The Value of Independent Directors: Evidence from Sudden Deaths*

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Abstract

We investigate the contributions of independent directors to shareholder value by examining the stock price reaction to an exogenous event: sudden deaths of directors. Compiling an extensive database of sudden deaths of 270 directors in the U.S. from 1994 to 2007, we find that following the death of an independent director, the firm's stock price drops by almost 1% on average. For our control sample of inside or gray directors, we find that stock prices do not react in any significant way to these events. This difference in abnormal returns following the sudden deaths of independent, gray and inside directors is statistically and economically significant. Positions in board, experience, age, and educational backgrounds are the main determinants of the negative abnormal returns. Consistent with the value of independent directors, we find that stock prices react less negatively when the independent director has long tenure or is a senior board member. Overall, our results demonstrate that independent directors provide a service valued by shareholders.

Keywords: board of directors, board members, corporate governance, sudden death
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Are independent directors valuable to firms? What are the determinants of their contributions to shareholder value? These issues have attracted a lot of attention in the popular and business press in recent years. Surprisingly, despite a rich literature on the board of directors, to our knowledge, there have been no direct empirical answers to these questions. This paper attempts to fill this void by examining the stock price reaction to sudden deaths of independent directors. Overall, we find that the sudden death of an independent director is value-reducing for the firm and that the contributions of an independent director to firm value depend on a number of factors such as the position he hold in the board, his skills and competence.

The dominant view in the literature and from the regulators is that outside independent directors are better at monitoring (so are boards with a majority of independent directors.) The reason frequently mentioned is that independent directors are not (or less) subject to the classical agency problem which can be harmful to shareholders' interest. Fama and Jensen (1983, p. 315) note that outside directors are in majority managers or decision makers in other complex organization. When they accept directorships in other companies, they care about their reputation. The status and the reputation effect provide incentives to outside directors to carry out difficult tasks which are the most prone to serious agency problems.

Many studies show empirical evidence to support Fama and Jensen (1983) view. Weisbach (1988), for example, reports that firms with outsider-dominated boards are more likely to remove a CEO for poor performance in comparison to firms with insider-dominated boards. Rosenstein and Wyatt (1990) (appointment of outside directors), Byrd and Hickman (1992) (tender offer bid), Brickley, Coles, and Terry (1994) (poison pills adoption and control auctions) among others show that outside directors are more likely to defend shareholder interest. There has been however less evidence on the impact of directors' competence and skill on firm value. Recent exceptions include Guner, Malmendier and Tate (2006), Dittmann, Maug and Schneider (2008) on financial expertise of directors.

In this paper, we first analyze the contributions of independent directors to firm value by studying the stock price reaction to sudden deaths of outside independent directors. If an independent director positively enhances firm value by properly

monitoring the managers and/or by providing them with pertinent advice, firm value should be reduced when he dies suddenly. Thus, our underlying hypothesis is that abnormal returns following sudden deaths of independent directors should be negative and significant.

Secondly, we study whether market reaction to the sudden death of an independent director is different to that of a gray and an inside director. If the average skill are constant across the different types of directors this will allow to understand the value of being independent and less prone to take decisions that are diametral to shareholders' interest.

The third focus of our paper is to analyze potential determinants of the contribution of independent directors to firm value. We argue that an independent director, apart from his independence which is crucial in decision making, might increase shareholder value thanks to his business experience, his social networks, and his sheer ability. We thus focus our analysis on the positions of an independent director in the board, as well as on proxies for his skills and competence.

Compiling an extensive database of sudden deaths of 270 directors in the U.S. from 1994 to 2007, we find that following the death of an independent director, the firm's stock price drops by almost 1 on average. These negative abnormal returns are significantly different from zero and important in economic terms. Since the average capitalization of firms in our sample is 5.3 billion dollars, firm value is reduced by almost 50 million dollars following the death of an independent director. Our evidence confirms the view that independent directors increase shareholder value. We also find that stock prices do not react in any significant way to sudden deaths of inside or gray directors. The difference in abnormal returns following the sudden deaths of independent, gray and inside directors is statistically and economically significant.

Positions in board, experience, age, and educational backgrounds are the main determinants of the negative abnormal returns. We find that the stock price react more negatively when the independent director is truly independent as the decline in the stock price to sudden deaths of independent directors with long tenure or seniority on the board is smaller.

Our paper contributes to the literature on corporate boards along several dimensions. First, to our knowledge, this paper is the first to provide direct empirical evidence on the contribution of independent directors to shareholder value. Although we did not separate the monitoring role from the adviser role, we show that independent directors enhance shareholders value. Second, in terms of methodology, our use of sudden deaths allows us to avoid the potential endogeneity problems related to how boards of directors impact firm value - a common issues in corporate finance. The use of such exogenous events also helps us easily separating the issue of skills and competence from the issue of independence of directors.

Overall, evidence from our paper is broadly consistent with Fama and Jensen (1983). Results from our paper should not be simply interpreted as adding more independent directors into a board is always better. Independent directors are good for firm value under some equilibrium in the competence and independence within the board and only when they are competent.

The remainder of the paper is organized as follows. Section I reviews related literature. Section II describes the database and empirical strategy. In Section III, we report our main empirical findings. Some robust checks of the results are presented in Section IV. Section V closes with a discussion of the results and our conclusions.

I. Prior Literature on Independent Directors

Prior literature, both theoretical and empirical, has focused on one of the many facets of the board of directors as a monitor or/and as an advisor.[1] For several reasons outside independent directors have been seen as the most able to assume both roles inside the board.[2]

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[1] Previous literature focused more on the motoring role of the board. Only recently, researchers started focusing on the expertise and the advisory role of the board. See, for example, Adams and Ferreira (2006) for a theoretical model showing interaction between board monitoring and advisory roles. Guner, Malmendier, Tate (2006), Dittmann, Maug and Schneider (2008) provide empirical evidence on financial expertise of directors.

[2] Directors are usually classified into three categories. Directors who are also current employees of the firm are considered inside directors. Board members who are retired employees

First, outside independent directors are not (or less) subject to potential conflicts of interest that reduce their monitoring capacity. In their seminal work, Fama and Jensen (1983, p. 314) acknowledge that insiders who are top executives might have an edge in information over other boards members, and that insiders can even be involved in the nomination of outside directors. However, the ultimate decisions on crucial issues such as setting executive compensation or searching for replacements of top managers are strictly the board authority and in most cases in the hands of independent directors. There has been abundant evidence that outsider-dominated boards are better monitors of the management. Weisbach (1988) reports that outsider-dominated boards are more likely to fire CEOs for poor performance. Rosenstein and Wyatt (1990) show that the stock market reacts positively to appointments of outside directors. Byrd and Hickman (1992) report that bidding firms with outsider-dominated boards have significantly higher announcement-date abnormal returns. Cotter, Shivsadani and Zenner (1997) find similar results for the target firms with outsider-dominated boards. Brickley, Coles, and Terry (1994) provide evidence that markets react positively when a firm with an outsider-dominated board announces adoption of poison pills. Recently, mixed evidence from several papers points out some limits to the effectiveness of outside directors' monitoring. Ferris, Jagannathan and Pritchard (2003) find that outside directors with multiple directorships do not harm firm performance nor increase the likelihood of firms to be named in security fraud. Perry and Peyer (2005) show that in some circumstances, outside directors who accumulate multiple directorship can enhance firm value. Fich and Shivsadani (2006) go further in specifying that independent directors and boards can only be good monitors if they are not "too busy." They find evidence that firms in which a majority of outside directors accumulate three or more directorships are associated with

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of the firm, relatives of the CEO, and/or persons with conflicts of interest or related to the firm's business are classified as "gray" outside directors. Directors who are not current or former employees, and who do not have dealings with the firm are designated as (independent) outside directors. Weisbach (1988), and Shivsadani and Yermack (1999) provide a succinct review of the measures of board independence used in the literature. Recent studies, for example Hermalin and Weisbach (1998) and Carter and Lorsch (2004), also consider relative and absolute tenure of the CEO in comparison to directors' tenure as alternative measures.

weak corporate governance. Markets react positively when a busy outside directors leave, and negatively when a director becomes busy by accepting an additional directorship.

Second, outside directors are in most cases experienced professionals or key persons in other firms or large organizations who care about the reputation in the labor market. Fama and Jensen (p. 315, 1983) hypothesize that this reputational effect induces outside directors to monitor, not a large compensation. By contrast, Yermack (2004) finds that outside directors have considerable money incentives to monitor. For each directorship, one standard deviation of the annual stock return performance can increase the outside director's wealth by $285,000, a non-trivial amount for an individual.

Third, outside independent directors possess technical expertise both in management and in decision-making (Fama and Jensen, 1983). This stature and expertise allow them to be able to monitor once they are given the right incentives to do so. Guner, Malmendier and Tate (2006) provide evidence that boards with financial experts do influence firm financing features. Dittmann, Maug and Schneider (2008) report that bankers who serve on the boards of non-financial German companies do not serve the interest of non-financial shareholders.

The evidence on the value of independent directors to shareholders interest is thin. Despite separate and various pieces of evidence, to date, there has been no evidence on the quantifiable contribution of independent directors on firm value. We do not know whether all independent directors are equally good or whether there are other determinants of the value of independent directors. We do not know about the value of independent directors in comparison to gray and inside directors. An obvious reason for this lack of insight is, as noted by Hermalin and Weisbach (2003), the fact that board of directors arise as an endogenously determined institution. Board composition and nominations are not likely to be exogenously related to firm performance.[3] Thus, any successful attempt to address these important issues will have to overcome the potential endogeneity problems to be able to identify the value of independent directors.

[3] To provide a few examples: Hermalin and Weisbach (1998) model shows board independence might just be the outcome of a bargaining process between the CEO and the board. Shivdasani and Yermack (1999) report evidence that the CEOs are involved in the selection of directors.

The literature on the value of corporate managers suffers from similar identifications problems since managerial turnover decisions hardly are random and often coincide with other relevant news about the firm. To mitigate these endogeneity problems, several papers have studied some exogenous events. In a seminal study, Johnson, Magee, Nagarajan, and Newman (1985) use sudden executive deaths to overcome these problems. The attractiveness of this approach is that sudden unexpected deaths occur randomly and are exogenous to current firm and market conditions. Using a sample of 53 sudden executive deaths between 1971 and 1982, Johnson et al. (1985) find a positive stock price reaction to the death of founder-CEOs, whereas professional CEOs seem enhance value exemplified through a negative market reaction to their death. In later studies the sudden death approach has used to examine interaction between characteristics of executives and the stock price reaction to sudden death announcement: Worrell, Davidson, Chandy, and Garrison (1986) analyze the relationship between 127 announcements of executive deaths and the position of the executive (CEO vs. Chairman); Slovin and Sushka (1993) examine the stock price reaction to the death of 85 inside blockholders, Haynes and Schaeffer (1999) compares the stock market reaction to manager/firm separation where managers quit their job to the stock price reaction from 29 cases where the firm looses its CEO due to sudden death; Borokhovich, Brunarski, and Harman (2005) use a sample of 161 executive deaths to examine the relationship to managerial ownership; Salas (2007) examines 184 sudden deaths to shed light on whether entrenched CEOs are associated with a negative stock price reaction; and finally, Roberts (1990), Fisman (2001), and Faccio and Parsley (2008) use sudden deaths (or rumours of poor health) of politicians to estimate the value of having a politically connected CEO.

We extend this line of research by studying the stock market reaction to sudden director deaths. To the best of our knowledge, this paper is the first to exploit sudden deaths of directors to overcome endogeneity problems in identifying and measuring the value of directors. This is quite surprising given the fact that the approach introduced by Johnson et al. (1985) has been know for more than two decades, and, moreover, the population of directors is significantly larger than the pool of executives.

II. Sample and Data

A. Sample Selection and Definition of Sudden Death

The sample consists of 270 sudden deaths of corporate directors which occurred between January 1, 1994 and December 31, 2007. A gross sample of 698 deceased directors was identified by searching Factiva, Lexis-Nexis and Edgar Online using keyword search terms on directors (board member, director) and death (passed away, died, deceased, etc.). Unlike prior research using sudden death events our search terms did not include keywords designed to capture sudden deaths (e.g. "sudden" or "unexpected"). This omission is important as many newspaper articles report the medical cause of death without explicitly mentioning that the death is sudden, e.g. cerebral hemorrhage (stroke). Thus, by conducting a general search designed to identify all deceased directors, we identify cases of sudden deaths that would not show up in a search focused at identifying sudden deaths.[4] The cost of the general keyword search design is that the search returns a significant number of newspaper articles. In fact, our sample of 698 director deaths was identified from more than 5,000 newspaper articles and 2,000 corporate fillings to the SEC.

To be able to measure the market reaction it is important that our sample only includes deaths that are truly sudden and unexpected by stock market. Prior research using sudden deaths has not provided a stringent definition of sudden deaths: Johnson et al. (1985, p. 157) identify their sample of 53 executive deaths from a gross sample of 210 deaths by excluding deaths were the cause *was not attributed to 'prolonged illness', 'complications following surgery' or indeterminate*, whereas Slovin and Sushka (1993) do not seem to impose restriction on their sample of deceased blockholders. More recent papers (e.g.

[4] In fact the evidence from our search shows that there is quite a large variation across media outlets in how the cause of death is described, e.g. strokes are also referred to as aneurysm and cerebral hemorrhage. Similarly, accidents are often described by the type of the accident; e.g. airplane, helicopter or plane crash, head injury due to a fall incident, shooting incident or death caused by participation in sports, e.g. fall from horse during a polo game, without mentioning the word "accident". Inherently, the large variation in the media's description of the cause of director deaths makes it difficult to sample all sudden deaths by including keywords such as "accident", "sudden", and "stroke" tailored to capture sudden deaths only. This is important as prior research using sudden deaths has suffered from relatively modest sample sizes varying from 29 to 184 cases.

Haynes and Schaefer, 1999, and Salas, 2007) provide some insight into how their sample of sudden deaths was selected. A natural reference point for any such discussions and selection of sudden deaths is the medical literature, which defines sudden death as an unexpected and non-traumatic death that occurs instantaneously or within a few hours of an abrupt change in the person's previous clinical state. One example of such an event is sudden cardiac death, which according to the American Academy of Pediatrics is defined as a nontraumatic**,** nonviolent, unexpected event resulting from sudden cardiac arrest within 6 hours of a previously witnessed state of normal health. Although our ability to follow a stringent medical definition is limited by our use of newspaper articles to classify causes of death, we have tried to be careful to ascertain that the deaths in our sample were indeed sudden and consistent with the medical definition.

To classify the sudden deaths, the cause of death was verified by additional searches on news containing the name of the director in the period surrounding his death. In case of inconsistency in the reported cause of death across different sources (e.g. one newspaper reports the death as sudden whereas another reports cancer as the cause of death) our approach is to be conservative and only include events where we have no conflicting evidence that the death is sudden and unexpected. Thus, deaths described as "sudden" or "unexpected" with no cause listed are only included if we could find no news indicating that the director was ill or suffered from declining health.

From the gross sample of 698 deceased directors we identify 270 sudden deaths. We include heart attacks, stroke, accidents as well as deaths where the cause is unreported, but the death is described as either sudden and/or unexpected by the stock market. Thus, our sudden death sample does not include cancer, complications from illness, past strokes or surgery, suicides, or cases where the death is referred to as "untimely". Panel A in Table I shows the reported cause of deaths for all deceased directors, whereas Panel B reports the cause for sudden deaths.

Out of the 698 deceased directors in our gross sample, Panel A shows that 270 (38.7 percent) of the deaths were sudden. In addition, 128 directors died of cancer, 60 directors died from complications related to various specified deceases (of which complications from past strokes account for 27 cases), 14 from complications related to surgery, 5

directors committed suicide, 74 died from unspecified illness, whereas the cause of death was unreported for the remaining 247 cases.

Panel B of Table I shows that around 39 percent of the directors who suddenly died suffered from heart attack, whereas around 8 percent died from a stroke. Accidents, including plane/helicopter crash (28 cases), traffic accidents (12 cases), fall accidents (7 cases), drowning (2 cases), murder (2 cases), and shooting incident (1 case) account for 19.6 percent of our sample. Finally, a total of 90 (33.3 percent) deaths are described as sudden and unexpected without specific details about the cause of death.[5]

For the sample of sudden deaths, the death date and news date was verified by additional searches on news containing the name of the director. In case the death is reported by multiple news agencies the earliest date was assigned as the news date. On average the death was reported around 3 days after it occurred.

Table II shows the composition of the sudden death sample across time and director types. Following Weisbach (1988) and Shivsdani and Yermack (1999) we classify directors into; inside, "gray" and independent directors. Inside directors are current employees of the firm, whereas board members who are retired employees of the firm, relatives of the CEO, and/or persons with conflicts of interest or related to the firm's business are classified as "gray" (outside) directors. Directors who are not current or former employees, and who do not have dealings with the firm are designated as independent (outside) directors.

From Table II it is evident that out of the 270 suddenly deceased directors around 41 percent are inside, 18 percent are gray and 41 percent are independent directors. Across time there is significantly fewer independent director deaths in the beginning of our sample compared to more recent years. We contribute this pattern to the introduction of the Sarbanne-Oxley Act in 2002, which among other things has increased the number and ratio of independent directors on corporate boards.

B. Descriptive Statistics

[5] In a robustness check in Section III we show that our results are not affected in any meaningful way by excluding the cases reported as "sudden" or "unexpected" from our sudden death sample.

Table III shows descriptive statistics for our sample of deceased directors. In Panel A we focus on personal characteristics. The average director suddenly died at the age of 63.6 years, although there is substantial variation with youngest being 38 and the oldest 87 years at the time of death. Our sample is dominated by males as 94 percent of our directors are male. The average director had served on the board for 10.5 years. Almost all directors held a bachelor degree, whereas a relatively modest fraction held a Postgraduate, MBA, or PhD degree. Finally, around one-third of the deceased directors were members of the audit or compensation committee, whereas 24 percent was serving on the executive committee. This reflects that our sample is dominated by independent directors who are likely to be member of the key governance committees.

Panel B of Table III reports descriptive firm charactertics. The average firm in our sample has 6.5 billion USD in book value of assets, sales equal to 4.7 billion USD, and an average age of 45.2 years. Finally, Panel C shows the board characteristics of our sample firms. Average board size is 8.65, which is slightly higher than the population average (Yermack, 1996). This is expected as the probability of a sudden director death is increasing in board size. On average around two-thirds of the directors (5.5 board members) are classified as outsiders, whereas the average tenure of all board members is 8 years. Interestingly, the average tenure is almost identical to the average tenure of the deceased director. Finally, 35 percent of the sample firms have separation between the CEO and chairman position, whereas 55 percent have implemented staggering board rules.

III. Valuation Impact of Sudden Death of Independent Directors

Two empirical tests are utilized to investigate the stock price reaction to the news of the sudden death of a corporate director. First, we examine the stock return in the period coincident with the sudden death. Second, we exploit the cross-section of stock price reactions to examine the impact of independence controlling for an array of individual, firm and governance characteristics. The empirical methods are described below.

A. Event Study of the Stock Price Reaction to Sudden Director Deaths

To examine the stock price reaction to news of sudden deaths, we access daily returns from CRSP for each of our 211 events for a 21-day period around the death (from day -10 to day +10) as well as a 255 day pre-event estimation period (from day -300 to day -46). The event day is defined as the trading day of the director's death or the first trading day following the death, if it occurred on a non-trading day.[6] To calculate the abnormal return we follow the standard event study approach and assume a single-factor model, where beta is estimated using the data from the pre-event window.

Table IV presents the time series of abnormal returns for the 11 trading days around the news date. We report the mean abnormal return and the number of positive and negative abnormal returns for each of the trading days.

The data in Table IV indicate that on average a small, negative share price adjustment is associated with the unexpected death of corporate directors, but that the negative reaction mainly is attributed to the unexpected loss of independent directors. In particular, the stock price reaction on the days surrounding the death is negative for 3 (4) straight days from day -1 to 1 (-1 to 2) for all (independent) directors. This pattern also suggests that deaths are incorporated into market prices in the period from the death until the event becomes publicly known to all market participants.

In Table V we report event study results for valuation effects of sudden deaths of corporate directors. Average abnormal returns are given for the two-, three- and four-day event windows from day -1 to 0, -1 to 1 and -1 to 2, respectively (day 0 is the death date). This approach is motivated by the fact that it on average takes 3 days (equivalent to 2.1 trading days) before the death is reported and covered in the news. Panel A shows the announcement effects for all directors, whereas Panel B through E shows the stock price reaction to independent, gray and insiders, gray, and insiders, respectively.

For the full sample of all directors Panel A shows a two-day (three-day) negative abnormal return of 0.45 (0.74) percent. Using the standard Patell Z-score we find that the negative stock price reactions are significantly different from zero. At first glance it

[6] In a robustness check in Section III, we define the event day as the news date. Our results are not affected in any meaningful way by the definition of the event day.

appears that the market reacts negatively to the loss of corporate directors. However, when the sample is split with respect to director types it is apparent that the negative stock price reaction is driven by independent directors. For independent directors Panel B shows that the abnormal return increases with the length of the event window: From an excess return of -0.4 percent for the -1 to 0 event window to -0.87 from -1 to 2. Moreover, the negative abnormal return is significant at the 10 percent level for the two-day window and at the 5 percent level for both the three- and four-day window. Using a sign-rank test we even find a significantly negative effect at the 10 percent level for the four-day event window.

These results contrast with the results from our control samples of gray and insiders shown in Panel C through E: Panel C shows that the pooled sample of gray and inside directors experience a negative excess return although the stock price reaction is not statistically significant from zero. In Panel D and E, we show similar results for gray and inside directors, respectively. The announcement of the sudden death of a gray director is on average associated with 0.26 percent negative abnormal return over the four-day event window, whereas the average reaction to insider director deaths is -0.53 percent. Both effects are not significant at conventional levels.

Overall, the results in Table V demonstrate a significantly negative abnormal return to the announcement of the sudden death of an independent director. This result is consistent with the view that independent director provide an important and valuable service to corporate shareholders.

B. More on the Value of Independent Directors

If independent directors perform a valuable service to shareholders, we hypothesize that the response to unexpected deaths should vary with various measures of director independence. In this section we take a first look at how the stock price reaction varies with measures of independence (tenure on the board) and membership of board committees in a univariate setting.

[*to be written*]

In the following subsection we proceed with a multivariate approach that allows us to controlling for educational background and observable firm characteristics using the cross section of stock price reactions.

C. Determinants of Stock Price Reaction to Sudden Director Deaths

To further establish the result that independent directors provide a valuable service to shareholders, this section exploits the cross-section of stock price reactions to sudden director deaths. In all regressions observations will are weighted with market capitalization to avoid drawing inference from small firms where the stock price is likely to vary considerably when corporate talent is lost.[7]

Table VI outlines our main result that independent directors perform a valuable service to corporate shareholders. In Column 1 we regress the stock price reaction on an indicator variable taking the value one if the director is independent. As expected we find a negative stock price reaction to the sudden death of independent directors of 0.68 percent, which is significant at the 10 percent level. This result is robust to controlling for firm characteristics such as firm size (log. to book value of assets) and firm age (log. to firm age) in Column 2. As expected firm size (age) is negatively (positively) correlated with the stock price reaction as the corporate directors are more likely to perform an important role in shaping the business for small and young firms.

In Column 3 through 5 we examine the interaction between our simple measure of independence with board tenure, which according to Weisbach (1988), and Shivsadani and Yermack (1999) proxies for independence. In Column 3 we include the deceased director's tenure on the board (years) as well as the interaction term with our indicator variable for independence. Consistent with our story we find a negative stock price reaction to independent directors, and that this is effect is strongest for directors who are considered more independent (low tenure) according to Weisbach (1988), and Shivsadani and Yermack (1999): The stock price reaction to the death of an independent director

[7] This is important as a simple control for firm size cannot alleviate the fact that small firms will be subject to greater variance in the stock price irrespective of the sign of the stock market reaction.

with 1 year of tenure is -1.44 percent compared to only -0.04 for an independent director who has served on the board for 10 years.[8] For independent directors with tenure over 13 years the stock price reaction becomes positive. In Column 4 we use an alternative approach to measure the relative independence by comparing the tenure of the deceased board member to the average tenure on the board. If independence is important we hypothesize that directors with low relative tenure should be valued more by corporate shareholders. To test this we define a seniority indicator variable taking the value one if the tenure of the deceased board member is larger than the average tenure on the board. In addition we include the interaction with our indicator for independent directors. Interestingly, we find that the stock market reacts more negatively to the death of junior independent directors. In particular, we find that the stock market reaction to senior independent directors is positive but small (0.23 percent), whereas the death of junior independent directors is associated with a 1.83 percent drop in the stock price. Finally, in Column 5 we consider the tenure of the deceased independent director relative to the CEO. Following, Weisbach (1988), and Shivsadani and Yermack (1999) we hypothesize that board members are less independent when they have been appointed by the current CEO. We therefore interact our indicator variable for independence with an indicator for whether the director was appointed to the board before the current CEO took office. Consistent with earlier literature using relative tenure between directors and CEO to proxy for independence, we find that the sudden death of independent directors appointed during the reign of the prior CEO is associated with to a substantial drop in the stock price of 1.48 percent. Interestingly, we find no effect for independent directors appointed by the current CEO.

In summary, Table VI provides strong evidence of the value of independent directors to corporate shareholders: Independence matters, not only between director types but also within the group of independent directors. In particular, our interaction with measures of

[8] This calculation follows directly from the estimated coefficients in Column 3 of Table VI: The common negative stock price reaction of -1.56 percent for independent directors has to be added to the interaction term's coefficient of -0.0012 multiplied with board tenure which is measured in years. For an independent directors with 1 year of tenure the stock price reaction is equal to -1.44% = -1.56%+1·0.12%.

board tenure - one of the most scrutinized proxies for independence - provides evidence of the value of independent that is identified within the sample of independent directors.

In Table VII we examine the relationship between independence, skills and stock market reaction. As a starting point we include control variables for measurable and observable differences in skills. If successful, controlling for director skill will alleviate the concern that the negative stock market reaction to the sudden death of independent directors is due to independent directors being more skillful than inside or gray directors. From Table III we know that 95.6 percent of the directors in the sample hold at least a bachelor degree. Taken at face value this seems to suggest that board members at least have a somewhat adequate minimum level of formal education. We therefore control for skill by including two indicator variables; *MBA* (PhD) taking the value one if the director holds an MBA (PhD) degree. The core motivation for including these is that a MBA degree provides relevant training in understanding the business model to be able to provide executives with advice, whereas a PhD degree provides a strong signal that the director has high ability and therefore is likely to be extraordinary skillful. Nonetheless, when we include these indicator variables among the controls in Column 1 of Table VII we find little impact on the overall result of the positive value of independent directors. In Column 2 we include interaction terms with our variable of interest - again with little effect on the results. If anything our main result is strengthened: Controlling for education we now find that the stock price drops by 0.89 percent following the death of an independent director. Moreover, this effect is significant at the 5 percent level.

Finally, following Fich and Shivdasani (2006) we control for whether the deceased director is busy by including an indicator variable for busy directors, where a busy is defined as directors serving on three or more boards. Column 3 shows that our general result cannot be explained by insiders being busier than independent directors as our independence indicator remains negative and significant. Interestingly, Column 3 also provide evidence consistent with the findings of Fich and Shivdasani (2006) that busy directors do not provide an effective monitoring role. The interaction between independent and busy is positive, although the small number of observations makes it hard to obtain significance.

D. Additional Evidence using Alternative Definitions and Control Samples

In this section we provide additional evidence using alternative definitions and control samples to demonstrate that our results are quite robust to various specifications. In short, our results are robust toward:

1. Excluding inside directors, and only including gray directors as control group
2. Pre- and post-Sox differences in the stock price reaction
3. Alternative event windows specified around the news data rather than death date
4. Including only sudden deaths where we know the cause of death, i.e. cause of death is either heart attack, stroke, accident or murder (see Table II).

IV. Conclusions

Compiling an extensive database of 270 sudden deaths of directors in the U.S. since from 1994 to 2007, we find that the stock price drop by almost 1 percent following the death of an independent director. We also find that stock prices do not react in a significant way to sudden deaths of inside or gray directors.

Using the cross-sectional variation we show that positions in board, experience, age, and educational backgrounds are the main determinants of the negative abnormal returns. Consistent with our main finding we show that stock price react less negatively when independent director possess characteristics that question their independence: Long tenure and seniority on the board.

Overall, our paper provides strong evidence consistent the view that independent directors provide a valuable service to shareholders. This interpretation follows from the fact that our use of sudden deaths allows us to overcome potential endogeneity problems related to studies on how boards of directors affect shareholder value.

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Table I, Cause of Director Deaths

This table presents the cause of death of corporate directors who deceased between January 1, 1994 and December 31, 2007. Based on the cited cause of death in newspaper articles reporting the death, Panel A classifies the cause of deaths into: *cancer*, *complications from deceases* (other than cancer), *complications from surgery*, *sudden deaths* (accidents, heart attack, stokes and deaths described as sudden and unexpected with no other cause cited), *suicide* (self-inflicted gunshots, death from carbon-monoxide poising), *unspecified illness* (cause of death described as brief or long illness) and *undisclosed* (in cases where no casue is reported but the death is not describes as sudden or unexpected. Panel B reports the reported cause of death for the subsample of sudden deaths from Panel A.

	N	**Share of total**
A. Cause of death		
Cancer	128	0.160
Complications from specified deceases	60	0.086
Complications from surgery	14	0.020
Sudden death	270	0.387
Suicide	5	0.007
Unspecified illness	74	0.106
Undisclosed	247	0.221
All	698	1.000
B. Cause of sudden death		
Heart attach	106	0.393
Stroke	22	0.082
Accident or murder	52	0.193
Sudden and unexpected death, but unspecified cause	90	0.333
All	270	1.000

Table II, Timing of Director Deaths

This table reports the composition of our sample of directors who suddenly died. We report the number of sudden deaths per year, as well as the number of deceased *inside*, *gray* and *independent directors*. Inside directors are current employees of the firm, whereas board members who are retired employees of the firm, relatives of the CEO, and/or persons with conflicts of interest or related to the firm's business are classified as "gray" (outside) directors. Directors who are not current or former employees, and who do not have dealings with the firm are designated as independent (outside) directors.

	Director type						
	Insiders		**Gray**		**Independent**		**All**
	N	**%**	**N**	**%**	**N**	**%**	
Number of sudden deaths per year							
1994	2	0.105	8	0.421	9	0.474	19
1995	4	0.500	1	0.125	3	0.375	8
1996	4	0.182	5	0.227	13	0.591	22
1997	0	0.000	0	0.000	8	1.000	8
1998	6	0.333	1	0.056	11	0.611	18
1999	1	0.083	4	0.333	7	0.583	12
2000	2	0.200	1	0.100	7	0.700	10
2001	2	0.133	4	0.267	9	0.600	15
2002	4	0.286	3	0.214	7	0.500	14
2003	2	0.080	15	0.600	8	0.320	25
2004	3	0.111	18	0.667	6	0.222	27
2005	6	0.188	17	0.531	9	0.281	32
2006	4	0.125	20	0.625	8	0.250	32
2007	8	0.286	14	0.500	6	0.214	28
All	48	0.178	111	0.411	111	0.411	270

Table III, Descriptive Characteristics of Directors who died Suddenly

This table shows descriptive statistics on the sample of directors who died suddenly. Panel A reports the following personal characteristics: *age* (measured in years), *gender* (indicator taking the value on if the director is male), *tenure* (measured in years), *education* indicators equalling one if the director holds a *bachelor*, *MBA*, *postgraduate* or *profession* degree, as well as indicator variables taking the value one if the director sits on the board's *audit*, *compensation* or *nominating* committees. Panel B shows the following firm characteristics: *book value of assets* (in mill. $), *sales* (mill. $) and *firm age* (measured in years). Panel C reports board characteristics: *board size*, number of outsiders (*outsiders*) on board, the ratio of outsiders (*outside ratio*) on the board, *average tenure* (in years) and indicator variables taking the value one if there is *separation of chairman and CEO position*, and if the firm has implemented a *staggering board* election rule.

	Mean	**Median**	**Min**	**Max**
A. Personal characteristics				
Age (years)	63.6	63.0	38.0	96.0
Gender (1=male)	0.94	1.0	0	1
Tenure (years)	10.52	7.5	0.1	54.0
Education				
- Bachelor degree	0.956	1.0	0	1
- Postgraduate degree	0.158	0.0	0	1
- MBA	0.108	0.0	0	1
- PhD	0.108	0.0	0	1
- Profession	0.170	0.0	0	1
Board sub-committee member				
- Audit	0.355	0.0	0	1
- Compensation	0.352	0.0	0	1
- Nominating	0.242	0.0	0	1
B. Firm characteristics				
Book value of assets (mill. $)	6564.4	508.8	1.5	180559.0
Sales (mill. $)	4651.2	317.9	0.0	286103.0
Firm age (years)	45.2	31.5	1	255
C. Board characteristics				
Board size	8.65	8.0	3	26
Outsiders	5.50	5.0	0	23
Outsider ratio	0.62	0.63	0.00	1.00
Average tenure	8.00	8.0	1	26
Separation of CEO and Chairman	0.354	0.0	0	1
Staggering board	0.546	1.0	0	1

Table IV, Times Series of Stock Price Reaction to News of Director's Sudden Death

This table shows the mean abnormal return to the new of the sudden death of a corporate director for each trading day from 5 days before the news date to 5 days after. In addition, to the mean abnormal return we report the corresponding t-stat and the number of positive and negative stock price reactions. Panel A reports the reaction to all director deaths, whereas Panel B reports for independent directors only.

Trading day	N	Mean abnormal return	t-stat	Positive: negative
Panel A: All Directors				
-5	257	0.36	2.630***	139:118
-4	257	0.09	1.617*	131:125
-3	257	-0.30	-1.501*	112:145
-2	257	-0.10	-0.495	117:140
-1	257	-0.25	-1.151	116:141
0	257	-0.20	-1.200	119:138
+1	257	-0.29	-0.420	124:133
+2	257	0.11	0.593	124:133
+3	257	0.07	1.017	142:117
+4	257	0.22	1.316	122:135
+5	257	-0.30	-2.244**	106:151
Panel B: Independent Directors				
-5	111	0.71	2.840***	63:48
-4	111	0.38	2.075**	41:50
-3	111	-0.27	-0.268	48:63
-2	111	0.08	-0.087	55:56
-1	111	-0.34	-1.548*	47:64
0	111	-0.06	-0.583	58:53
+1	111	-0.29	-1.037	50:61
+2	111	-0.18	-0.614	44:67
+3	111	0.19	0.984	64:47
+4	111	0.15	0.698	56:55
+5	111	0.22	-0.178	51:59

Table V, Stock Price Reaction to the Sudden Death of Directors

This table shows the stock price reaction to the announcement of the sudden death of a corporate director. Panel A reports the reaction to all director deaths, Panel B for independent directors, Panel C for gray and inside directors, whereas Panel D and E report for gray and inside directors, respectively. Raw return is the return on the stock within the event period, whereas the cumulative abnormal return is the market adjusted return using equal weights. Patell z-score tests whether the mean return is significantly different from zero. In addition the table reports the number of positive and negative stock price reactions, the median return and the corresponding sign rank test. All results are calculated with equal weights on each observation.

Returns	**Event period**	**N**	**Mean return**	**Patell Z**	**Positive: Negative**	**Median return**	**Sign rank test**
Panel A: All Directors							
Cumulative abnormal return	(-1+0)	257	-0.45	-1.663**	120:137		-1.049
Cumulative abnormal return	(-1+1)	257	-0.74	-1.600*	113:144		-1.353*
Cumulative abnormal return	(-1+2)	257	-0.63	-1.091	119:138		-0.932
Panel B: Independent Directors							
Cumulative abnormal return	(-1+0)	111	-0.40	-1.507*	49:62		-0.753
Cumulative abnormal return	(-1+1)	111	-0.69	-1.829**	48:63		-1.169
Cumulative abnormal return	(-1+2)	111	-0.87	-1.892**	43:68		-1.459*
Panel C: Gray & Inside Directors							
Cumulative abnormal return	(-1+0)	146	-0.49	-0.893	71:75		-0.674
Cumulative abnormal return	(-1+1)	146	-0.77	-0.529	65:81		-0.689
Cumulative abnormal return	(-1+2)	146	-0.44	0.198	76:70		0.115
Panel D: Gray Directors							
Cumulative abnormal return	(-1+0)	47	0.46	-0.146	23:24		-0.272
Cumulative abnormal return	(-1+1)	47	-1.05	-1.220	20:27		-0.959
Cumulative abnormal return	(-1+2)	47	-0.26	-0.417	25:22		-0.211
Panel E: Inside Directors							
Cumulative abnormal return	(-1+0)	99	-0.94	-0.984	48:51		0.603
Cumulative abnormal return	(-1+1)	99	-0.64	0.200	45:54		-0.100
Cumulative abnormal return	(-1+2)	99	-0.53	0.528	51:48		0.298

Table VI, Independence and Stock Price Reaction to Sudden Director Death

This table shows the determinants of the stock price reaction to the sudden death of directors using the cross-section of stock price reactions from Table V. The reported results are based on the event period from -1 to +2, where 0 is the announcement date. *Independent director* is an indicator taking the value one if the director is independent. *Tenure* is the years of tenure on the board. *Senior* is an indicator taking the value one if the deceased director's board tenure is above the average tenure on the board. *Appointed before CEO* is an indicator taking the value on if the director was appointed before the current CEO took office. *Firm size* is log. to book value of asset. *Firm age* is log. to firm age measured in years.

	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Independent	-0.0086**	-0.0091**	-0.0195***	-0.0147**	-0.0032
	(-2.39)	(-2.51)	(-3.07)	(-2.16)	(0.73)
Tenure			0.0027		
			(0.73)		
Independent * Tenure			0.0013**		
			(2.63)		
Senior				0.0051	
				(0.07)	
Independent * Senior				0.0127	
				(1.51)	
Independent *					-0.0117**
Appointed before CEO					(-2.38)
Firm size		-0.0017	-0.0014	-0.0013	-0.0013
		(-1.27)	(-0.96)	(-0.96)	(-0.96)
Firm age		0.0033	0.0015	0.0008	0.0016
		(1.20)	(0.51)	(0.29)	(0.55)
Adj. R-squared	0.021	0.022	0.110	0.073	0.042
N	226	223	223	223	223

Table VII, Independence, Skills and Stock Price Reaction to Sudden Director Death
This table shows the determinants of the stock price reaction to the sudden death of directors using the cross-section of stock price reactions from Table V. The reported results are based on the event period from -1 to +2, where 0 is the announcement date. *Independent director* is an indicator taking the value one if the director is independent. *MBA* is an indicator taking the value one if the deceased director was holding a MBA-degree, whereas *PhD* is an indicator for holding a PhD-degree. *Busy* is an indicator taking the value on if the deceased director was serving on three or more boards. *Firm size* is log. to book value of asset. *Firm age* is log. to firm age measured in years.

	(1)	**(2)**	**(3)**
Independent	-0.0095**	-0.0067	0.0025
	(-2.42)	(-1.59)	(0.54)
MBA	0.0055	0.0184**	
	(0.91)	(2.01)	
Independent * MBA		-0.0225*	
		(1.87)	
PhD	0.0008	0.0082	
	(0.04)	(0.10)	
Independent * PhD		-0.0051	
		(-0.06)	
Busy			0.0267**
			(2.48)
Independent * Busy			-0.0432***
			(-3.56)
Firm size	-0.0017	-0.0014	0.0003
	(-1.12)	(-0.91)	(0.25)
Firm age	0.0037	0.0050	0.0014
	(1.21)	(1.59)	(0.50)
Adj. R-squared	0.016	0.024	0.082
N	190	190	223

Table VIII, Stock Price Reaction to Sudden Director Death using Fixed Effects

This table shows the determinants of the stock price reaction to the sudden death of directors using the cross-section of stock price reactions from Table V. The specification includes a fixed-effect for each director. The reported results are based on the event period from -1 to +2, where 0 is the announcement date. *Independent director* is an indicator taking the value one if the director is independent. *Firm size* is log. to book value of asset. *Firm age* is log. to firm age measured in years.

	(1)	**(2)**	**(3)**
Independent	-0.0343**	-0.0297**	
	(-2.76)	(-2.54)	
Firm size		-0.0066	
		(-1.45)	
Firm age		0.0218***	
		(4.20)	
Fixed effects	YES	YES	
Adj. R-squared	0.245	0.444	
N	72	71	

Table IX, Additional Evidence using Alternative Specifications

This table shows the determinants of the stock price reaction to the sudden death of directors using alternative specifications of the event samples and event window. The dependent variable in columns (1) and (2) is the cumulative abnormal return to all director deaths for alternative event windows from -1 to 0, and -1 to +1 around the deaths date. In Column (3) the dependent variable is the cumulative abnormal return to all directors in the period from death date (day -1) to the news date. The sample in Column (3) is restricted to events where the death is reported in the news within 7 days of the death. The dependent variable in column (4) is the cumulative abnormal return around the news date. In columns (5) to (7) the dependent variable is the cumulative abnormal return from -1 to -2 around the death date. Column (5) restricts the sample to directors aged under 70 at the time of death, whereas column (6) uses directors aged below 65 year. Column (7) includes only directors aged below 70 with a known causes of deaths (i.e. either stroke, heart attack or accidence, see Table 2 for details). All specifications include controls for (estimated coefficients are not reported): XX. Standard errors are in parentheses. ***, **, and * denote significance at the 1, 5, and 10 percent levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Event sample	**All**	**All**	**All w/ news within a week**	**All**	**Directors aged <70**	**Directors aged <65**	**Director aged <70 w/ known death cause**
Event date	**Death**	**Death**	**Death**	**News**	**Death**	**Death**	**Death**
Event window	**[-1;0]**	**[-1;+1]**	**[-1;news date]**	**[-1; 0]**	**[-1;+2]**	**[-1;+2]**	**[-1;+2]**
Independent	-0.0040*	-0.0101***	-0.0102***	-0.0112***	-0.0195***	-0.0231***	-0.0135**
	(-1.85)	(-3.12)	(-3.06)	(-4.39)	(-3.70)	(-4.02)	(-2.40)
Director controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.007	0.035	0.059	0.089	0.072	0.100	0.147
N	226	226	205	222	152	118	102