US data and declare the observation period. In these articles, distress is investigated mainly in relation to board turnover (D'Aveni, 1989; Schwartz and Menon, 1985).

Period 2 (1990-1999)

Two very innovative articles (D'Aveni, 1990; D'Aveni & MacMillan, 1990) influence the emerging empirical literature on the investigated topic at the beginning of the 1990s. As evidenced by the sharp increase in the number of articles published in this decade (N=20), the research on the relationship between distress and board features gains momentum.

Although only three articles are published in the first year of this decade, interest in the topic grows rapidly, with nine articles published between 1994 and 1995. In this decade, although the relationship between distress and board turnover (N=8) still plays a fundamental role (as in the previous decade), board independence becomes dominant, with 9 observations.

Most studies during this decade focus on US data (70%; for the remaining 30% the data source is not available), use a matching sample (60%) and do not declare the firm business sector (50%).

Period 3 (2000-2009)

The number of quantitative articles published in this period is comparable to the previous decade (N=18, or 45%). At the same time, different research approaches and features emerge.

First, studies drawing on non-US data become more frequent, as scholars examine the relationship between boards and corporate distress also in different contexts, such as UK (Filatotchev and Toms, 2003; Yawson, 2006), Australia (Evans et al., 2002), Belgium (Boone and Witteloostuijn, 2000), Canada (Elloumi and Gueyié, 2001), Germany (Jostarndt and Sautner, 2008), Japan (Okazaki et al., 2007), Norway (Minichilli and Hansen, 2007), Taiwan (Lee and Yeh, 2004) and Venezuela (Garay et al., 2007).

Second, single sample studies (67%) are used more than matching sample studies.

Third, although the majorities of the studies do not explicit the firm business sector (61%), the declared samples refer not only to industrial firms (22%), but also to service firms (17%).

Fourth, the relationship between corporate distress and CEO turnover or board independence results the research subfield most often explored (27 and 23% respectively).

Journal ranking

Table III categorizes the articles per academic journal.

INSERT TABLE III ABOUT HERE

The articles within the dataset are published in 26 international journals. As for journal ranking, by coding these articles through the *2010 Association of Business School Academic Journal Quality Guide* (ABS, 2010),⁶ thirty-one hits (or 78%) appear in top journals: 24 (or 60%) in 4-ranked and 7 (or 18%) in 3-ranked. No articles appear in 2-ranked, 4 (or 10%) in 1-ranked and 5 (or 13%) in not-ranked journals. Both the *Strategic Management Journal* and the *Academy of Management Journal* receive the highest number of hits (N=4). As for the authors' primary research field, the pure management background is the most common (73%), followed by finance (22%).⁷

BOARD OBSERVATIONS

This section reports the findings from the board observations in the dataset. First, the publications were sorted and clustered. Second, various board variables were analyzed.

Clusters

Two macro-categories of articles constitute most of the dataset. The former category pertains to articles that observe the impact of particular CEO or board variables (i.e. independent

⁶ The ABS classification system uses five classification criteria: 4*, 4, 3, 2 and 1, with 4* as the highest mark.

⁷ Minor weights (5%) pertain to other fields, such as accounting, marketing and psychology.

variables) on a crisis or turnaround context (i.e. dependent variables). In contrast, the latter category pertains to those articles that explore the impact of a crisis or turnaround context (i.e. independent variables) on particular CEO or board features (i.e. dependent variables).

While the distinction between dependent and independent variables was specifically highlighted in the on line supplementary material, it is not taken into account in Figure 2. This Figure shows the observations in the dataset sorted and clustered in a ‘two X two’ matrix, with the focus on crisis or turnaround contexts and the focus on CEOs or boards shown on the X and the Y axis respectively.

INSERT FIGURE 1 ABOUT HERE

First, it is worthnoting that some articles were clustered more than once in the matrix to improve the quality of the results (e.g. Daily and Dalton, 1994a, 1994b, 1995; D’Aveni, 1989, 1990; Filatotchev and Toms, 2003). In fact, the X axis distinguishes the articles taking into account if they specifically refer to a crisis or turnaround situation; thus, all those observations based on matching samples were clustered twice (i.e. both as crisis observations and turnaround observations). As for the Y axis, all those observations that look at the features of CEOs only were clustered as CEO observations, while all those observations that look at the behaviour of boards in general, rather than at CEOs only, were clustered as board observations. Also, all those observations that regard boards in general, but also have an explicit focus on CEOs, were clustered twice (i.e. as both CEO and board observations).

Second, from the combined use of the X and Y axes, four Clusters and 83 overall observations were derived. Cluster IV (crisis-board) is the most populated cluster, with 28 hits (34%). Cluster I (turnaround-board) follows with 25 hits (30%). Both Cluster II (turnaround-CEO) and Cluster III (crisis-CEO) received 15 observations (18%).

In Cluster II, the relationship between CEOs and turnarounds is studied as an exclusive area of inquiry in only four articles out of 14 total observations (28%). The remaining 72 percent of the observations also fall in other Clusters. Values increase moderately in Cluster III. The relationship between CEO and crisis results as the unique area of investigation in five articles out of 13 (38%), while 62 percent of the observations also fall in other Clusters.

Board variables

The discussion of each of the observed board variables, in descending order per number of overall observations, follows.

Board independence

The question whether board independence (i.e. the significant presence of outside directors) improves firm survival chances or not was addressed. This question receives 14 observations out of 40 (35%), all regarding the years between 1990 and 2008. From three articles (21%), no conclusive results on the investigated relationship are given (Daily and Dalton, 1994a, 1995; Simpson and Gleason, 1999), while two articles (14%) within the third decade find that board independence is associated with corporate bankruptcy (Berry *et al.*, 2006; Evans *et al.*, 2002).

Despite these minor exceptions, nine articles (65%) broadly find that board independence counts in improving firm survival chances. In fact, in the 1990s it is found that outside directors are fewer in bankrupt firms than in non-bankrupt firms (Hambrick and D'Aveni, 1992) and that their representation is positively related to boards' involvement in corporate restructuring (Johnson *et al.*, 1993). Similarly, in the period leading to bankruptcy declaration, declining firms experience a loss of outside directors (Gales and Kesner, 1994) and bankrupt firms have more affiliated directors than non-bankrupt firms (Daily and Dalton, 1994b).

Furthermore, scholars find that the proportion of outside directors is positively associated with successful turnarounds and negatively associated with corporate liquidations (Daily, 1995) and that turnaround firms are more likely to have a greater outside control of the board (Mueller and Barker III, 1997).

In the years between 2000 and 2008, it is found that significant improvements affect operating performance for firms with outside directors that initiate restructurings (Perry and Shivdasani, 2005) and that boards with independent directors are more likely to avoid bankruptcy (Elloumi and Gueyiè, 2001; Fich and Slezak, 2008).

Board turnover

It was explored whether observations focus on board turnover as a consequence or an antecedent of corporate distress and whether board turnover enhances firm survival chances or not. All comprised in the years between 1990 and 2008, these observations receive 12 hits out of 40 (30%). Apart from Daily and Dalton (1995), all the articles focus on turnover as a consequence, rather than an antecedent.

Four articles (33%) observe that turnover somehow enhances firm survival chances. In particular, forced resignations of top managers are preceded by large and significant declines in operating performance and followed by large improvements in performance (Denis and Denis, 1995). Moreover, firms experiencing non-routine (not retirement related) executive succession events within the board subsequently undergo more restructuring activity than firms without routine executive turnover (Wiersema, 1995). Similarly, by the end of their recoveries, turnaround firms have boards employing a significantly smaller proportion of their pre-decline top managers, as compared to non-turnaround firms (Mueller and Barker III, 1997). Especially if outside directors are hired, corporate performance improves (Perry and Shivdasani, 2005).

In contrast, three articles (25%) arrive at the conclusion that board turnover diminishes corporate recovery chances. In this case, D'Aveni (1990) finds that prestigious managers are imported in the board to raise the overall prestige, but this is not enough. The 'Bailout' phenomenon occurs, with most of the incumbent top managers leaving firms to avoid the 'stigma' of bankruptcy about 2 years before the declaration. Hambrick and D'Aveni (1992) evidence that corporate deterioration brings about team deterioration, through a combination of voluntary departures, scapegoating, and limited resources for attracting new executive talent (*corporate deterioration as downward spiral*). Daily and Dalton (1995) obtain similar evidence.

Finally, in five articles (42%) the relationship between board turnover and corporate renewal does not generate conclusive results (Arthaud-Day *et al.*, 2006; Gales and Kesner, 1994; Gilson, 1990; Jostarndt and Sautner, 2008; Schwartz and Menon, 1985).

CEO turnover

The questions whether observations focus on CEO turnover as a consequence or an antecedent of distress and whether CEO turnover enhances firm survival chances or not were addressed. Apart from Schwartz and Menon (1985), all the observations are comprised in the years between 1990 and 2008 and receive 11 hits out of 40 (28%). Only Daily and Dalton (1995) focus on turnover as an antecedent, rather than a consequence, of corporate bankruptcy.

Three articles (27%) observe that CEO turnover has a positive impact on firm survival chances (Brockmann *et al.*, 2006; Clapham *et al.*, 2005; Davidson III *et al.*, 1993), while one article (9%) finds that it does not (Daily and Dalton, 1995). In seven articles (64%) there are no definite conclusions on this research question (Arthaud-Day *et al.*, 2006; Elloumi and

Gueyié, 2001; Gilson, 1990; Gilson and Vetsuypens, 1993; Parker *et al.*, 2002; Perry and Shivdasani, 2005; Schwartz and Menon, 1985).

Board socio-demographic features

Also, the review investigated whether certain board socio-demographic features can predict firm survival chances. Taken as an overall topic, these features are observed in nine articles out of 40 (23%). The percentage declines, however, if the number of observations received by each sub-variable is specifically considered. *Tenure* is the most investigated variable, with four observations out of nine (44%). Three articles (75%) find that the high board tenure reduces the survival chances of firms (D'Aveni, 1990; Greening and Johnson, 1996; Johnson *et al.*, 1993) while one article (25%) suggests the opposite (Hambrick and D'Aveni, 1992). Similar results apply to *heterogeneity*, which receives three observations (33%). The empirical evidences converge in finding that heterogeneity reduces the possibility of firm distress (Filatotchev and Toms, 2003; Greening and Johnson, 1996; Minichilli and Hansen, 2007).

Thirty-three percent of the observations also regard the relationship between corporate distress and *board level of education*. Two articles (67%) find that a high level of education enhances firm survival chances (D'Aveni, 1990; Greening and Johnson, 1996), while one article (33%) indicates the opposite (Johnson *et al.*, 1993).

Equal observations (22%) occur in studies that explore the relationship between distress and *age* or *core function expertise*. However, while the former relationship produces contrasting evidence (Greening and Johnson, 1996; *versus* Mudambi and Treichel, 2005), the lack of core function expertise is univocally considered as a predictor of diminished survival chances (D'Aveni, 1989; Hambrick and D'Aveni, 1992).

Board size

The research explored whether smaller boards enhance firm survival chances. Only one study (14%) finds that smaller boards are associated with increased financial performance (Fich and Slezak, 2008). In contrast, four studies (57%) find that smaller boards are associated with more probabilities of distress (Gales and Kesner, 1994; Gilson, 1990; Hambrick and D'Aveni, 1992; Mueller and Barker III, 1997). Two studies (29%) suggest that no conclusions are possible (Mudambi and Treichel, 2005; Simpson and Gleason, 1999).

CEO duality

The research asked whether CEO duality enhances firm survival chances or not and this receives seven observations out of 40 (18%). Duality is explicitly associated with bankruptcy in three studies (43%) (Daily and Dalton, 1994b, 1995; Elloumi and Gueyiè, 2001) and turnaround in two studies (28.5%) (Mueller and Barker III, 1997; Simpson and Gleason, 1999), while two studies (28.5%) find strict relationships ambiguous (Brockmann *et al.*, 2006; Daily and Dalton, 1994a).

STATISTICAL METHODS

This section addresses the *how* question of the present review in that it analyzes the statistical methods used in the selected publications. The articles analyze 8,646 firms and range from 30 to 1,501, with a mean of 225.6 and a median of 110 (inter-quartile range, 81.8–237.5). Descriptive statistics about the methods in the articles are offered. Also, their use in terms of joint occurrences, temporal dynamics, journal ranking and clusters of arguments is highlighted.

Descriptives

Table IV shows the statistical methods used in the articles.

INSERT TABLE IV ABOUT HERE

Twenty articles (50%) use the ‘test of differences between groups and/or variables’ method. While tests of differences between groups allow comparing variables of interest in two or more independent samples, tests of differences between variables allow comparing two or more variables of interest in the same dependent sample.

‘Discriminant analysis’ is used in only two articles (5%). This technique allows classifying a set of observations into predefined classes (such as the status of the firms, including healthy/bankrupt, turnaround/non-turnaround, etc.) to determine the class of an observation based on a set of variables known as predictors or input variables.

Some studies (N = 9, or 22.5%) use a ‘linear regression’ model, which includes any approach to modelling the relationship between a dependent variable and the observed values of one or more independent variables, where the model depends linearly on unknown parameters that have to be estimated from the data. Twenty articles (50%) use a ‘logit’ model, while use of a ‘probit’ model is marginal (N = 1, or 2.5%).

In general, both the logit and probit models allow for the representation of the existing relationship between a dependent variable (a discrete variable representing a choice or category from a set of mutually exclusive choices or categories) and one or more independent variables (presumed to affect the choice or category). These models differ since logit uses the logistic cumulative distribution function, while probit uses the inverse cumulative distribution function associated with the standard normal distribution.

The ‘Poisson’ and ‘tobit’ models are also marginally used (in both cases $N = 1$, or 2.5%). The Poisson model is useful for representing count data from a contingency table and assumes that the response variable has a Poisson distribution and the logarithm of its expected value can be modelled by a linear combination of unknown parameters.

The tobit model is based on a regression, in which the dependent variable is restricted in its range due to censoring or truncation. From a set of explanatory variables, this model explains the probability of the dependent variable being at or below (above) a certain limit.

‘Survival analysis’ methods study the effects of multiple continuous or categorical attributes on the time of events, such as the time spent by a firm in the healthy group. These methods are used in three articles (7.5%). Survival analysis allows for: *i*) the estimating and interpreting of the survival characteristics (i.e. Kaplan-Meier plots, Median estimation, Confidence intervals); *ii*) the comparing of survival among different groups (i.e. Log-rank test); *iii*) the assessing of the relationship between the explanatory variables and the survival time (i.e. Cox regression model).

Finally, two studies (5%) use the ‘event study’ method when determining the impact of specific events on shareholder returns and expected profitability. In corporate restructuring, this method allows for the analysis of the financial consequences of decisions (such as CEO and board turnover).

Combined use

In order to analyze the combined use of the different statistical methods, an adjacency matrix was defined. This is an ‘ n by n ’ matrix, where ‘ n ’ is the number of the statistical methods. In the case of edges from the generic statistical method X to the generic statistical method Y , the element ‘ $a_{x,y}$ ’ is equal to the number of ‘ xy ’ edges, otherwise it is equal to 0 (see Table V).

INSERT TABLE V ABOUT HERE

This matrix allows for the obtaining a graphical representation of the combined use of the statistical methods (see Figure 2).

INSERT FIGURE 2 ABOUT HERE

Temporal dynamics

Table VI illustrates the use of the statistical methods over time.

INSERT TABLE VI ABOUT HERE

Articles in the first decade (1980-1989) exclusively use the tests of differences between groups/variables (N = 2, or 100%) and the logit model (N = 1, or 50%).

In the second decade (1990-1999), the use of the abovementioned models (tests of differences and logit) decreases to 50 percent and the methods' heterogeneity increases (i.e. linear regression, N = 3, or 15%; discriminant analysis and event studies methodologies, N = 2, or 10%; tobit, N = 1, or 5%).

Finally, articles in the third decade (2000-2009) further reduce the use of tests of differences between groups and/or variables (N = 8, or 44%) while the use of logit increases slightly (N = 9; or 50%). Some articles use linear regression (N = 6, or 33%) and survival analysis (N = 3, or 17%). The use of probit and Poisson is not relevant (in both the cases N = 1, or 6%).

Journal ranking

Table VII illustrates the use of the statistical methods on the basis of the ranking of journals where the articles appear.

INSERT TABLE VII ABOUT HERE

Tests of differences between groups/variables are the most frequently used statistical methods (N = 2, or 50%) in the articles published in 1-ranked journals, followed by linear regression, logit, probit and Poisson models (in all these models, N = 1, or 25%).

The only article in 2-ranked journal uses logit that is the most frequently used statistical method (N = 5, or 71%) also in articles published in 3-ranked journals. In these journals, logit is followed by tests of differences between groups/variables (N = 3, or 43%), linear regression (N = 2, or 29%) and survival analysis (N = 1, or 14%).

The most relevant heterogeneity is observed in 4-ranked journals. Tests of differences between groups/variables are the most often used (N = 13, or 54%), followed by logit (N = 12, or 50%), linear regression (N = 4, or 17%), discriminant analysis and event study (in both the cases N = 2, or 8%), tobit and survival analysis (in both the cases, N = 1, or 4%). Since they are not present in the population, 4*- ranked journals cannot be analysed.

Finally, linear regression and tests of differences between groups/variables are the most often used statistical methods in journals with no available ranking (in both the cases N = 2, or 50%). Logit (N = 1, or 25%) and survival analysis (N = 1, or 25%) follow.

Clusters

Table VIII shows the relationship between the statistical methods and the various clusters.

INSERT TABLE VIII ABOUT HERE

The three articles that fall solely in Cluster I (Evans *et al.*, 2002; Johnson *et al.*, 1993; Wiersema, 1995) use only tests of differences between groups/variables and linear regression. Heterogeneity increases for the eight articles that fall solely in Cluster IV (Betker, 1995; Fich and Slezak, 2008; Greening and Johnson, 1996; Lee and Yeh, 2004; Mudambi and Treichel, 2005; Okazaki *et al.*, 2007; Sheppard, 1994; Yawson, 2006).

No study is comprised solely in Cluster II and the article that falls solely in Cluster III (Boone and van Witteloostuijn, 2000) uses logit.

DISCUSSION AND SUGGESTIONS FOR FUTURE RESEARCH

Empirical research on the relationship between boards of directors and contexts of corporate distress (i.e. crisis or turnaround) has increased over the last three decades. Scholars are committed to stimulating the debate on how boards can contribute to effective corporate restructuring and whether certain board features can enhance firm survival chances.

Valuable heterogeneous evidence can emerge from this analysis of the extant empirical literature. It has been systematically addressed how this literature evolved and what scholars could research further in the future. Three main research results warrant additional discussion.

First, year of publication, author's primary research field, sample size, country, sector and observation period interact and influence the insights about the investigated topic. On the one hand, most of the first and second decade studies (N = 22) analyse US companies, mainly refer to board turnover or independence, use a matching sample and are substantially published in general management journals. On the other hand, third decade studies (N = 18) pay attention also to non-US companies, mainly refer to CEO turnover or board independence, use a single sample and, for the first time, start to be published also in

specialized corporate governance journals, although strategic management management journals continue to constitute the major outlet.

Second, as for the *what* question, i.e. whether specific board variables can enhance firm survival chances, still requires more research. *Board independence* results the most addressed within the dataset. It is known that board independence is pivotal in the more general debate on the effectiveness of corporate governance and researchers are currently debating whether outside directors can improve performance or not (e.g. El Mehdi, 2007; Lin *et al.*, 2009; *versus* Cho and Kim, 2007; Choi and Hasan, 2005). In distress contexts, the evidence from this review suggests that board independence really counts in improving firm survival chances. *Board and/or CEO turnover* have also received a valuable number of hits. Still, the present analysis reveals that further empirical refinement is needed for definitive conclusions on their effectiveness in terms of improved corporate performance within distress contexts, thus consistent with past claims that effective turnarounds can also start from within the organization (Donaldson, 1994). Taken as a whole, *board socio-demographic features* have received quite considerable attention, but this attention declines if one considers the number of observations which each sub-variable has been given. Although still limited, the existing evidence suggests that *board heterogeneity* and *low level tenure* may both enhance firm survival chances, while the *lack of core function expertise* may not. As for *board size*, although the number of sample observations is the most limited within the dataset ($N = 7$), the specific evidence in distress contexts seems to contradict some general agency theorist expectations that ‘smaller is better’ (e.g. Hermalin and Weisbach, 2003; Jensen, 1993; Nguyen & Faff, 2006-07; Yermack, 1996). Finally, *duality* has received the same limited number of observations as board size. In this regard, the specific evidence seems to suggest that the separation between the roles of the CEO and the board chairperson, rather than duality, can enhance the survival chances of firms.

In sum, on the one hand, certain variables (i.e. board size or single socio-demographic features and CEO duality) have received too little attention by the past empirical literature, although their observations have produced a consensus. Other variables (i.e. board and CEO turnover) have produced no conclusive results, although researchers have devoted considerable time to these variables. Board independence constitutes the sole exception, since most studies agree that the presence of outside directors can enhance firm survival chances.

Third, as for the *how* question, i.e. what statistical methods have been applied over the years, articles use mainly: *i) tests of differences between groups/variables*, comparing corporate governance variables in two or more independent samples (e.g. bankruptcy/non-bankruptcy firms; turnaround/non-turnarounds firms) or in the same dependent sample; *ii) the logit model* for representing the existing relationship between a dependent discrete variable (e.g. bankruptcy event) and one or more independent corporate governance variables; *iii) the linear regression model* for representing the linear relationship between a dependent variable (e.g. board involvement in strategic restructuring) and the observed values of one or more independent variables (e.g. board composition). In general, the heterogeneity of the statistical methods has increased proportionally to time and journal ranking.

The present analysis also produces a number of implications for future research on distress issues. Future quantitative studies could define research settings more broadly. Focusing on a complete set of board variables might provide scholars with a better analytical framework to explore the relationship between corporate boards and distress. Further, considering the following questions could improve the quality of future research.

First, are the changes in board variables determinants or simply consequences of distress? The present results show that the existing literature quite always analyses these variables (e.g. CEO or board turnover) as consequences, while it rarely examines their role as possible causal antecedents.

Second, who (and when) decides the board changes? Although existing studies do not address this aspect, one can expect different consequences when changes are decided by various stakeholders (e.g. shareholders, banks, governments, etc.) and/or in various stages of the firm's life cycle.

Third, what is the role of the top decision makers' personality? Although the relationship between board socio-demographic features and distress has received attention over the years, scholars should develop more extended research frameworks. These frameworks could include the decision makers' most vivid personality features, such as top managers' prestige (D'Aveni, 1990), CEO locus of control (Boone and van Witteloostuijn, 2000), or narcissism (Chatterjee and Hambrick, 2007). Related to this, scholars may also explore qualitative approaches to understanding actual board involvement, such as the development of contingency, behavioral, and evolutionary perspectives (Huse, 2009).

Fourth, how do environmental variables (such as market- vs. bank-oriented systems, legal systems, macro-economic conditions, etc.) matter? The present results have demonstrated that, when examining the relationship between boards and distress, the literature uses mostly US samples although studies on non-US-samples have recently been published. Thus, the results from this review suggest the need to understand the role of environment at broader levels, as the impact of different (non-US) contexts on corporate crises and turnarounds has still not received proper attention. Thus, more information on international comparisons is needed.

The findings from this research have implications also for practitioners. It is believed that some board/CEO features can help in avoiding crisis and promoting successful turnarounds. As an example, the review has shown that having more outside directors tends to prevent crisis situations and to increase the survival chances of restructuring firms. Reinforcing board

capabilities' heterogeneity may also help in preventing/resolving crises. Board turnover may have a positive effect, too, as suggested by the negative effect of board tenure.

However, this is only the beginning of a rough systematization and much remains to be done. Firms' top decision makers will benefit from the understanding of what kinds of board capabilities and socio-demographic features allow for successful turnaround strategies, as well as what combination of board members is best suited to deal with different crises. At the same time, further supporting (or eventually refuting) the *myth* that boards and CEOs must be replaced to achieve successful turnaround strategies will be valuable for firm shareholders as well as for other stakeholders.

CONCLUSION

This literature review indicates that empirical research on the relationship between boards of directors and distress contexts has expanded over the last 30 years. Several changes are observable across different periods in terms of the variables explored and the statistical methods applied. The increased scholarly attention is due to the theoretical advancements in the fields of strategic management and corporate governance.

Nevertheless, it seems that the proliferation of empirical studies has still not provided exhaustive and conclusive results on how boards can contribute to enhance the survival chances of firms in turbulent times. As for the current state of the art, Andrew Pettigrew (1979: 580) would have argued that scholars have 'only listed some items on a menu and put some of the items together in some simple dishes; it remains for others to broaden the menu and produce the cordon bleu meals'. Thus, further inquiries on this topic constitute a pivotal challenge for the research agenda of both scholars and practitioners.

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⁸ All the references within the research dataset are preceded by an asterisk.

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Tables

Table 1. Summary of the selection criteria (a)

Filter type	Description	Total Articles
<i>i)</i> (substantive)	All articles containing, at least, one of the following eight <i>conceptual</i> keywords in their abstract: bankruptc*, cris*, decline, default*, distress, restructr*, surviv*, turnaround*	59,105
<i>ii)</i> (substantive)	All articles from phase <i>i)</i> which also contain, at least, one of the following three <i>conceptual</i> keywords in their abstract: firm*, corporat*, enterprise*	10,191
<i>iii)</i> (substantive)	All articles from phase <i>ii)</i> which also contain, at least, one of the following seven <i>conceptual</i> keywords in their abstract: board*, director*, entrepreneur*, top management team, CEO, Chief, TMT	966
<i>iv)</i> (methodological)	All articles from phase <i>iii)</i> which also contain, at least, one of the following four <i>methodological</i> keywords in their abstract: empirical, event history, quantitative, statistic*	77
<i>v)</i> (substantive)	All articles from phase <i>iv)</i> whose text was effectively relevant	40
<i>vi)</i> (substantive)	Snowballing technique	40

(a) The selection filters used herein are based on and/or adapted from those developed and used by David and Han (2004) and Newbert (2007) in their reviews of the empirical literature related to the *transaction cost economics* and the *resource-based view of the firm* respectively.

Table 2. The evolution of empirical research on boards and distress

Feature	Period 1	Period 2	Period 3	Overall
<i>Summary</i>				
Number of articles	2 (5%)	20 (50%)	18 (45%)	40 (100%)
<i>Sample</i>				
Unique sample	0 (0%)	8 (40%)	12 (67%)	20 (50%)
Matching samples	2 (100%)	12 (60%)	6 (33%)	20 (50%)
<i>Geographical source of data</i>				
Americas	2 (100%)	14 (70%)	9 (50%)	25 (63%)
Europe	0 (0%)	0 (0%)	5 (28%)	5 (13%)

Asia	0 (0%)	0 (0%)	2 (11%)	2 (5%)
Australia	0 (0%)	0 (0%)	1 (6%)	1 (2%)
Not Available	0 (0%)	6 (30%)	1 (6%)	7 (17%)
<hr/>				
<i>Business sector</i>				
Industry	2(100%)	9 (45%)	4 (22%)	15 (37%)
Service	0 (0%)	1 (5%)	3 (17%)	4 (10%)
Not Available	0 (0%)	10 (50%)	11 (61%)	21 (53%)
<hr/>				
<i>Board variables (a)</i>				
(in descending order per overall number of observations)				
Board independence (number of outside directors)	0 (0%)	9 (45%)	5 (28%)	14 (35%)
Board turnover	1 (50%)	8 (40%)	3 (17%)	12 (30%)
CEO turnover	0 (0%)	5 (25%)	6 (33%)	11 (28%)
Board socio-demographic features	1 (50%)	4 (20%)	4 (22%)	9 (23%)
Board size	0 (0%)	5 (25%)	2 (11%)	7 (18%)
CEO duality	0 (0%)	5 (25%)	2 (11%)	7 (18%)

(a) Because most of the reviewed articles simultaneously focus on more than one board variable, the sum of the percentages associated with them has not to be equal to 100.

Table 3. Articles distribution per journal (a)

Journal	Period 1	Period 2	Period 3	Overall
Academy of Management Journal	2	1	1	4
Strategic Management Journal	0	4	0	4
Journal of Management	0	3	0	3
Corporate Governance: An International Review	0	0	2	2
CG: The International Journal of Business in Society	0	0	2	2
Journal of Business	0	1	1	2
Journal of Business Research	0	2	0	2
Journal of Finance	0	2	0	2
Journal of Management Studies	0	1	1	2
Administrative Science Quarterly	0	1	0	1
Corporate Ownership and Control	0	0	1	1
Emerging Markets Finance and Trade	0	0	1	1
Human Resource Management	0	1	0	1
International Journal of Business Studies	0	0	1	1
International Review of Economics and Finance	0	1	0	1
Journal of Banking and Finance	0	0	1	1
Journal of Business Venturing	0	0	1	1
Journal of Change Management	0	0	1	1
Journal of Corporate Finance	0	0	1	1
Journal of Financial Economics	0	1	0	1
Journal of Management and Governance	0	0	1	1
Journal of Managerial Issues	0	0	1	1
Management Science	0	1	0	1
Organization Science	0	1	0	1
Organization Studies	0	0	1	1
Review of Quantitative Finance and Accounting	0	0	1	1

(a) In descending order per overall observations.

Table 4. Statistical methods used in the articles (a)

Statistical method	Observations (N=40)
Tests of differences between groups / variables	20 (50%)
Logit model	20 (50%)
Linear regression model	9 (22.5%)
Survival model	3 (7.5%)
Discriminant analysis	2 (5%)
Event study	2 (5%)
Probit model	1 (2.5%)
Poisson model	1 (2.5%)
Tobit model	1 (2.5%)

(a) Because most of the sampled articles simultaneously use more than one statistical method, the sum of the percentages associated with them has not to be equal to 100.

Table 5. Combined use of the statistical methods (number of xy edges)

Statistical method	Tests of differences between groups/variables	Discriminant analysis	Linear regression model	Logit model	Probit model	Poisson model	Tobit model	Survival model	Event study
Tests of differences between groups/variables	-	-	-	-	-	-	-	-	-
Discriminant analysis	0	-	-	-	-	-	-	-	-
Linear regression model	4	0	-	-	-	-	-	-	-
Logit model	10	0	1	-	-	-	-	-	-
Probit model	1	0	0	0	-	-	-	-	-
Poisson model	1	0	0	0	1	-	-	-	-
Tobit model	0	0	0	0	0	0	-	-	-
Survival model	0	0	0	1	0	0	0	-	-
Event study	1	0	0	0	0	0	0	0	-

Table 6. Use of the statistical methods over time (a)

Period	N	Tests of differences between groups/variables	Discriminant analysis	Linear regression model	Logit model	Probit model	Poisson model	Tobit model	Survival model	Event study
3	18	8 (44%)	0 (0%)	6 (33%)	9(50%)	1(6%)	1 (6%)	0(0%)	3 (17%)	0(0%)
2	20	10 (50%)	2 (10%)	3 (15%)	10(50%)	0(0%)	0 (0%)	1(5%)	0 (0%)	2(10%)
1	2	2 (100%)	0 (0%)	0 (0%)	1 (50%)	0(0%)	0 (0%)	0(0%)	0 (0%)	0 (0%)

(a) Because most of the sampled articles simultaneously use more than one statistical method, the sum of the percentages associated with them has not to be equal to 100.

Table 7. Journals ranking and statistical methods (a)

Ranking	N	Tests of differences between groups/variables	Discriminant analysis	Linear regression model	Logit model	Probit model	Poisson model	Tobit model	Survival model	Event study
4*	0	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
4	24	13 (54%)	2 (8%)	4 (17%)	12 (50%)	0 (0%)	0 (0%)	1 (4%)	1 (4%)	2 (8%)
3	7	3 (43%)	0 (0%)	2 (29%)	5 (71%)	0 (0%)	0 (0%)	0 (0%)	1 (14%)	0 (0%)
2	1	0 (0%)	0 (0%)	0 (0%)	1 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
1	4	2 (50%)	0 (0%)	1 (25%)	1 (25%)	1 (25%)	1 (25%)	0 (0%)	0 (0%)	0 (0%)
N.A (b)	4	2 (50%)	0 (0%)	2 (50%)	1 (25%)	0 (0%)	0 (0%)	0 (0%)	1 (25%)	0 (0%)

(a) Because most of the sampled articles simultaneously use more than one statistical method, the sum of the percentages associated with them has not to be equal to 100.

(b) N/A = Ranking not available.

Table 8. Clusters and statistical methods (a)

Cluster(s)	N	Tests of differences between groups / variables								
		Discriminant analysis	Linear regression model	Logit model	Probit model	Poisson model	Tobit model	Survival model	Event study	
I	3	2 (67%)	0 (0%)	2 (67%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
I,II	4	2 (50%)	0 (0%)	1 (25%)	3 (75%)	0 (0%)	0 (0%)	0 (0%)	1 (25%)	0 (0%)
I,II,III,IV	7	3 (43%)	1 (14%)	1 (14%)	4 (57%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
I,IV	10	7 (70%)	1 (10%)	2 (20%)	4 (40%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (10%)
I,III,IV	1	1 (100%)	0 (0%)	1 (100%)	1 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
II,III	4	3 (75%)	0 (0%)	1 (25%)	0 (0%)	1 (25%)	1 (25%)	0 (0%)	0 (0%)	1 (25%)
III	1	0 (0%)	0 (0%)	0 (0%)	1 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
III,IV	2	0 (0%)	0 (0%)	0 (0%)	1 (50%)	0 (0%)	0 (0%)	0 (0%)	1 (50%)	0 (0%)
IV	8	2 (25%)	0 (0%)	1 (13%)	6 (75%)	0 (0%)	0 (0%)	1 (13%)	1 (13%)	0 (0%)

(a) Because most of the sampled articles simultaneously use more than one statistical method, the sum of the percentages associated with them has not to be equal to 100.

Figures

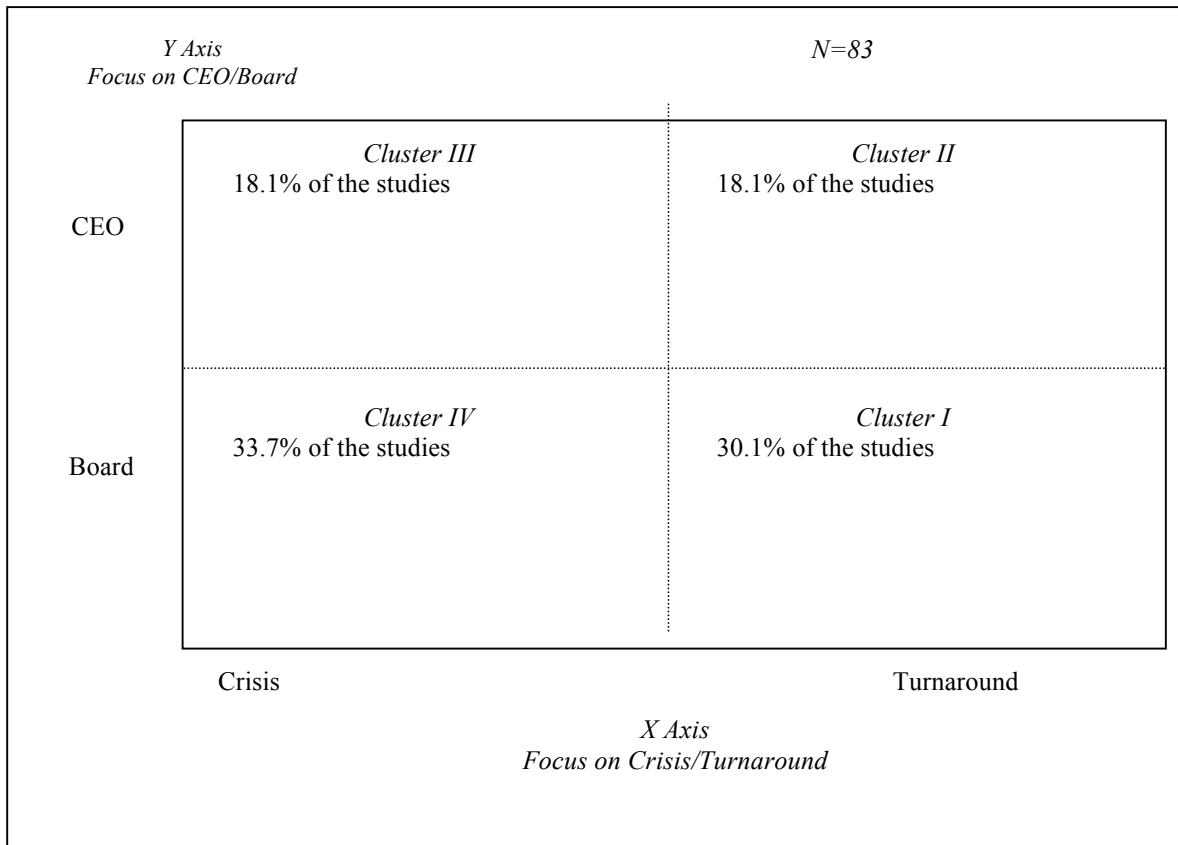


Figure 1. Clusters of the observations

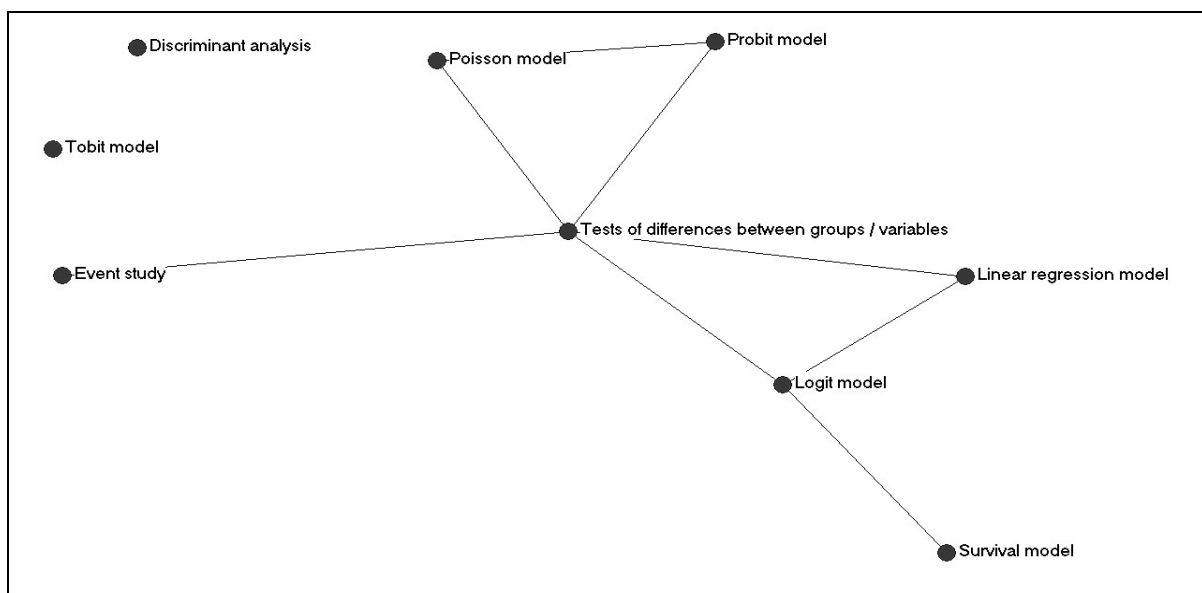


Figure 2. Combined use of the statistical methods (graphical representation of xy edges)