

Board Composition, Grey Directors and Corporate Failure in the UK

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ABSTRACT

This study examines the effect of board composition on the likelihood of corporate failure in the UK. We consider both independent and non-independent (grey) non-executive directors (NEDs) to enhance our understanding of the impact of NEDs' personal or economic ties with the firm and its management on firm performance. We find that firms with a larger proportion of grey directors on their boards are less likely to fail. Furthermore, the probability of corporate failure is lower both when firms have a higher proportion of grey directors relative to executive directors and when they have a higher proportion of grey directors relative to independent directors. Conversely, there is a positive relationship between the likelihood of corporate failure and the proportion of independent directors on corporate boards. The findings discussed in this study support the collaborative board model and the view that corporate governance reform efforts may have overemphasised the monitoring function of independent directors and underestimated the benefits of NEDs' affiliations with the firm and its management.

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1. Introduction

A series of unexpected corporate failures has reignited and increased concerns regarding the effectiveness of board oversight. Since the Cadbury Report was published in 1992, governance reformers in the UK have continued to emphasise the importance of independent directors who enhance the monitoring function of boards (e.g., the UK Corporate Governance Code, 2012). The term “independent director” generally refers to non-executive directors (NEDs) who are free from personal or economic ties with the firm and its management.¹ NEDs who have such ties are classified as non-independent NEDs and are also known as “grey” directors. Corporate governance reformers typically argue that the existence of affiliations between NEDs and the firm diminishes the effectiveness of NED monitoring because such affiliations may result in conflicts of interest with shareholders. Despite the widespread belief among regulators that a higher proportion of independent directors on a board is good for governance, little is known regarding whether the increased focus on board independence is able to prevent corporate failure in the current corporate governance framework.

This study considers the effectiveness of independent and grey directors and investigates the association between board composition and the likelihood of corporate failure. Corporate governance theorists have diverse perspectives on the ties between NEDs and the firm. From the agency perspective, independent directors are central to the effective resolution of agency problems between managers and shareholders. Their independence from the firm places them in a good position to

engage in monitoring and enables them to exercise independent judgement in evaluating managerial performance (Fama & Jensen, 1983). In contrast, NEDs personally or economically tied to the firm and the firm's management have less incentive to challenge top management, as they may have common interests with management, which could lead to conflicts of interest with shareholders and adverse organisational outcomes. According to this view, independent directors can improve firm performance by monitoring management on behalf of shareholders.

Alternatively, the advocates of the collaborative board model argue that the agency perspective only provides a partial basis for understanding the impact of board composition on corporate strategy and performance (Adams & Ferreira, 2007; Westphal, 1999). They suggest that board composition should optimise collaborative working relationships among its members (Almazan & Suarez, 2003). Ties between NEDs and the firm's management can enable mutual trust and effective communication, which may facilitate information flow and advisory interactions in the boardroom (Westphal, 1999). Additionally, as NEDs typically serve on a part-time basis, the presence of such ties may align the interests of the NEDs and the company and increase the NEDs' incentives to offer advice and resources to maximise firm performance. According to this model, grey directors are more likely to be involved in strategic decision-making through their affiliations with the firm, which may lead to favourable organisational outcomes. However, grey directors have received little formal recognition in the literature.

Previous studies have acknowledged that the board's functions of advising, providing resources

and monitoring are essential to a firm's survival (Hambrick & D'Aveni, 1992), but they have not devoted sufficient attention to how ties between NEDs and the firm influence board effectiveness and the performance of firms. As noted, independent and grey directors act in inherently different ways to fulfil those different board tasks. It is possible that independent directors could perform best in a monitoring role, while grey directors could play important advising and resource dependence roles (Baysinger & Butler, 1985; Westphal, 1999). Underrepresentation of either independent or grey directors on the board may affect the firm's ability to survive. We therefore argue that current governance practice, which inherently favours stacking NED positions with independent directors rather than grey directors, is likely to compromise the advisory and/or resource dependence roles of a board and make firms more susceptible to failure.

This study employs a matched-pairs research design using a sample of 234 companies comprising 117 failed firms and 117 non-failed control firms. The findings indicate that firms with greater proportions of grey directors are less likely to fail, while there is a positive association between the proportion of independent directors and the likelihood of corporate failure. Furthermore, comparing the failed firms to the non-failed firms, the failed firms have lower percentages of grey directors relative both to executive and independent directors on their boards. Overall, the findings support the collaborative board model (Adams & Ferreira, 2007; Westphal, 1999) and echo recent concerns that overemphasis on the monitoring and control roles of independent directors undermines the contributions NEDs can make to the advising and resource dependence functions of the board (Adams

& Ferreira, 2007; Faleye, Hoitash, & Hoitash, 2011).

This study seeks to contribute to the existing literature in three ways. First, this study contributes to the debate over how close ties between NEDs and a firm affect the firm's value. We award equal consideration to the effectiveness of independent and grey directors. Although a large number of studies depart from the agency perspective to examine the effects of independent directors, existing studies remain largely silent regarding the roles and effectiveness of grey directors. This study extends the collaborative board model to address this gap.

Second, this study addresses the lack of discussion in the existing literature on the link between corporate failure and the composition of the board of directors (Daily, McDougall, Covin, & Dalton, 2002). Filatotchev, Toms and Wright (2006) conceptually argue that a firm requires different corporate governance functions at different stages of the corporate lifecycle. To continue to survive, a distressed firm requires a greater degree of the strategic and resource functions of corporate governance. However, the effects of corporate governance mechanisms on firm survival are under-researched. By focusing on the context of corporate failure, this study adds to our understanding of corporate governance at the final stage in the corporate lifecycle.

Third, the results of this study have important public policy implications. UK governance codes were developed in response to a series of unexpected failures, and many other countries have subsequently introduced new rules and practices. The context of corporate failure in the UK therefore provides a unique ground to examine regulators' concerns regarding the contributions of independent

effectiveness of the chairman, liaising with non-executive directors and communicating with major investors (The Higgs Report, 2003). The UK Corporate Governance Code (2012) therefore requires companies to nominate a senior independent director to their boards. It is expected that the presence of senior independent directors is negatively related to the likelihood of corporate failure.

Fourth, CEO tenure (CEOTEN) is used to measure CEOs' experience in the firm. As CEOs who have longer tenures in their firms are more likely to possess firm-specific knowledge, CEO tenure is expected to be negatively related to the likelihood of corporate failure (e.g., Hambrick & D'Aveni, 1992; Simsek, 2007). Fifth, the concentration of external shareholdings (BLOCK) is also included as a control variable. It is argued that block shareholders have greater incentives and ability to become involved in monitoring activities. It is expected that firms with higher external block shareholdings are less likely to fail (e.g., Fama & Jensen, 1983; Shleifer & Vishny, 1986). Sixth, this study controls for ex ante failure risk by employing a profitability ratio (ROA), leverage ratio (LEV), firm size (LnSIZE) and firm age (AGE), which have been commonly used in previous bankruptcy research. It is expected that a firm with greater profitability, lower leverage, larger size and higher age is less likely to fail (e.g., Altman, 1968; Blum, 1974; Howton, 2006).

4. Empirical results

4.1 Descriptive statistics and univariate analysis

Table 2 presents the descriptive statistics categorised by survival status for each of the independent variables and provides the results of the t-test and the Wilcoxon rank sum test for the continuous

variables and the Chi-squared test for categorical variables. The mean values of the percentage of independent directors (INED%) for the failed and non-failed firms are 30.48% and 27.94%, respectively, but this difference is insignificant. The finding does not support Hypothesis 1, which states that there is a negative association between the proportion of independent directors and the likelihood of corporate failure. However, the mean percentages of grey directors (GNED%) for the failed and non-failed firms are 15.72% and 21.50%, respectively, and this difference is statistically significant at the 5% level, suggesting that more grey directors are employed by the non-failed firms than by their failed counterparts. The finding thus supports Hypothesis 2, i.e., the proportion of grey directors on the board is negatively related to the likelihood of corporate failure.

In addition, there is no significant difference in the ratios of independent directors to executive directors between the failed and non-failed firms (INED_ED%), while the ratios of grey directors to executive directors (GREY_ED%) are significantly higher in non-failed firms than that in failed firms. Compared to the failed firms, the non-failed firms have a significantly higher ratio of grey directors to independent directors (GREY_INED%). These results appear to indicate that increasing the representation of grey directors relative to both executive and independent directors on a board may reduce the likelihood of corporate failure.

With regard to the control variables, the average proportions of executive directors (ED%) are 53.80% and 50.55% for the failed and non-failed firms, respectively, and this difference is statistically significant at the 10% level. It appears that the boards of both the failed and non-failed firms are

generally dominated by executive directors. In addition, there is no significant difference in both the presence of leadership duality (DUALITY) and the presence of senior independent director (SINED) between the failed and non-failed firms.

It is also found that the failed firms' CEOs had significantly shorter tenures than their non-failed counterparts, in line with the suggestion by Hambrick and D'Aveni (1992). There is no significant difference in the external block shareholdings (BLOCK) between the failed and non-failed firms, which is not consistent with expectations. Additionally, compared to the failed firms, the non-failed firms have significantly higher profitability (ROA), lower leverage level (LEV) and greater asset size (LnSIZE). However, there is no significant difference in the firm ages (AGE) of the failed and non-failed firms.

[Insert Table 2]

The grey directors are further classified into seven areas based on the UK Corporate Governance Code (2012, Para. B.1.1). **Table 3** shows the percentage of the grey directors in each grey area category on the board for both the failed and non-failed firms. It appears that in comparison to non-failed counterparts, the failed firms had a lower proportion of NEDs who had been employees of

the company (GNED1%), had a material business relationship with the company (GNED2%), received additional remuneration from the company apart from a director's fee (GNED3%), had family ties with the management (GNED4%), held cross-directorships (GNED5%), represented significant shareholders (GNED6%), or had served on the board for more than nine years (GNED7%).

The results suggest that, on average, the non-failed firms had consistently more grey directors across the seven categories than the failed firms.

[Insert Table 3]

4.2 Results of the Conditional Logistic Regression Analysis

Because multicollinearity is considered to be harmful in regression analysis, the Spearman rho correlations between the independent variables are provided in **Table 4**, and the variance inflation factors (VIFs) are computed and examined for each independent variable to examine whether multicollinearity is problematic. The correlations among all independent variables included in each regression analysis in this study are less than 0.40. Multicollinearity in regression analysis is only regarded as harmful when correlations exceed 0.7 (Tabachnick & Fidell, 2007). In addition, in all of the cases shown in **Table 5 and Table 6**, the VIFs are below 2.0, far lower than the critical value of 10

(Tabachnick & Fidell, 2007), which also suggests that multicollinearity is not a major problem in the regression analyses.

[Insert Table 4 about here]

Table 5 presents the results of the conditional logistic regression models used to examine the relationship between the likelihood of corporate failure and board composition one year prior to the corporate failure event. Model (1) examines the effect of independent directors on the likelihood of corporate failure and demonstrates that the likelihood of corporate failure is positively related to the proportion of independent directors (INED%) on boards ($p < 0.05$), which is not consistent with the agency perspective or Hypothesis 1. Model (2) examines the effect of grey directors on the likelihood of corporate failure and reveals a negative association between the likelihood of corporate failure and the proportion of grey directors (GNED%) on boards ($p < 0.01$), consistent with the collaborative board model suggested by Westphal (1999) and Hypothesis 2. The results of Model (1) and Model (2) reflect that, compared to the non-failed firms, independent (grey) directors may be overrepresented (underrepresented) on the boards of the failed firms. Model (3) examines the relationship between the proportion of executive directors or the aggregate proportion of NEDs¹¹ and the likelihood of

corporate failure. The likelihood of corporate failure is not significantly associated with the proportion of executive directors on the board (ED%), which implies that the proportion of aggregate NEDs on the board is not significantly related to the likelihood of corporate failure.

Model (4) in **Table 5** further examines whether the weight of independent and grey directors relative to executive directors on a board is associated with the likelihood of corporate failure. No significant relationship is observed between the ratio of independent directors to executive directors (INED_ED%) and the likelihood of corporate failure, while the ratio of grey directors to executive directors (GNED_ED%) is negatively associated with the likelihood of corporate failure ($p < 0.01$). These findings may suggest that increasing the percentage of independent directors relative to executive directors on a board may not necessarily improve a firm's viability, but increasing the weight of grey directors relative to executive directors on the boards of the failed firms might have enhanced their prospects of survival.

Moreover, Model (5) in **Table 5** examines the effect of the composition of NEDs on the likelihood of corporate failure. The result shows that the ratio of grey directors to independent directors on a board (GNED_INED%) is negatively related to the likelihood of corporate failure ($p < 0.05$), suggesting that increasing NEDs with grey directors may improve a firm's viability. This result may reflect the failed firms' over-reliance on independent directors, and these firms may have needed more grey directors than independent directors to continue to survive.

With respect to the control variables, neither the presence of leadership duality (DUALITY) nor

the presence of senior independent directors (SIND) are significantly related to the likelihood of corporate failure. As noted above, a distressed firm requires a greater degree of the strategic and resource functions from its board (Filatotchev *at al.*, 2006). Increased board monitoring by separating the roles of CEO and chairman and nominating a senior independent director may restrict management discretion to strategically respond to adverse situation in a troubled firm. Therefore, the results do not support to the importance of separating the roles of CEO and chairman and the presence of a senior independent director in maintaining a firm's survival.

In addition, CEO tenure (CEOTEN) and external shareholdings (BLOCK) are also not significantly related to corporate failure. Consistent with expectations, firms with higher profitability (ROA) and lower leverage (LEV) are less likely to fail. Little evidence shows that there is a negative relationship between firm size (LnSIZE) and corporate failure. However, the association between firm age (AGE) and the likelihood of corporate failure is not significant.

[Insert Table 5 about here]

Figure 1 further illustrates the margins of responses of the average probability of corporate failure for specific values of the percentages of independent directors (INED%) and grey directors (GNED%),

which analyses how the probability of corporate failure responds to changes in the percentages of independent directors and grey directors. The figure shows that the likelihood of corporate failure varies depending on changes in the percentages of independent directors (INED%) and grey directors (GNED%). The likelihood of corporate failure increases when the percentage of independent directors (INED%) increases, while the likelihood of corporate failure decreases when the percentage of grey directors (GNED%) decreases. In addition, those relationships appear to be non-linear and suggest that the marginal effects of independent (grey) directors on the probability of corporate failure increase (diminish) as their weight on the board increases.

[Insert Figure 1 about here]

Further tests are performed to examine the associations between the NEDs in each grey area and the incidence of corporate failure. **Table 6** shows that the likelihood of corporate failure is significantly and negatively related to the percentage of non-executive directors who have been employees of the company (GNED1%) (Model (1)), have or had a material business relationship with the company (GNED2%) (Model (2)), have received additional remuneration from the company apart from a director's fee (GNED3%) (Model (3)), have family ties with the management (GNED4%)

(Model (4)), represent significant shareholders (GNED6%) (Model (6)), and have served on the board for more than nine years (GNED7%) (Model (7)). The relationship between the percentage of NEDs who hold cross-directorships (GNED5%) and the incidence of corporate failure is also negative, but not significant (Model (5)). The results appear that different types of grey directors have a consistent effect on a firm's survival, implying that a company may benefit from the presence of grey directors in maintaining viability regardless of their categories.

Overall, the findings presented in **Table 5** and **Table 6** reveal the importance of grey directors on boards and support prior conceptual reasoning that grey directors can add value to a firm (Baysinger & Butler, 1985; Hampel Report, 1998; Westphal, 1999). Corporate governance reformers may understate (overstate) the potential benefits that grey directors (independent directors) provide to the firm. Because alternative NEDs perform different board functions in terms of strategy and control, the increased use of independent directors for board monitoring could lead to a reduced use of grey directors, reducing their positive impacts on firm performance. Consequently, an overemphasis on stacking NEDs with independent directors at the expense of grey directors is likely to be ineffective and make firms more susceptible to failure.

[Insert Table 6 about here]

4.3 Additional Analyses

We perform additional analyses to determine the robustness of our results. First, certain studies and governance reports suggest that the absolute number of different types of directors on a board affects the weight of their views in the board's decisions (e.g., Cadbury, 1992; Gales & Kesner, 1994; Hambrick & D'Aveni, 1992). We examine the associations between the likelihood of corporate failure and absolute numbers of independent directors and grey directors. We find that firms with a greater number of independent directors are more likely to fail and there is a negative relationship between the likelihood of corporate failure and the number of grey directors, consistent with our primary tests shown in models (1) and (2) in **Table 5**.

Second, we employ an alternative definition suggested by Faleye et al. (2011) to classify independent and grey directors. A NED is considered to be an independent director if he/she serves on at least two of three major oversight committees (audit, remuneration and nomination committees); otherwise, he/she is considered to be a non-independent (grey) director. Faleye et al. (2011) argue that the dedication of a NED to monitoring activities reflects his/her function on the board. NEDs who concurrently serve on multiple oversight committees are more monitoring-intensive. They would devote significant time and efforts to oversight duties. However, NEDs who serve on a maximum of one oversight committee are more likely to contribute to the board in an advisory role because less intense monitoring can enable them to develop closer relationships and mutual trust with management,

allowing for them the time to focus more effectively on advising (Faleye et al., 2011). We find that firms with a greater proportion of NEDs who serve on at least two oversight committees are more likely to fail and there is a negative relationship between the likelihood of corporate failure and the proportion of NEDs serving on a maximum of one oversight committee. The findings are consistent with the primary results shown in **Table 5**, which reinforces the importance of non-independent (grey) directors to firm survival.

Third, the UK Corporate Governance Code (2012) requires that at least half of the board should comprise independent directors, which implies that the UK governance reformers prefer that independent directors dominate corporate boards. We therefore investigate the effects of an overrepresentation of independent directors with respect to both grey directors and executive directors on the likelihood of corporate failure. The result shows that the overrepresentation of independent directors relative to grey directors is positively associated with the likelihood of corporate failure, but there is no significant relationship between the overrepresentation of independent directors relative to executive directors and the likelihood of corporate failure. These findings suggest that having a board dominated by independent directors may not necessarily improve the likelihood of firm survival, compared to having one with grey directors, in line with the findings presented in **Table 5**.

Fourth, it is suggested that problematic firms may tend to change their board composition in response to poor performance (Hermalin & Weisbach, 2003). We thus employ the interaction term between the percentage of independent directors and return on assets and the interaction term between

the percentage of grey directors and return on assets to examine whether the effects of the percentages of independent and grey directors on the likelihood of corporate failure are subject to firm performance. However, we find that the interactions between firm performance and the percentages of independent directors and grey directors are not significantly related to the likelihood of corporate failure.

Lastly, the previous literature has suggested interrelationships or trade-offs between various governance mechanisms. Charitou et al. (2007) argue that external block shareholders are effective monitors because they have significant interests in the firms. A firm may demand fewer independent directors when its external block shareholders have higher ownership shares in the firm, suggesting that the effect of independent directors on firm performance is subject to the degree of external block shareholdings (Charitou, et al., 2007; Mak & Li, 2001). This study therefore also analyses the relationship between the likelihood of corporate failure and the interactions between the percentages of independent directors and external block shareholdings. However, the result shows that the interactive effect of the percentage of independent directors and external block shareholdings is not significantly related to the likelihood of corporate failure.

5. Discussion and conclusions

In this study, we examine whether a firm's board structure is related to the likelihood of corporate failure in the UK. Particularly, we address the effectiveness of different types of NEDs: independent directors and grey directors. In doing so, we compare the board compositions of 117 failed firms to

those of a set of year-, industry- and size-matched non-failed firms. The empirical results suggest that firms with greater proportions of grey directors on their boards are less likely to fail. This result is confirmed when we separately analyse the seven categories of grey directors defined by the UK Corporate Governance Code (2012, Para. B.1.1). However, there is a significant, positive relationship between independent directors and corporate failure. Furthermore, the findings also demonstrate that firms with a greater share of grey directors relative both to executive and independent directors on their boards are less likely to fail.

The findings of this study appear to have important implications for the corporate governance literature. The findings demonstrate the importance of grey directors, consistent with the collaborative board model suggested by Westphal (1999) and Adams and Ferreira (2007) and the conceptual arguments of Baysinger and Butler (1985) and Baysinger and Hoskisson (1990). This result suggests that personally and economically tied NEDs who serve on boards can add value to firms. The results also contribute to the critique that the effectiveness of independent directors may be overstated in governance reform efforts (e.g., Adams & Ferreira, 2007; Baysinger & Hoskisson, 1990; Coles, Daniel, & Naveen, 2008; Faleye, et al., 2011; Hwang & Kim, 2009; Mace, 1986; Patton & Baker, 1987). An overemphasis on monitoring and control by independent directors may come at the expense of the contributions that NEDs can make to wealth creation (Adams & Ferreira, 2007; Faleye, et al., 2011; The Higgs Report, 2003).

Although the results of this study are important, they must be interpreted in light of the following

limitations, which may be addressed in future research. First, this study focuses on the observable personal or economic ties defined by the UK Corporate Governance Code (2012). This may underestimate the effects of unobservable friendship ties between executive directors and NEDs. Second, all of the sample companies considered in this study were classified in terms of the UK bankruptcy code. In fact, corporate failure could be a consequence of various reasons such as liquidity problem, ethical problem of management and changes in the external environment. A greater understanding of the relationship between corporate governance and corporate failure could be gained by extending the investigation to include the effectiveness of different corporate governance mechanisms in mitigating those various causes of failure that are beyond the scope of this study. Extending the current study into different settings in terms of various reasons of corporate failure might be a useful direction for future research.

Notes

¹ In this study we refer to ‘personal or economic ties (affiliations) between NEDs and the firm’ and intend it to include NEDs’ affiliations with both the firm and its management.

² Companies in financial and mining sectors were excluded on the grounds that they have a number of significant differences in terms of industrial characteristics and accounting systems, such as income-measuring accounting rules.

³ The lists of companies revoked from the Official List on The London Stock Exchange are obtained from the electronic resources Citytext and Hemscoff Company Guru.

⁴ There are 14 companies in our final sample that were transferred from the Official List to the AIM List between 1997 and 2010. Those AIM companies are considered officially listed companies in this study because they went into receivership, administration or liquidation immediately after moving onto the AIM list, and all of their filed information is obtained during their official listing periods.

⁵ Similar to existing US-based governance-failure studies, there are relatively few large-scale companies subject to failure in the UK. There were only 21, 57, 57 and 50 failed companies in the studies by Chaganti et al. (1985), Hambrick and D’Aveni (1992), Daily and Dalton (1994a, 1994b), respectively.

⁶ The time period, industry classification and company size matching criteria employed in this study have commonly been used in prior bankruptcy studies (e.g., Blum, 1974; Beaver, 1966; Daily, 1996).

⁷ Each failed sample company was matched with a non-failed company at the 3-digit level of the sub-sector code of the FTSE industrial classification.

⁸ Within the industry group of each failed sample firm, the non-failed firm that had total sales most similar to the total sales of the failed firms was selected as the matching non-failed sample firm.

⁹ This result is similar to the findings of Citron and Taffler (1992) and Lennox (1999).

¹⁰ We classify all non-executive directors who do not meet the independence criteria defined by the UK Corporate Governance Code (2012, Para. B.1.1) as non-independent (grey) directors in this study, although the Code allows for the board to state its reasons if it considers a director independent notwithstanding he or she failing to meet the criteria.

¹¹ NEDs include both independent directors and grey directors. The total percentage of NEDs on the board is equal to 100% minus the percentage of executive directors on the board (ED%).

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Table 1**The Characteristics of Failed Sample Firms**

Panel A: Number of failed sample companies and nature of the failure					
Delisting	Nature of Failure			Frequency	Percentage
	Liquidation	Receivership	Administration		
1997	0	1	1	2	2%
1998	1	4	3	8	7%
1999	3	4	3	10	9%
2000	6	4	1	11	9%
2001	2	6	6	14	12%
2002	13	7	5	25	21%
2003	2	7	2	11	9%
2004	3	3	1	7	6%
2005	1	2	3	6	5%
2006	1	2	0	3	3%
2007	0	0	0	0	0%
2008	0	1	5	6	5%
2009	0	0	9	9	8%
2010	1	0	4	5	4%
Total	33	41	43	117	100%

Panel B: Distribution of the FTSE industrial classifications of the failed sample companies		
Industrial Classifications	Frequency	%
Basic Materials	4	3%
Industrials	32	27%
Consumer Goods	24	21%
Health Care	6	5%
Consumer Services	28	24%
Telecommunications	6	5%
Utilities	2	2%
Technology	15	13%
Total	117	100%

Table 2**Descriptive Statistics of the Sample and Univariate Analysis**

Variables	Failed firms					Non-failed Firms					t Test / Chi-squared Test ⁽³⁾	Wilcoxon Test
	Mean	Median	Min	Max	Std dev	Mean	Median	Min	Max	Std dev		
INED%	30.48	33.33	0.00	80.00	17.87	27.94	25.00	0.00	75.00	18.53	1.07	0.71
GNED%	15.72	12.50	0.00	66.67	18.71	21.50	20.00	0.00	75.00	17.39	2.45 **	2.47 **
INED_ED%	64.58	60.00	0.00	400.00	55.07	69.85	50.00	0.00	400.00	64.79	0.71	1.06
GNED_ED%	34.80	20.00	0.00	300.00	49.63	56.75	40.00	0.00	600.00	83.20	2.42 **	2.57 **
GNED_INED%	49.61	0.00	0.00	300.00	73.25	98.39	50.00	0.00	600.00	123.41	2.92 ***	2.69 ***
ED%	53.80	50.00	0.00	100.00	15.04	50.55	50.00	12.50	100.00	16.36	1.75 *	1.88 *
DUALITY	0.23	0.00	0.00	1.00	0.42	0.17	0.00	0.00	1.00	0.38	1.70	
SINED	0.55	1.00	0.00	1.00	0.50	0.60	1.00	0.00	1.00	0.49	0.63	
CEOTEN	5.85	5.00	0.00	29.00	4.81	8.52	7.00	0.00	36.00	5.64	3.54 ***	3.78 ***
BLOCK	37.81	38.22	0.00	87.62	19.27	38.33	33.81	3.14	76.91	18.45	0.23	2.54
ROA	-0.23	-0.10	-5.20	0.43	0.60	0.04	0.09	-0.88	0.52	0.21	4.87 ***	6.56 ***
LEV	0.34	0.31	0.00	2.79	0.26	0.17	0.14	0.00	1.14	0.18	4.91 ***	5.75 ***
LnSIZE	10.72	10.57	7.10	14.09	1.37	11.08	10.96	7.08	18.96	1.60	2.24 **	2.21 **
AGE	36.92	20.00	1.00	132.00	34.23	40.01	30.00	4.00	115.00	32.10	0.75	1.02

Notes: (1) ***, ** and * indicate significance at the $p < 0.01$, $p < 0.05$ and $p < 0.1$ levels, respectively, based on two-tailed tests. (2) INED%: the percentage of total board members who are independent directors; GNED%: the percentage of total board members who are grey directors; INED_ED%: the ratio of independent directors to executive directors; GNED_ED%: the ratio of grey directors to executive directors; GNED_INED%: the ratio of grey directors to independent directors; ED%: the percentage of board members who are executive directors; DUALITY: the presence of leadership duality; SINED: the presence of a senior independent director; CEOTEN: number of years that the incumbent CEO has spent on the board; BLOCK: total percentage of shareholdings held by significant external shareholders; ROA: return on assets; LEV: the percentage of total debts in terms of total assets; LnSIZE: natural log of total assets (£000); AGE: firm age. (3) T-tests and Wilcoxon rank sum tests for continuous variables and Chi-squared test for categorical variables (DUALITY and SINED).

Table 3**Percentage of directors in each grey area category**

Grey directors Categories ¹		Failed Firms	Non-failed Firms
GNED1%	Former Employee of Company or Group	4.03% (25.64%)	5.97% (27.77%)
GNED2%	Material Business Relationship with Company	1.68% (10.69%)	5.63% (26.19%)
GNED3%	Receives additional remuneration from the company apart from a director's fee	3.68% (23.41%)	6.29% (29.26%)
GNED4%	Relatives of Management	0.21% (1.34%)	0.95% (4.42%)
GNED5%	Cross Directorships	3.33% (21.18%)	3.39% (15.77%)
GNED6%	Represents a significant shareholder	7.39% (47.01%)	9.60% (44.65%)
GNED7%	Serving on the board for more than nine years	5.10% (32.44%)	10.19% (47.40%)

Notes: (1) The table presents the percentage of grey directors in each grey area category relative to the total number of directors. The percentage of grey directors in each grey area category relative to the total number of grey directors is shown in parentheses. (2) The grey directors are classified in terms of the categories recommended by the UK Corporate Governance Code (2012, Para. B.1.1). (3) GNED1%: the percentage of grey directors who have been an employee of the company or group; GNED2%: the percentage of grey directors who have or had a material business relationship with the company; GNED3%: the percentage of grey directors who have received additional remuneration apart from a director's fee; GNED4%: the percentage of grey directors who have close family ties with the company's other directors, advisors or senior employees; GNED5%: the percentage of grey directors who hold cross-directorships; GNED6%: the percentage of grey directors who represent significant shareholders; GNED7%: the percentage of grey directors who have served on the board for more than nine years. (4) Percentages sum to more than 15.72% and 21.50% of total directors of the failed and non-failed firms, respectively, because certain grey directors fit multiple categories.

Table 4**Spearman's rho Correlations among Independent Variables**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 INED%	1.00													
2 GNED%	-0.62 ***	1.00												
3 INED_ED%	0.88 ***	-0.24 ***	1.00											
4 GNED_ED%	-0.53 ***	0.99 ***	-0.13 *	1.00										
5 GNED_INED%	-0.73 ***	0.97 ***	-0.39 ***	0.93 ***	1.00									
6 ED%	-0.33 ***	-0.47 ***	-0.69 ***	-0.54 ***	-0.32 ***	1.00								
7 DUALITY	-0.02	-0.19 ***	-0.09	-0.21 ***	-0.16 **	0.24 ***	1.00							
8 SINED	0.19 ***	0.04	0.23 ***	0.07	-0.01	-0.23 ***	0.10	1.00						
9 CEOTEN	-0.09	-0.04	-0.15 **	-0.07	-0.01	0.14 **	0.22 **	0.05	1.00					
10 BLOCK	0.13 *	0.07	0.25 ***	0.08	0.02	-0.25 ***	-0.06	-0.05	0.02	1.00				
11 ROA	-0.11	0.03	-0.13 *	0.02	0.06	0.09	0.01	-0.06	0.25 ***	0.04	1.00			
12 LEV	0.05	-0.14 *	0.01	-0.13 *	-0.14 **	0.14 *	0.11	-0.14 *	-0.17 **	-0.05	-0.17 **	1.00		
13 LnSIZE	0.15 **	-0.01	0.19 ***	0.03	-0.05	-0.11	0.05	0.25 ***	0.12 *	-0.03	0.26 ***	0.13 *	1.00	
14 AGE	0.05	0.04	0.06	0.05	0.01	-0.06	0.11	-0.07	0.13 *	0.11	0.01	0.04	0.06	1.00

Notes: (1) ***, ** and * indicate significance at the $p < 0.01$, $p < 0.05$ and $p < 0.1$ levels, respectively, based on two-tailed tests. (2) INED%: the percentage of board members who are independent directors; GNED%: the percentage of board members who are grey directors; INED_ED%: the ratio of independent directors to executive directors; GNED_ED%: the ratio of grey directors to executive directors; GNED_INED%: the ratio of grey directors to independent directors; ED%: the percentage of board members who are executive directors; DUALITY: the presence of leadership duality; SINED: the presence of a senior independent director; CEOTEN: number of years that the incumbent CEO has spent on the board; BLOCK: total percentage of shareholdings held by significant external shareholders; ROA: return on assets; LEV: percentage of total debts in terms of total assets; LnSIZE: natural log of total assets (thousands); AGE: firm age.

Table 5
Conditional Logistic Regression of the Association between Board Composition and the Incidence of Corporate Failure

Dependent Variable: 1: Failed Firms, 0: Non-failed Firms					
Variables	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
INED%	0.033** (0.013)				
GNE%D		-0.040*** (0.013)			
INED_ED%				0.003 (0.004)	
GNE%D_ED%				-0.009*** (0.003)	
GNE%D_INED%					-0.007** (0.003)
ED%			0.017 (0.014)		0.018 (0.018)
DUALITY	0.501 (0.620)	0.060 (0.656)	0.006 (0.610)	0.225 (0.671)	0.622 (0.803)
SINED	-0.258 (0.581)	-0.239 (0.541)	0.244 (0.490)	-0.379 (0.550)	-0.314 (0.809)
CEOTEN	-0.051 (0.048)	-0.058 (0.051)	-0.046 (0.053)	-0.041 (0.050)	-0.054 (0.060)
BLOCK	-0.012 (0.012)	-0.002 (0.013)	0.001 (0.014)	-0.004 (0.013)	-0.006 (0.015)
ROA	-3.894** (1.938)	-4.116** (1.736)	-3.910** (1.710)	-3.903** (1.838)	-3.659* (2.139)
LEV	4.427* (2.373)	4.537** (1.978)	3.995** (1.926)	4.490** (2.286)	4.294** (1.749)
LnSIZE	-0.439* (0.204)	-0.342* (0.185)	-0.202 (0.180)	-0.254 (0.246)	-0.262 (0.268)
AGE	0.008 (0.007)	0.007 (0.007)	0.003 (0.006)	0.006 (0.007)	-0.000 (0.007)
Observations	234	234	234	226	172
Log likelihood	-42.97	-40.78	-46.12	-40.79	-29.33
Chi-square	27.64***	31.80***	29.90***	34.15***	29.26***
Pseudo R ²	0.470	0.497	0.431	0.479	0.508

Notes: (1) ***, ** and * indicate significance at the $p < 0.01$, $p < 0.05$ and $p < 0.1$ levels, respectively, based on two-tailed tests; robust standard errors are presented in parentheses. (2) INED%: the percentage of board members who are independent directors; GNE%D: the percentage of board members who are grey directors; INED_ED%: the ratio of independent directors to executive directors; GNE%D_ED%: the ratio of grey directors to executive directors; GNE%D_INED%: the ratio of grey directors to independent directors; ED%: the percentage of board members who are executive directors; DUALITY: the presence of leadership duality; SINED: the presence of a senior independent director; CEOTEN: number of years that the incumbent CEO has spent on the board; BLOCK: total percentage of shareholdings held by significant external shareholders; ROA: return on assets; LEV: percentage of total debts in terms of total assets; LnSIZE: natural log of total assets (thousands); AGE: firm age. (3) The table shows the results for one year prior to failure. The results are largely unchanged in the second, third and fourth years prior to failure.

Table 6

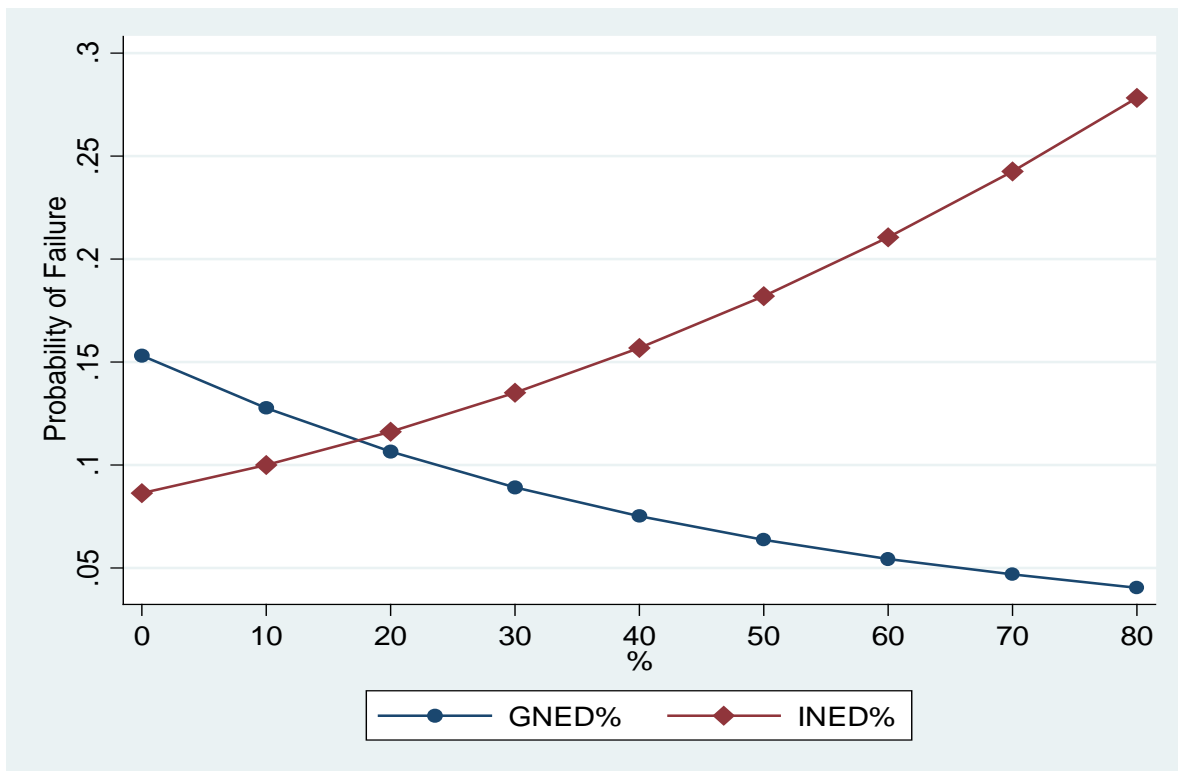
Conditional Logistic Regression of the Association between Different Category of Grey Directors and the Incidence of Corporate Failure

Dependent Variable: 1: Failed Firms, 0: Non-failed Firms							
Variables	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)
GNED1%	-0.041** (0.018)						
GNED2%		-0.074*** (0.021)					
GNED3%			-0.056*** (0.020)				
GNED4%				-0.112* (0.059)			
GNED5%					-0.013 (0.015)		
GNED6%						-0.025* (0.015)	
GNED7%							-0.044** (0.018)
DUALITY	0.126 (0.619)	0.375 (0.744)	-0.019 (0.626)	0.151 (0.609)	0.211 (0.609)	0.082 (0.647)	-0.125 (0.565)
SINED	0.075 (0.495)	-0.034 (0.546)	0.044 (0.532)	0.098 (0.454)	0.164 (0.488)	-0.113 (0.524)	0.046 (0.557)
CEOTEN	-0.043 (0.050)	-0.046 (0.057)	-0.033 (0.051)	-0.043 (0.054)	-0.047 (0.054)	-0.047 (0.053)	-0.035 (0.043)
BLOCK	-0.003 (0.013)	-0.000 (0.014)	-0.002 (0.012)	-0.006 (0.013)	-0.003 (0.013)	-0.001 (0.014)	-0.003 (0.013)
ROA	-3.803** (1.699)	-4.253** (1.969)	-4.370** (1.794)	-3.747** (1.821)	-3.921** (1.733)	-3.915** (1.758)	-3.612*** (1.402)
LEV	4.246** (1.955)	3.709* (2.227)	4.215* (2.004)	4.380* (2.282)	4.155* (2.127)	4.138* (2.128)	3.914*** (1.469)
LnSIZE	-0.291 (0.177)	-0.162 (0.187)	-0.279 (0.182)	-0.260 (0.186)	-0.270 (0.182)	-0.254 (0.178)	-0.315 (0.165)
AGE	0.004 (0.006)	0.004 (0.007)	0.006 (0.006)	0.002 (0.006)	0.005 (0.006)	0.004 (0.006)	0.003 (0.007)
Observations	234	234	234	234	234	234	234
Log likelihood	-45.10	-42.27	-42.65	-45.26	-45.74	-45.03	-43.35
Chi-square	29.98***	28.55***	31.97***	25.16***	27.67***	28.47***	48.90***
Pseudo R ²	0.444	0.479	0.474	0.442	0.429	0.445	0.465

Notes: (1) ***, ** and * indicate significance at the $p < 0.01$, $p < 0.05$ and $p < 0.1$ levels, respectively, based on two-tailed tests; robust standard errors are presented in parentheses. (2) GNED1%: the percentage of grey directors who have been an employee of the company or group; GNED2%: the percentage of grey directors who have or had a material business relationship with the company; GNED3%: the percentage of grey directors who have received additional remuneration apart from a director's fee; GNED4%: the percentage of grey directors who have close family ties with the company's other directors, advisors or senior employees; GNED5%: the percentage of grey directors who hold cross-directorships; GNED6%: the percentage of grey directors who represent significant shareholders; GNED7%: the percentage of grey directors who have served on the board for more than nine years. (3) The definitions for the control variables have been presented in **Table 5**.

Figure 1.

The relationships between board composition and the probability of corporate failure



Notes: (1) This figure depicts the margins of responses of the average probability of corporate failure for specific values of INED% and GNED%. We use the predictions of models (1) and (2) in **Table 5** to calculate the probability of failure for each observation at fixed values of INED% and GNED%, respectively, and the observed values of the remaining covariates. We then calculate the average probability of failure by averaging the probability of failure of each observation. (2) INED%: the percentage of board members who are independent directors; GNED%: the percentage of board members who are grey directors.