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Effects of the sudden death of executive directors

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Summary

Theoretical framework

Do top managers actually matter?

The study of the impact of the sudden death of top executives has roots on this question: do top managers matter? The large part of the variation of the firm performance is explained by organizational factors indeed (Hansen & Wernerfelt, 1989). This implies that managers have the power to influence the outcome of the organization and then they are valuable for all the stakeholders. Measuring the extent of the managerial influence is not easy though, because causes of managerial turnover are not always clear. This means that it is quite difficult to provide an estimation of firms' performances related to managerial skills and the ones linked to firm and industry variables only. Hypothetically, if individual directors' matter for companies' performances should hinge on the standing of managerial contributions in the production course, on the scarceness of managerial capacity, on the degree to which top managers differ from each other, and on if there are frictions in the assignment of directors to companies. Whether managerial contributions are irrelevant, or if there is a huge supply of standardized managerial capacity, and if the assignment of directors to companies is unrestricted, at that point shocks to individual directors should have slight consequence. Whether, though, managerial contributions are significant and managerial capacity is rare, or whether there are frictions in the matching of directors to companies, then shocks to managers can have central consequences for company value and outcome (Jenter *et al.*, 2016). A suitable yardstick for discerning about the effects of directors on company value are models wherein labor markets are frictionless and competitive and wherein the matching between managers and companies is efficient. In a frictionless and competitive assignment model, companies attempt to hire the manager that makes the most of the company's value net of his wage, and managers join the company that offers the uppermost expected wage. In equilibrium, the assignment of managers to companies makes best use of the total value of all companies and each manager earns at least his "outside option". The "outside option" is what the manager could receive at the following best company that would wish to hire him as an alternative to the company's actual manager. In this model, every company-manager

match produces a positive match surplus, which is the difference amongst the company's value under the actual managers and the company's value under the following best manager the company could hire. In what manner this surplus is split amid the manager and the company's shareholders is decided outside the assignment model (Gabaix & Landier, 2008). What is the consequence of a manager demise in a competitive and frictionless assignment model? In theory, given that the assignment of managers to companies is efficient, a manager passing cannot increase company value. This is because of the previous assumption of the positive match surplus. Whether there was another manager candidate who would increase company value net of the wage needed to appoint him, he would have already been appointed indeed. If and to which level a manager demise drops company value hinges on the scope of the match surplus and its distribution among shareholders and the manager. In the upper bound, if a manager takes out all the match surplus, then a manager passing has no consequence on shareholder value. Though the manager is alive, shareholders are given their outside option, that is the value of the company under the following best manager. As soon as the manager passes away, the company appoints the following best manager, and shareholder value is not affected. In each other circumstance, the match surplus is split amid the manager and the shareholders. Thus, a manager casualty triggers shareholders to lose their part of the match surplus and shareholder value decreases. Competitive and frictionless assignment models hence forecast that a manager passing never boosts shareholder value. A manager demise decreases shareholder value more the greater the match surplus, holding the distribution of the surplus constant, and the greater the shareholders' part of the surplus. So, what eventually shapes the match surplus? In a frictionless world, manager currently in office is every time a feebly better match than the following candidate, and the extent of the surplus is defined by the diversity in skills amongst the two directors. If the following best candidate is a far worse match than the one currently in charge, say because the manager position needs rare company or business peculiar knowhow, then the match surplus is huge. In the real world, frictions in the shape of seeking or transition costs are expected to be a significant determining factor of the match surplus. A company

might be worth less than before after a manager passing not because the following manager is not as good as the previous one, but because it is costly to come across the best candidate and to transfer the company's control. Given that frictionless assignment models foresee that a manager demise can never improve shareholder value, a discovery that definite types of manager demises do would hint at a denial of the model. Beyond this model, there are three explanations for a manager passing boosting shareholder value (Jenter *et al.*, 2016):

- the replacement might be a better match than the dead manager, in which case the board of directors should have already substituted the one in charge with that replacement;
- the current manager might have been the best match but took out more compensation than the surplus he produces;
- the board of directors' choices did not enlarge the shareholder value.

The literature on wage dynamics and property fights puts forward that some features of managerial employment provisions and of the labor market for directors make shareholder wealth hooked on sustained employment of the currently serving manager. Some literature claims that the payment set needed to keep hold of a serving director with company-specific human capital allows shareholders to seize some of the economic remunerations linked with those company-specific skills (Klein *et al.*, 1978). Other literature puts on a view that a serving director's sustained employment can negatively influence shareholder wealth when the employment background is embodied by transferable human capital and director freedom of movement, since upcoming period remunerations may go beyond the *ex-post* value of the director's skills (Harris & Holmstrom, 1982). In both backgrounds, cessation of the company/director employment rapport will bring on variations in shareholder wealth if the future remunerations or overheads related with the serving director's sustained employment vary from those foreseeable from the substitute director. Certainly, shareholder wealth will be autonomous from the serving director's sustained employment or cessation if perfect substitutes are on hand as an alternative director. As a result of the capital market

efficiency, these shareholder wealth consequences are mirrored in common stock price reactions to the cessation of the company/director employment rapport (Johnson *et al.*, 1985). Capital market efficiency is stated by efficient market hypothesis, a theory according to which shares are always exchanged at their fair value, not making it possible for shareholders to either buy undervalued stocks or get rid of shares for overstated prices. By itself, it ought not to be feasible to beat the whole market within professional share choice or market timing, thus the only manner a shareholder can perhaps get better profits is by luck or by buying less safe assets (Malkiel & Fama, 1970). Of course, death can be a cause of cessation of the company/director employment rapport. If the cessation of the employment rapport due to death is not completely expected, the share price reaction to the serving director's demise mirrors the difference in investor wealth that takes place because of the *ex-ante* value of the dead serving director's resolutions, skills and payment changes from the one of the expected alternative director. The advantages and disadvantages linked with the cessation of the employment rapport may hinge on if the cessation happens throughout removal from office, resignation, or passing. For instance, some long-term employment agreements assure the manager's position and compensation for the extent of the contract time. This warranty carries out a transaction cost which investors put up with when the manager is dismissed during the contract time, but this kind of transaction cost is avoided by the shareholders when the manager passes away. Thus, the consequences of sudden directors' deaths may not take a broad view of other kinds of employment cessations. At the stage of first employment, companies striving in the managerial labor market weigh up the skills and features of every single potential director and bid compensation packages proportionate with those valuations. If the labor market is competitive and efficient, with all companies and potential directors having shared, although maybe partial, tidings about every director's skills and features, these valuations will be mirrored in the market-clearing price[1] for every director's skill. The existence of non-transferrable company-specific human capital infers that the

[1] The market clearing price is the unique price such that the demand of a good or service offsets the supply that good or service (Maillé, 2007).

director's anticipated marginal product to the employing company goes above the director's value to other companies competing in the labor market. Whether the company shells out the market price or even something in addition to the director's skills, the director will undertake the employment, therefore, allowing shareholders to have profits. These profits originate because shareholders control access to a valuable chance that is only one of its kind in its level of benefits from the director's skills. Following the early hiring, expenses of private means to get company-specific skills will not develop the serving director's rank in the labor market, so the director has no encouragement to gain such skills unless shareholders pledge to an above-market upcoming payment set (Johnson *et al.*, 1985). Shareholders Conversely, would be eager to put up with the expenses of improving the director's company-specific human capital to the scope that they can pick up the anticipated upcoming "quasi-rents" subsequent that deal. A certain period's director-specific quasi-rent matches the change amid the value of the director's fruitful undertakings and the preventable expenses of employing the director, as well as the opportunity cost of employing the following best replacement director. Unlike monopoly rents, which take place because of eventual limits to market access, quasi-rents take place in a multi-period realm when present period outlays are made with the probability of upcoming profits (Klein *et al.*, 1978). Shareholder wealth is influenced negatively by the sudden demise of a director with company-specific assets, given that the company needs to appoint an alternative one and pay out supplementary funds to find or grow the new director's company-specific skills. This negative shareholder wealth consequence would be mirrored in an adverse stock price reaction to the director's sudden passing. The previous dissertation takes for granted that shareholders control access to a valuable chance that is only one of its kind. In other circumstances, access to the valuable chance might be linked to the forthcoming director, as in the circumstance of a company founder taking the corporation public. In this state of affairs, the rents caused by the access to the valuable chance will fall on the founder-director, rather than to shareholders. If these rents have the shape of a payment set that goes above the market-clearing price for the founder's executive skills, cessation of the employment rapport

allows shareholders to reach a deal on a more satisfactory employment contract with an expert director. This satisfactory wealth consequence would be mirrored in a favorable stock price response to the founder-director sudden demise. To the scope that the serving director's skills are transferrable rather than company-specific, the expected value of those skills will be mirrored in the market price of the director's skills. This market price differs with organizational performance because performance results provide up-to-date figures about the skills and features of the director (Johnson *et al.*, 1985). Whether shareholders and the serving director can reach a new deal repeatedly on the employment contract with no costs, the director's payment differs with organizational performance (Fama & Jensen, 1983). Under inexpensive new contracting, shareholders and the serving director are allowed to conclude the employment rapport at every new contracting situation, and the serving director's sustained employment is made sure merely whether the payment set offered by shareholders is no less appealing than those sets obtainable by the director in the labor market. Shareholder wealth is autonomous from the serving director's sustained employment within this setup since the director's payment is repeatedly fine-tuned with up-to-date figures about the director's skills and feature, as is the market- clearing price for all prospect alternative directors. In this circumstance, no common stock price response to the sudden demise of the serving manager is foreseen. Some contracts make it expensive for shareholders or the serving director or both to reach a new deal or make the employment rapport come to an end. Director-begun compensation new contracting is expensive if stock options, deferred compensation, restricted stock or other kinds of managerial wealth are lost when the director runs off the company of his own accord. Whether the serving director cannot reach a new deal without incurring in any cost or make the employment rapport come to an end and the director's skills are felt to be more worthwhile than was foreseen when the actual payment set was assigned, shareholders gain favorable quasi-rents from the sustained employment of the director. This advantage falling on the shareholders dies away at the time in which the employment rapport is ceased, and the company must look for an alternative director. Under this setup, there is an adverse share price response to

the serving director's sudden passing (Johnson *et al.,* 1985). When the outcome of the serving director is not as positive as shareholders foresaw, and barriers exist that put off shareholders from decreasing the director's payment or firing him, sustained employment of the director may inflict adverse quasi-rents on shareholders. Although multi-period employment agreements inflict transaction costs when new contracting happens ahead of time, they may not be equivalent to inefficiency when there was the first contracting. Consensual obligation, where the shareholders and the manager mutually bind to a multi-period deal, is Pareto-superior to a one-sided commitment, driven by the shareholders only, in a multi-period agency framework, indeed (Lambert, 1983). Empirical evidence shows that while payment improves with practice, worker outcome does not. This effect may be caused by embedded agreements which assure workers yearly compensation improves notwithstanding their concrete outcome. This kind of boss/worker rapport might be efficient if risk-neutral bosses put up with the "ability risk" for risk-averse workers (Medoff & Abraham, 1980). Shareholders often reach an agreement to multi-period employment deals that warrant the director's rank and payment all along the agreement period notwithstanding the company's performance. As previously stated, the manager may force the renegotiation and provoke an adverse quasi-rent for the shareholder, indeed (Harris & Holmstrom, 1982). Otherwise, shareholder-begun compensation new contracting, which can be direct renegotiation or dismissal, or indirect dismissal via a proxy contest or hostile takeover, is expensive whether the director controls a quite huge side of the company's voting shares. Even in the lack of noteworthy share ownership, an inflexible director might act in order to boost the charge of the proxy contests or drop off the odds of a hostile takeover. The serving director's demise allows shareholders to appoint an alternative director without bringing upon themselves the expenses of firing or negotiating again with the former director. Such settings should turn out a favorable common stock price response to the sudden passing of the serving director. Summarizing the implications of the literature on wage dynamics and property fights over sudden deaths, in the lack of changes amongst the value to shareholders of the serving director's skills and those of the alternative one, no common stock price response

to the director's sudden demise should be detected. Otherwise, if the director's employment agreement is expensive to deal with again or cease all through the agreement period or if the director owns company-specific human capital that would be expensive to substitute, shareholder wealth is influenced by the cessation of the employment rapport. The detected stock price response is foreseen to be adversely associated with variables which determine the expected value of the serving director's company-specific human capital, the magnitude to which the director is more skilled than foreseen up to that time, and the extent of transaction costs that put off the director from getting a new deal or ceasing the employment contract. On the other hand, detected price differences are foreseen to be favorably associated with the director's standing as a firm founder, and with variables which determine the magnitude to which the director is less skilled than foreseen up to that time and the director's capability to put off sack or new dealing of the employment agreement[2] (Johnson *et al, 1985*).

The study of the sudden deaths of managers is valuable also for the research on managerial entrenchment. Comparing entrenched managers with non-entrenched ones, the first ones often dig out larger compensations and higher benefits from shareholders and get more room for maneuver in controlling firm strategy (Shleifer & Vishny, 1989). Moreover, entrenched directors sometimes prevent takeovers because they are aware that directors are often fired afterward a company is taken over (Shivdasani, 1993). Entrenchment is usually defined according to variables as the manager oldness, tenure and anti-takeover provisions although some literature claims that oldness and tenure can proxy for worthwhile knowhow too and companies with lots of anti-takeover provisions work as well as companies with a small number of them given the same business cluster (Bebchuk *et al.*, 2008; Norburn & Birley, 1988; Johnson *et al.*, 2005). To knock out these inadequacies the share price response to sudden death of the executive directors can be studied to distinguish entrenched managers. The share price response to the unexpected demise of an actual non-entrenched director ought to be adverse if he will be

[2] In other words, in all those cases in which the director has a huge bargaining power.

problematical to substitute and zero if substituted with no trouble. Conversely, if demise takes away an entrenched director meanwhile the board would or could not, the share price response ought to be favorable. Sudden managers demises, such as the ones due to strokes or accidents, are the best tryouts to calculate entrenchment for quite a lot of explanations (Salas, 2010):

- It is not easy to guess a stronger hint that a manager was entrenched than a favorable share price reaction to his or her passing. A clear favorable share price reaction shows that shareholders are relieved to see the manager taken away, hinting at the fact that the board should have taken away previously;
- Since taking away a manager is neither an option of the manager nor the company, the example of unexpected manager demises is free of endogeneity;
- Since death is unexpected, it is quite not likely that rumors about that were disclosed previously.

The value of independent directors is another issue which can be investigated through the executives' sudden death. Do independent directors supply a worthwhile benefit to shareholders? The leading perspective on this topic looks as if independent directors are positive to shareholder value. This perspective is pointed out by loads of international guiding principles for corporate governance and in regulatory initiatives. Relevant instances are the Cadbury Report in the UK, the Vienot Reports in France, and the Sarbanes-Oxley Act in the US, that have all requested higher standards of independence of the Board of Directors. Amazingly, despite a prolific bulk of academic research on the subject matter of boards of directors, straight observed data on the importance of independent directors is scarce (Nguyen & Nielsen, 2010). The accent on the importance of independence in both academic and expert work mirrors the idea that independent directors are better at keeping an eye on the executives because they are less involved in agency issues. The best part of independent directors feels concerned about their standing (Fama & Jensen, 1983). There are disagreeing proofs, anyway, on if the allegedly actual check of independent directors is really a thing. Some literature claims that the influence of independent directors to company outcome is not relevant or even adverse (Bhagat &

Black, 2001; Agrawal & Knoeber, 1996). Limited evidence shows that share price response is favorable with the appointing of independent directors or market-to-book ratio is positively influenced by a greater part of outside directors in the board (Rosenstein & Wyatt, 1990; Core *et al.*, 1999). Quite a lot of reasons exist for these disagreeing and open to doubt visions:

- The board of directors is endogenously settled on. In particular, firsthand shreds of evidence prove that poor outcome is a cause of the rising of board independence. Thus, the benefits of independent directors might be only a consequence of low previous outcome. This means that it cannot be easily stated that board independence is the cause of the company outcome or value (Hermalin & Weisbach, 2001);
- Not every independent director properly checks executives. Executives might be implicated in the choice of independent directors indeed (Shivdasani & Yermack, 1999);
- Independent directors' presence might be not correlated with firm value.

Unexpected demises of independent directors can be used as a natural test to examine their impact on company value. The underlying assumption is that the share price ought to decrease next to the unexpected demise whether an independent director effectively checks or endows directors with relevant assistance. The share price response is supposed to be adverse even when the market expects the dead to be substituted by another independent director because of search costs and learning curves for new managers. The expected substitute is less worthwhile too if the market expects the company to hire a not-independent director or whether it settles on hiring nobody in his or her place (Nguyen & Nielsen, 2010).

Here I have presented four frameworks which are affected by the study of the consequences of directors' sudden deaths:

- Frictionless and competitive labor market models;
- The literature on wage dynamics and property fights;

- Research on managerial entrenchment;
- Studies on the value of independent directors.

It can be seen then that lots of research fellows tried to state if directors matter within different frameworks but always taking into consideration the consequences of directors' sudden death as a proxy of their value. In the next paragraph is shown how literature empirically analyzed those consequences.

Previous empirical evidence from sudden deaths

The first paper taken into consideration examines shifts in company value and outcome set off by demised of actual managers in order to compute the input of the dead manager compared to that of his or her replacement (Jenter *et al.*, 2016). Contrasting other manager turnovers, manager demises are mostly distributed by chance to companies and are not decided by the board of directors. Thus, any consequences of manager demises on company value ought to be due to:

- Rare managerial skills;
- Shifts in the distribution of the surplus amongst shareholders and managers;
- Frictions in the labor market for managers.

The authors searched news about sudden deaths of CEOs mostly within corporate press releases, news reports, and SEC filings. They found 458 CEO demises in listed U.S. companies amongst 1980 and 2012. They brought together full figures about 162 unexpected demises and 296 predictable ones. A predictable demise is anticipated by no less than some clues that the CEO has a medical condition. The experiment involves companies of different dimensions and quite old and long-tenured CEOs[3]. Their findings put on view that CEOs are a relevant contributing factor of shareholder value for lots of companies and that the distributions CEOs to companies is not smooth. Unexpected demises are usually joint together with huge shortfalls of shareholder value. The average three-day cumulative abnormal return for an unexpected CEO demise is significantly negative, according to these authors. The cumulative abnormal return is the "sum of the differences between the expected return on a stock […] and the actual return often used to evaluate the impact of news on a stock price"[4]. The authors use two distinct yardsticks:

- The expected return from a market model estimated over 200 trading day before the casualty;

[3] The CEO average age is 62, while the average tenure is 17 years.
[4] https://www.nasdaq.com/investing/glossary/c/cumulative-abnormal-return [visited on 6/2/2019]

- Return on the value-weighted market portfolio.

Shortfalls computed like this are higher for unexpected demises of young and short-tenured CEOs. However, not all unexpected demises are linked to adverse outcomes. For instance, older CEOs demises are associated with a positive average three-day cumulative abnormal return. Non-sudden demises, Conversely, are usually linked to relevant positive results in shareholder value. The average buy-and-hold abnormal return for a non-sudden demise computed over a two-months interval ending five days after the casualty is significantly positive (Jenter *et al*, 2016). Buy-and-hold abnormal returns are described as the difference between the compounded actual returns and the compounded expected return (Moerman, 2014). Shareholder value response is stronger when the dead CEO is the founder too. 40% of the analyzed CEO are founders too. A CEO is defined as a founder in four cases:

- The CEO is the actual founder of the company;
- He or she got a family firm and made it bigger;
- He or she founded a company which took control of another one and keep controlling both simultaneously;
- He or she purchased the existing firm.

The unexpected demise of founder CEO triggers a significantly negative average three-day cumulative abnormal return. This reaction is larger if the founder CEO is young while if he or she is old the cumulative abnormal return might be significantly positive. The expected death of a founder is linked with a positive average two-months buy-and-hold abnormal return. Thus, the founders seem to be more relevant causes of shareholder value than non-founder CEOs. A possible explanation is that founders have more power over their companies than non-founders. As we can see, the cited paper puts on a view an outstanding degree of heterogeneity in the shareholder value consequences of CEO demises. Despite this heterogeneity, most of the abnormal returns on statement date are not favorable. Thus, statement return evidence puts on a view that shareholders eventually see most unexpected CEO demises as unpleasant news (Jenter *et al*, 2016).

The second paper considered looks at common stock price response to sudden demises of company directors in order to investigate shareholders' wealth effects due to some features of the managerial labor market (Johnson *et al.*, 1985). The sample taken by the authors was made of 53 unexpected demises of senior directors within the year interval 1971-1982. The directors' age when dead varies between 48 and 86 years with a mean of 61,8 years. The average tenure is 23 years. Figures on the demise reason give emphasis to the sudden type of the sample casualties: heart attack, accidents (*e.g.* car or plane crashes), suicides, not declared nature brief illnesses, cerebral hemorrhage, and embolism. The authors use two empirical trials to examine the common stock price response to news of senior director's sudden demise:

- Common stock return in trading interval concurrent with the director's demise are tested for proofs of abnormal stock price performance;
- Cross-sectional analysis of stock price response is carried out to explain the examined price fine tunings.

The single-factor market model is supposed to describe *per diem* stock returns (Fama, 1976). Thus, excess daily returns are computed as the difference between the actual return and the expected one according to the single-factor market model. The results show that, on average, a slight, not significant favorable stock price fine-tuning is linked with the sudden demises of senior directors. Excess returns are characterized by abnormal dispersion compared to the pre-death period. This evidence underscores that hypothetically relevant stock price fine tunings are linked with the sudden demise of senior directors albeit the mean of the excess returns is not statistically different from zero. The actuality of heterogeneous stock price fine-tuning is shown splitting the sample according to the condition of "founder" or "not founder". These subsamples correspond to dissimilar managerial hiring situations because founders are not employed by shareholders. If founders get the biggest share of the advantages of the working rapport in their wage, then the alternative of a founding director ought to give investors a better flow of prospect paybacks. According to the result found by the authors, this seems to be what happens. "Founder" subsample had a significant favorable stock price fine-tuning,

while “Not founder” is linked to an adverse stock price one. The stock price response happening after the sudden demise of a senior director is assumed to change contrarywise with the potential paybacks that investors would have gained from the former director’s sustained employment. The initial agreement between director and shareholders will be subject to the eventual employment situation being typified as one in which a founder looks for outside equity financing or actual shareholders look for an expert director. Founders are expected to be able to reach a better deal than not founders thus excess returns are expected to be higher in the case of the founder sudden death. Relevant discrepancies in decision-making power exist between different categories of directors. The more powerful is the director, the larger will be the shortfall of managerial skills which have no similar alternatives in the company. Thus, the level of authority of a director is assumed to be adversely linked with excess returns following his or her sudden death. Performance of the director is also adversely linked with excess returns. However, if a former director has carried out poor results and can inflict transaction costs which constraint investor-initiated new dealing, investors will go through no less than part of the costs linked with the director’s sustained employment. Thus, if the director dies those costs are eventually eluded. Then the higher the transactions costs, the higher will be the excess returns as the director dies. Conversely, if the investors can impose transaction costs to a good performing director, then the adverse excess return after his or her death will be amplified, by assumption. Given these previous assumptions, empirical results found by the authors state that excess returns are directly linked with the “founder status” and the ability of the executive. Adverse correlation is Conversely, shown for decision-making power and the variables related to transactions costs (Johnson *et al.*, 1985).

The third paper taken into consideration uses share price response to sudden senior director demises to analyze managerial entrenchment (Salas, 2010). Salas takes a sample of directors suddenly died between 1972 and 1987. The abnormal returns are computed with the differences between actual returns and expected ones through a market model.

The null hypothesis tested is that abnormal return is equal to zero[5]. Abnormal returns at the time of the casualty are statistically significant. Though the response is adverse on the day of the casualty while is favorable in the following one. Abnormal returns are not relevant until the casualty; thus, leakage of the passing statement is not probable. The best part of the demises of the sample is due to heart attacks or accidents. The average age and tenure are respectively 60,7 and 14,7 years when dead. Moreover, the age and tenure are directly related, and the correlation is 0,55. Performance of former executives is computed using the alphas from the market model regression and the Return on Assets (ROA). Negative (positive) *alphas* and lower (higher) ROAs are linked with worse (better) outcomes than foreseen. Succession plans might make it easier to substitute a director who passed away suddenly as well as the size of the industry, given the higher number of potential alternatives. Evidence shows positive stock price response when:

- The dead executive is older or more tenured;
- The company has a bad performance, as estimated with the above-mentioned *alphas*;
- The company has a large board of directors;
- The company has a staggered board;
- The company was a takeover target before the executive demise;
- The company has a low market-to-book ratio.

Executives are defined as "entrenched" if they were employed for ten years and had negative *alphas* for three years before dying. Conversely, they are not. Abnormal returns are significantly favorable when an entrenched executive dies while they are significantly adverse when the dead executive is not entrenched. Indeed, executives are usually entrenched when they are old and long-tenured, and their firms have the above-listed characteristics. This does not work for founders executives though, the stock price response to their sudden demise is not statistically significant indeed. Empirical evidence

[5] Thus, the null hypothesis is basically that sudden deaths are insignificant, while the alternative hypothesis is that they are significant, from a statistical point of view.

shows that founder deaths lead to far negative or far positive cumulative abnormal returns, thus founders usually are a real key asset or, on the other hand, deeply entrenched. In fact, founders may be not entrenched while they may be Conversely, a valuable source for the company (Schwert, 1985).

The fourth paper analyzes how much independent directors are worth through the share price response to their unexpected passing (Nguyen & Nielsen, 2010). The sample here taken is made of 229 unexpected demises of company directors within the interval 1994-2007. 108 of them were defined as "independent". Death causes are heart attack, stroke, plane or helicopter crashes, traffic accidents, fall accidents, drowning, murder and shooting incidents. The age of the sample lies between 40 and 90 years with a mean of 63,1 years and 91% are men. The average tenure is around 8 years. The average company capitalization market-to-book ratio are respectively $4 billion and 2,1. The average size of the board of directors is 8,9 with an average of two outsiders out of three. Lastly, 38% of the sample companies have the CEO/Chairman role split. The authors use two different trials:

- Analysis of the share return during the time of the unexpected demise of the independent directors of the sample;
- Cross-section analysis of the share price response to seeing the link with the degree of independence of the director.

Abnormal returns are computed comparing the actual returns with the expected ones from a single-factor model (Fama, 1976). The *beta* is computed from the historical data of the stock. The empirical evidence shows a slight adverse stock price adjustment when an independent director dies. More in details this adjustment occurs mainly in the four days around the casualty date. Thus, stock prices seem to encompass this kind of news by the time in which these become widely understood by all investors. When looking at the average cumulative abnormal returns, they are significantly negative for each interval taken into analysis. However, there is a huge discrepancy amongst the single stocks of the sample. Albeit the average cumulative abnormal returns are not positive, more than one

stock out of three registered positive stock price response and CARs to the sudden death of an independent director. A cross-section analysis is performed by the authors in order to investigate the causes of these differences. Control variables considered are director age, market cap, market-to-book ratio, company age, industry indicators, board size (Nguyen & Nielsen, 2010). The level of independence is estimated through the director's absolute tenure, if directors with a higher absolute tenure become always less independent, even though long tenure might be associated too more company-specific skills or better comprehension of the industry (Carter & Lorsch, 2003). Moreover, independent directors may be appointed through the influence of the CEO so another sign of higher or lower independence is whether the dead director is appointed by the current CEO or not (Shivdasani & Yermack, 1999). Evidence shows that:

- Shareholders value more short-tenured directors than long-tenured ones;
- Directors appointed by the current CEO, when dead, are valued less than others by shareholders, albeit those ones are usually shorter tenured than these ones, by definition;
- The stock price reaction is huger when there few independent directors in the board;
- Cumulative abnormal returns are lower if the death of the independent director might tip the balance within the board;
- Although part of the literature states that the eventual split between CEO and Chairman roles ought to influence the value of the independent directors (Brickley *et al.,* 1997), this does not seem to be proved.

Independent directors may be valuable in some decisive tasks wherein not-independent directors have hypothetical conflicts of interest. This implies that independent directors usually have relevant roles in board committees which must monitor the executives. If these decisive tasks deliver a benefit to investors, the share price response is more adverse when independent directors pass away unexpectedly. Evidence shows that independent directors who participate in board committees are valuable for investors,

above all when speaking about the audit committee (Nguyen & Nielsen, 2010; Shivdasani & Yermack, 1999). However, independent directors might be worthy for investors only because of their skills or company-specific knowledge. Most of the directors taken by the authors have a bachelor's degree so control is used over postgraduate degrees, M.B.A. and Ph.D. These kinds of education indeed should provide a higher scope of valuable skills for top managers. Empirical evidence shows that even after controlling for the level of education of directors, their independence affects their company in a manner so significant as to bring down the share price significantly after their sudden death. Lastly, the value of independent directors may vary related to the presence of dominant insider directors or difficult processes. Independent directors ought to check the executives and deliver an independent contribution to managerial activity. In companies with dominant executives, the worth of this contribution might be higher, unless the efficacy is restricted by the above-mentioned executives. Empirical evidence from stock price reactions shows that independent directors' effectiveness is limited with the presence of dominant executives or difficult processes and thus monitoring costs are high (Nguyen & Nielsen, 2010).

In this paragraph, some empirical shreds of evidence deriving from the study of directors' sudden deaths have been analyzed. In the following one, conclusions from the cited literature are analyzed.

Conclusions from literature

Through the analysis of the stock price reactions due to executives' sudden deaths, Jenter *et al.* (2016) examined differences in investors' value and company outcome triggered by demises of executives. They show that executives are relevant variables leading to changes in investors' value for several corporations. The worth consequences of executives' demises are very assorted though. For the most part, unexpected deceases, and more than ever the ones of young and short-tenured executives, bring about huge worth shortfalls. This points out that these companies' value more under the dead executive than with the best on hand replacement, and that a relevant fraction of manager-company match surplus do good to investors and not just the executive. Other executives' demises[6] are overall related to huge increases in worth. There are two explanations of why an executive passing may boost investors value:

- The replacement may be a better match than the dead executive. If this is the case the board of directors should have already substituted the former one;
- The former may have been the best match but taken away a larger wage than the defensible by the surplus he or she created.

Whatever is the reason, the increase in companies' worth points out that for lots of companies the board of directors does not make the most in dealing with executives.

Conversely, Johnson *et al.* (1985) analyzed the share price response to the unexpected demise of companies' managers. They show that:

- Unexpected directors' demises have little influence on average share price response within the trading period from the day in which the director passed away to the day in which the death news is disclosed;
- Abnormal returns following the disclosure of the news are set apart by a high cross-sectional variance, hinting that both favorable and adverse share price reactions to directors' demises happened.

[6] Either expected, or unexpected of old and long-tenured executives.

Thus, it seems that features of the working rapport and the labor market for directors lead to significant dissimilarities amongst the flow of shareholders' gains which are expected from the dead director and the alternative candidate. Using a cross-sectional analysis, the authors show that when the director is also the firm founder, then abnormal returns are higher. This is due to the dissimilarities amongst founder-directors and external ones in their early hiring, as here stated in the first paragraph. A firm founder seems to get a higher fraction of the surplus from the working rapport than does an external director coming after the founder. Abnormal returns are adversely linked with the director's rank in the company's chain of command, as proxied by the director's wage compared to the ones of the other executives. This finding might mirror the scope and inimitability of company-specific human capital which a director gets, making the passing of an outranked employee or of a retired CEO who kept being chairman of the board of directors more inexpensive to investors than an actual CEO passing. The findings related to the link amongst abnormal returns and company outcome straight before sudden executive deaths show that this link is not clear. It seems that the shift in the expected value of managerial skills is not strictly related to the company outcome before sudden executive deaths. But the blend of the low outcome and a huge amount of stock held by the dead director seems to be linked with higher abnormal returns following his or her death. This implies that a huge amount of stock held by a director lets him or her carry out transaction costs on the new dealing proposals.

Salas (2010) used the share price response to unexpected directors' demises to measure managerial entrenchment. Moreover, he compared the efficacy of entrenchment proxies formerly employed. Findings point out that entrenched directors are usually older and longer tenured than non-entrenched ones. Though, old directors usually carry out better outcomes than young ones. Therefore, the link of tenure with the low outcome is a good proxy for entrenchment. The dynamic of tenure and the low outcome shows a clearer relationship with entrenchment than age or tenure only. This proxy is used to split non-entrenched founders and entrenched ones. Share price responses to directors' demises for companies that were takeover targets before is significantly positive, thus their passing

removes a takeover obstacle, according to investors. This implies that the takeover market is an inefficient kind of corporate governance, given that entrenched executives can often put off the takeover from coming to pass. Apparently unexpected directors' demises boost the probability for the company to become a takeover target.

Lastly, Nguyen & Nielsen (2010) investigated the value of independent directors through the stock price reaction to the sudden executive deaths. The authors assume that independent directors deliver value to investors, so their unexpected demises ought to lead an adverse share price response. The extent of this response is different amongst the sample though. Findings state that share price response is less adverse when the dead manager is hired during the tenure of the current CEO or is long-tenured. Moreover, the marginal value of independence is more relevant the fewer is the number of independent directors in the board or when they serve in important committees. Thus, independent directors eventually increase firm worth for investors, though findings state that the presence powerful executives might limit this value delivery.

Summarizing these conclusions controlling for the actual effects on the stock price reactions following the sudden death of the firm directors we can eventually say that:

- A negative stock price reaction occurs when the dead director is:
    - Young and short-tenured;
    - A director who did not use to get all the firm-director match surplus;
    - A director with a high hierarchy position;
    - An independent director who was effective in his monitoring role;
- A positive stock price reaction occurs when the director:
    - Died expectedly;
    - Died unexpectedly but he was old and long-tenured;
    - Had a higher compensation than the firm-director match surplus;
    - Was also the founder;
    - Used to have both a bad performance and a large amount of stock held;
    - Was perceived to be takeover block.

Reactions of the companies to the sudden deaths

Black box vs organizational view of companies

There are two main flows of literature on the causes of companies' outcomes:

- The "black box" view, which is grounded mainly on an economic heritage which highlights the relevance of outside market variable in leading to company failure or achievements;
- The organizational view works up the behavioral and sociological pattern and perceives organizational variables and their appropriateness with the environment as the main variable of companies' achievements or failure.

Black box view usually ignored in-house variables (Buzzell & Gale, 1987), conversely considered within organizational view. However, some literature went into and weighed up few contingent linkages amongst economic and organizational variables (Grinyer *et al.*, 1988). Some literature also tried to provide an integrated analysis of companies' performance through these two frameworks (Hansen & Wernerfelt, 1989). The black box view gives a raw notional point of view on the impact of market structure on company strategy and outcome. While there is a scope of detailed paradigms, main variables of company-level profitability take in:

- Features of the industry in which the company takes part[7] (Scherer & Ross, 1990);
- The company's rank compared to its competitors[8] (*Ibidem*);
- The traits and amounts of the company's resources[9] (Porter, 1981).

Industry variables are often analyzed concerning the features of industries leading to highest profitability, like for instance the existence of entry barriers (Bain, 1956). As repeatedly stated in the literature the importance of these variables is off the table, though their quantitative impact has been instead the subject of continuous research disputes

[7] These features are subsequently called more synthetically "industry variables".
[8] This is subsequently called more synthetically "competitor variables".
[9] These traits are subsequently called more synthetically "firm variables".

(Ravenscraft, 1983). Instances of industry variables are the average industry profits and the average industry return on assets (Hansen & Wernerfelt, 1989; Schmalensee, 1985). Main competitors' variable is the relative market share (Buzzell & Gale, 1987). Formerly sensed as the starting place of market power, this variable has been used then to develop more sophisticated proxies to measure competition (Shepherd, 1972; Karnani, 1984). Firm variables essentially proxy the company size. Company size is often read as a cause of organizational costs or X-inefficiencies but, from a strategy point of view, we see that dimension might be too a proxy for diversification (Shepherd, 1972; Leibenstein, 1976; Porter, 1989). By and large, the archetypal black box model of companies' outcome gives details on up to 40% of the difference in outcomes between companies. Away from accidental results, measurement mistakes *et similia*, three reasons, as a minimum, can explain the left difference:

- There might be economic factors which are difficult to be quantified;
- The real world might be such that relevant economic factors vary in each instance, making overall analysis complex;
- Organizational variables are not considered.

Maybe organizational scholars built up even a wider scope of outcome frameworks than their economist colleagues. The organizational literature is prolific in the extent and complexity of their researches about configurations, coordination and people, the scope of theories and proved frameworks makes difficult to provide a synthesis (Hansen & Wernerfelt, 1989). For instance, just estimating the proper paradigm of outcome of efficacy takes in computations going from workers happiness to investors prosperity (Cameron, 1986). This literature points out that directors can have some bearing on the workers' behavior and therefore the outcome of the firm by considering variables such as configurations, coordination, compensation, setups, control, abilities, traits and the linkage of these to the environment. Thus, directors can have effect on firms' performances by assigning a background which is the synthesis of a series of mental,

sociological and fleshly relations (Hansen & Wernerfelt, 1989). Working with such complex frameworks makes difficult to build up, bring together and sum up suitable measures (Bonoma, 1985). Lots of theories inside the various streams of research are complicated to estimate and those which are less difficult to compute are usually on an individual basis. For instance, it is difficult to assure that a company is surely bureaucratic just because its hierarchy is very marked. Company's outcome is a complex fact. The literature which tried to seize this nature of firms is that of "organizational climate" (Steers & Lee, 2017). Just as geographical areas have dissimilar climates because of the direct contact of several atmospheric factors to make them positive or negative climates for existing, so can a company have as the contact of its provisions, constructions and people a positive or negative work climate. This theory talks about a wide scope of organizational factors which mirror individual-organizational contacts which influence individual conduct (Glick, 1985). The relevance of this stream of research is given by the fact that it delivers a theoretical linkage amid examination at the organizational rank and at the worker rank. Contrasting empirical methods of organizational configurations such as "M-form", "U-form" or systems such as capital budgeting polices, climate as estimated by worker answers to surveys mirrors the individual's insights of that worker about the consequence or existence or kind of specific organizational facts (Williamson, 1983). Climate is not directly linked to the structure, diverse organizations may create far dissimilar climates, indeed, as structure is only one within several variables that have some bearings on the employee's feeling of his or her environment (Springer & Gable, 1980). Several papers show how shifts in organizational configurations, setups and routines alter climate estimates and therefore individual outcome (Pritchard & Karasick, 1973). Some literature conversely state that climate estimates have more an impact on the organizational performance rather than at the individual one (Denison, 1983). However, further discussion on the topic is beyond the scope of this dissertation. A synthesis between the organizational view and the black box view is provided by the literature (Hansen & Wernerfelt, 1989). The findings highlight the relevance and independence of both economic and organizational variables in leading

to company's outcome. Furthermore, the findings show too that organizational variables are twice related to differences in companies profit rates than economic ones. This implies that best organizational practices support a company in selecting a favorable economic environment or getting a competitive advantage through the production of intangible assets (Itami & Roehl, 1991), thus:

- Industry choice and setting inside a sector are relevant determinants of firm performance;
- Best practices are even more relevant determinants of firm performance;
- Economic and organizational variables are independent: succeeding in a field does not lead necessarily to succeeding in the other one;
- Organizational variables are more important than economic ones.

Organizational factors are here outlined as "characteristics of the decision setting that should influence the decision-making process and outcome" (Ross & Robertson, 2003). These factors often win over persons' moral choices (Trevino, 1986). One of these organizational variables are the code of ethics. Code of ethics have been broadly studied in the business ethics stream of research because of their theoretically important correlation with moral choices (O'Fallon & Butterfield, 2005). They can be outlined as "written documents through which corporations hope to shape employee behavior and produce change by making explicit statements as to desired behavior" (Stevens, 1994). Therefore, a code of ethics in a firm can deliver significant advice for the actions of workers (Pater & Van Gils, 2003). Inquiries by and large implied that codes of ethics are effective organizational variables (Kaptein, 2011). Ethical climate is one more significant organizational factor that has been discovered to have some important impact on workers' moral choices (Ortas *et al.*, 2014). This consists in "the prevailing perceptions of typical organizational practices and procedures that have ethical content" (Victor & Cullen, 1988). Thus, the ethical climate within the office is a significant basis for workers' figures concerning the fair manners in the firm. The ethical climate can vary

according to different way of being[10] associated to different level of examination[11]. Climates featured by selfishness and company interest are more expected to be associated with immoral actions. Conversely climates which stress respecting the law and professional codes and social responsibility are linked to more moral choices. However, not all the literature is unanimous about the importance of ethical climates (Shafer, 2008). One more organizational variable is the organizational size. That can influence workers' moral choices. There are some dissimilarities within the work environment among big and small firms, indeed (Appelbaum *et al.*, 2005). Big firms often have business advantages that smaller ones do not have; thus, small firms may be stressed to make an immoral choice to strive with bigger firms (Eynon *et al.*, 1996). Some literature conversely states that there is a negative correlation amongst organization size and employees' moral choices implying that, when the organizational size rises, employees' moral choices drop off (Ford & Richardson, 1994). But there is also literature stating that there is a positive correlation amongst firm size or even no correlation at all (Pierce & Sweeney, 2010; Doyle *et al.*, 2014). Industry type is another organizational variable, this also can influence employees' moral choices, indeed (Forte, 2004). Lastly moral intensity is another organizational variable. This is "a construct that captures the extent of issue-related moral imperative in a situation" (Jones, 1991). The existence of this variable is positively correlated with employees' moral choices within firms, though this correlation has not been always found to be significant (Valentine & Hollingworth, 2012; Svanberg, 2011). The ones here summarized are only few of the several organizational variables which can be found according to the above-mentioned definition and they must not be linked inevitably to ethical decisions, the instances here taken were chosen because they were clearly explained by some authors (Musbah *et al.*, 2016). What is here relevant is that organizational variables, as we see, influence the decisions in a firm and the results deriving from these decisions, although it is not often clear how well or badly these

[10] Ways of being are here defined as attitudes of each person to produce emotional, sentimental, behavioral responses, determined by the family, society or work environment, about situations, groups or objects (*e.g.* egoism or benevolence).
[11] Such as individual-level or firm-level of examination.

decisions affect firm performance. Moreover, sometimes a firm variable can be seen as economic as an organizational one. Coming back to the main topic of this dissertation, we can state that a succession plan, within a firm, is a kind of organization variable, given that actually influences the decision-making within the firm and has a link with the organizational performance, as explained in the next paragraphs.

Corporate succession plans

Succession planning has been outlined as a process of spotting significant management ranks, beginning from the stages of project manager and supervisor and going on up to the top ranks in the firm. Succession planning also refers to management ranks to deliver the highest elasticity in creative management actions and to make sure that as persons pull off superior seniority, their management abilities will become wider and get more widespread according to the firm goals rather than to merely departmental goals (Carter, 1986). However, succession planning ought not be independent. That ought to be joint up with succession management, which take a more active business environment for granted. It acknowledges the consequences of the new hiring arrangement, whereby firms no longer indirectly make certain anyone sustained employment, though they are working well (Leibman *et al.*) A succession planning and management program is hence a methodical and organized attempt by a firm to make the management steadiness sure within relevant ranks, keep and grow intellectual and knowledge capital for the time to come, and give confidence to personal development. Methodical succession planning happens when a firm changes definite processes to assure the recognition, advancement and long run keeping of skilled employees (Hansen & Wexler, 1988). However, succession planning and management is often thought that should not concern only managers. Indeed, a good succession planning and management attempt ought to also speak to the necessities for personal advancement in any profession. The necessity to spread out the meaning of succession planning and management away from the management positions is getting more critical as firms become proactive in putting up high-outcome and high-participation offices wherein managerial power is dispersed, control is distributed all over an empowered labor force, and private scientific expertise accrued from ages of experience in a firm culture is crucial to working (Rothwell, 2010). One goal of succession planning and management is to fit the firm's current on hand skills to its required future skills. A further one is to support the firm to come across its tasks dealing with the fair persons at the fair spots at the fair occasions to do the fair stuff. In these meanings, succession planning and management ought to assure that the

institutional memory[12] is conserved to pursue sustained development in labor outcome (Argyris & Schön, 1997). Let us now distinguish succession planning and management from other organizational variables. Succession planning and management ought not to be mixed up with replacement planning, even if they are similar and often have common characteristics. The eventual necessity of replacement planning is usually a chief reason behind hard work that eventually become succession planning and management settings. In its most straightforward configuration, replacement planning is a kind of risk management. It does look like other firm programs to manage risks. The driving force of replacement planning is to reduce the chance of holding back because of the sudden shortfall (*e.g.* resignation) of important employees. However, succession planning and management overtakes plain replacement planning. It is down to business and tries to assure the steadiness of control through the promotion of new leaders within the firm through systematic training events. It ought to be looked as a relevant instrument for developing strategic programs. Instead, workforce planning represents broad organization for the whole firm's employees (Bechet, 2002). Concerning talent management, conversely, that is defined as "the process for recruiting and developing people with the required skills and aptitude to meet current organizational needs" (Bhatnagar, 2007). Thus, attempts to cultivate high-performing employees which are crucial for the firm's future connote the talent management (Rothwell & Kazanas, 2003). Human capital management paradigm is all about people and their economic worth. A critical issue about human capital management is that individuals are worth for more than they deliver. Women and men are extremely imaginative, and this skill is worth, from an economic point of view. People, not machines, make breakthroughs which can be financially valuable. For instance, they find out up-to-date lines of attack in customer caring, acquire new clients or new ways to sell old merchandise, or find out new methods to boost efficiency. A crucial point in human capital management is that inventiveness is worth. So is the institutional memory that employees keep in mind. After defining programs other than succession planning and management, let us state what is needed in good

[12] Defined as "the stored knowledge within the organization" (Gibbons, 2007)

succession planning and management. One important thing which is needed is that substitutes must be accessible to take on significantly valuable standings as soon as they turn out to be untaken. As in the relay, where the runners must be perfectly synchronized, because, if during the change the baton falls, they lose the race (Mahler & Drotter, 1986). Many studies over the years have highlighted the relevance of succession planning and management. Top managers often mention this topic as one their most important worries. This is matter of concern in boards or directors too. There are some explanations to executives' and boards' concern for succession and planning and management:

- Executives know that the competitive advantage of the firm hinges on the fair persons at the fair spots at the fair occasions to do the fair stuff. Firm realization is for the most part having the fair management. Some work must be done to assure that the firm is systematically recognizing and educating talented prospect employees in critical ranks;
- As attempts to decrease costs showed the way to layoffs of middle managers, there are fewer individuals who can be upgraded to key positions from inside the firm itself. This implies that deep care is needed to recognize talented prospect employees for these positions as soon as possible and growing their talent. People who are very talented should not be undervalued, especially in high-competitive labor markets, as the risk of their eventual resignation to join another firm, maybe a competitor. This might happen, for instance, when a downsized firm reallocate the labor amount among the left employees[13] leading to an increase in workload at the same wage. Hence, they are the ones easier to turn into fed up employees and change workplace than less talented ones. To prevent that issue executives must actively recognize, properly compensate and educate talented employees.
- When succession planning and management is held off-the-record and therefore unprepared, key employees in charge tend to identify their successors in employees who resemble them in education and beliefs. They set up a

[13] Which are the most talented ones, if a rational top management would fire the least talented.

> "bureaucratic kinship system" grounded on "homosocial reproduction" (Moore, 1962). Due to the state of affairs in which directors work, due to the rank of them in the organization chart, social resemblance leans towards getting very significant to them. The chart launches influences setting in motion the creation of directors resembling the former ones (Kanter, 2008). Thus, white males usually choose other white males as replacements and black women will choose black women and so on and so forth. That habit, indubitably, is responsible for such issues as the glass-ceiling and other disadvantages due to gender or racial reasons (Cotter *et al.*, 2001). To sidestep these issues and prop up diversity and multiculturalism within firms, organized tries need to be made to recognize and train the best replacements for relevant ranks.

Furthermore, succession planning and management is valuable because is the root for:

- Linking each line of work to each employee;
- Setting up education and enhancement programs;
- Setting up lines of work;
- Promoting the communication concerning the directorship planning;
- Developing a better human resource planning mechanism (Carter, 1986).

Succession planning and management ought not to be led into the void; preferably, it ought to be connected to other firm plans. Thus, succession and planning management should help the promotion of firm strategy. Firm strategy is the direction and long-term goal of a firm that allows to achieve a certain type of advantage for the firm through the configuration of resources in the reference ecosystem in order to meet the needs of the markets and to meet the expectations of the shareholder (Scholes *et al.*, 2002). That is an essential firm tool by which the firm can stay alive. It consists in expressing and applying a durable program by which the firm can get full benefit of current inside firm strengths and upcoming outside environmental opportunities, reducing the consequences of current inside firm weaknesses and upcoming outside threats. To develop firm strategy, firms need the fair persons at the fair spots at the fair occasions to do the fair stuff. Without

them, strategy cannot exist. Thus, management recognition and succession are important to the effective development of firm strategy. Indeed, "performance criteria […] often flow from a strategic plan which the chief executive is responsible for developing and carrying out" (Gilmore, 2003). As a minimum, there are five ways to join in strategy and succession plans (Rothwell & Kazanas, 2003):

- The top-down approach, where firm strategy constrains succession planning and management and, thus, managers recognized by the above-mentioned procedure keep up the effective development of strategy;
- The market-driven approach, in which succession planning and management is led by market desires and requests, thus, as the aptitude to cope with market players is required, it is looked for;
- The career planning approach, wherein succession planning and management is linked to strategy through employees' career planning, therefore employees analyze their own objectives according to firm's strategy and choose their best provisions to firm desires, matching with their bosses' opinions;
- The future approach, where succession and planning management turns into a driver for foreseeing skills needs arising from firm strategy. It is seen as a method to study outside-of-the-firm situations and link inside-of-the-firm skills to these situations;
- The rifle approach, in which succession planning and management is dedicated on working out precise and recognizable issues relating the firm such as high turnover in some firm positions or jobs.

Thus, "there is no one universal approach that works well across all companies; rather, effective companies match their succession strategies to their business strategies" (Gratton & Syrett, 1990). Strategy is also concerned by Human Resource Planning. That is "the process of analyzing an organization's human resource needs under changing conditions and developing the activities necessary to satisfy these needs" (Walker, 1992).

Human Resource Planning relates the analysis of firm employees and the skills needed. One of the goals of Human Resource Planning is the long-run plan to lead firms' employees' guidelines (Rothwell & Kazanas, 2003). Few firms call out the increasing value of Human Resource Planning, as pointed out by some literature, indeed "the need for people with increasingly specialized skills, higher managerial competencies, and commitment to new levels of excellence, with professional qualifications in disciplines that did not exist a few decades ago […] is and will continue to be the overriding business concern of the organization" (Manzini & Gridley, 1986). Succession planning and management intrinsically concerns the Human Resources Planning, even if succession planning and management usually concerns more the management needs and abilities. Thus, many practices and styles used in Human Resource Planning might also be used for succession planning and management. Succession planning and management ought to concern recognizing crucial management skills. Furthermore, succession planning and management does not have necessarily to involve skilled people inside of the firm. Succession planning and management is supposed to recognize substitution requirements as way to set the needed employee preparation. Preparation aids workforce to identify their duties, trains them to move forward to future duties and is an instrument for firm learning. So, succession planning and management validates the procedure of training employees to work subsequently in the relevant ranks. Another significant explanation for the existence of succession planning and management is the recognition of the proper methods to speed up in the high potentials' advancement and the enhancement of the holding of skilled employees (Cappelli, 2000). Succession planning and management is also useful to finance the intellectual capital within the firm. Intellectual capital is a "wide-ranging" business resource. It includes numerous activities headed by the company, such as human resources, know-how, intellectual property rights, manufacturing processes, organizational structure, problem-solving skills and internal and external relations to the company organization (Capuano, 2010). Though this definition here provided is quite broad and comprehensive of all facets of intellectual capital, here intellectual capital mainly takes on the meaning linked to human resources.

Firms invest a significant amount of money in education of humans resources. Performance might be developed through practice as employees move along the so-called "learning curve". That is defined as the "curve [which] shows the rate of improvement in performing a task as a function of time, or the rate of change in average cost […] as a function of cumulative output"[14]. When employees resign, the firm's shortfall can be estimated, indeed. Conversely, if they stay in the firm to achieve their professional goals, then the firm gains from their accumulated know-how. Within this meaning, succession planning and management is useful as an instrument by which employees can be educated for achieving their professional goals inside of the firm. This fact assumes even greater importance in view of the growing diversity that characterizes the population today and therefore the workforce. Indeed, discrimination based on ethnicity, sex, gender and sexual orientation has always been perpetrated against workers and often still happens today, though that is usually forbidden by states laws. Nowadays, there is a growing perception of the necessity to advance multiculturalism, which concerns the understanding of social and personal dissimilarities. According to this view, diversity has a wide sense which comprehends sex and ethnic sets (Morrison, 1992). Many firms plan their succession planning and management programs in order to boost the advancement of employees keeping an eye out on the diversity of the candidates for key positions. Indeed, diversity is often a supply of inventiveness and innovation that can lead to a competitive advantage, though, conversely, diversity may be also a root for differences of opinions, disagreements and fights which can lead to a loss of competitiveness (Bassett-Jones, 2005). Succession planning and management can also be a tool in order to raise workers determination through nominations for key positions within the firm. Indeed, advancement from the inside "permit an organization to utilize the skills and abilities of individuals more effectively, and the opportunity to gain a promotion can serve as an incentive" (Sherman & Bohlander, 1998). Once the goal has been reached, the example of the "lucky" employee encourages others. This is especially useful in times of frequent redundancies, perhaps due to a company down-sizing, in which the remaining workers

[14] http://www.businessdictionary.com/definition/learning-curve.html [visited in 7/4/2019]

could suffer from the so-called "survivor's syndrome" (Boroson & Burgess, 1992). The survivors' syndrome, in human resource studies, is the "mixed bag of behaviors and emotions often exhibited by remaining employees following an organizational downsizing" (Doherty & Horsted, 1995). Basically, when there are huge layoffs due to downsizing companies, employees who are not fired can be demoralized, less loyal, more angry, cynical, discouraged from management and fearful that a round of layoffs will promise following ones and they will be the next to be fired (Appelbaum *et al.*, 1997). Thus, succession planning and management helps to develop workers' skills in order to face the varying firm environment. Indeed, "one role of the leader is to shield the organization from ambiguity and uncertainty so that people can do their work" (Gilmore, 2003). Succession planning and management helps the pursuance of this goal. Employees trained for critical ranks convert the vagueness and doubt of varying outside environment into vision and leadership. A kind of environment change may be due to voluntary separation programs. A "voluntary separation program" is an "opportunity to resign voluntarily and obtain specified benefits that they would not otherwise be entitled to receive"[15]. There are basically four reasons to implement a voluntary separation program:

- Reduce headcount, when some employees are no more needed for any reason;
- Reduce payroll, when headcount has become too much expensive for the firm;
- Reorganize functions, when it is needed to retrain the headcount and some employees may not be willing to switch to the new roles assigned to them;
- Facilitate retirements, when it is not possible to force employees' retirement despite their advanced age.

Basically, they are the same reasons which may lead to forced layoffs, but here the survivors' syndrome may be avoided given the voluntary trait of the plan, though voluntary separation programs might be an earliest stage to it. Succession planning and management is here useful in order to recognize the replacements for the leaving employees or how to reallocate the work amongst the remaining ones. This implies that

[15] https://hortonpllc.com/voluntary-separation-programs/ [visited on 7/5/2019]

succession planning and management is also useful in order to understand which employees can be fired without harming the business. This is important above all when firms want to decrease extremely their employees up to the minimum possible. This is a decision that is becoming quite popular because of the increasing global competition. Thus, the procedures must be planned to reduce expenses, decrease the cycles time, and boost quality and production. Procedures need to be analyzed according to the firm goals, not according to all that has always been done. In such environments "companies don't need people to fill a slot, because the slot will only be roughly defined. Companies need people who can figure out what the job takes and do it, people who can create the slot that fits them. Moreover, the slot will keep changing" (Morrison, 1992). There are several attitudes to succession planning and management. These attitudes can vary along:

- Direction:
    - Top-down approach, where succession planning and management is led from the top firm positions, thus the executives manage succession planning and management related processes. They choose how employees are evaluated, how replacements for key positions will be chosen and how will the employees be trained to work, in the future, in such key positions;
    - A bottom-up approach, wherein succession planning and management is led from the bottom firm's position, thus workers take part in all undertakings related to succession planning and management. Choices pertaining succession planning and management are linked to employees' plans, thus they can self-evaluate their strengths and weaknesses and work on them;
    - Combination approach, which tries to combine both the above-mentioned attitudes, thus executives take part in succession planning and management activities as well as the workers;
- Timing:

    - Fitful, when organized succession planning and management is not actually a thing because succession is not planned, in fact, thus whenever an important employee leaves the firm, an emergency can be triggered;
    - Periodical, when succession planning and management is performed according to a determined timetable, thus it usually looks like a workers' outcome assessment plan, which is typically part of such programs;
    - Continuous, when succession planning and management needs constant choices, figures collecting, and initiative. All workers are here asked to help the ongoing development of their abilities;
- Planning:
    - Systematic, when succession planning and management is organized, written down (*"Verba volant, scripta manent"*), and constitutes a program according to which firm decisions are taken;
    - Unsystematic, when succession planning and management is guided by the discretion of the single directors rather than by a formalized program to assure directorship steadiness;
- Scope:
    - Specialized, when succession planning and management is focused on specific key positions. Usually, specialized programs come out during shortfalls of specific job categories within the firm;
    - Generalized, when succession planning management has the goal to enhance all employees regardless the importance of their position. Usually, that is the kick-off for recognizing afterward the key positions within the firm;
    - Halfway;
- Degree of dissemination:
    - Closed, when succession planning and management is managed as a strictly confidential, thus directors evaluate the employees' skills with no consultation by themselves. Employees' targets may not be considered

during the decision-making process. Confidentiality is due to two main reasons:

- Succession matters might disclose crucial news about firm strategy that ought to be hidden to competitors;
- Executive might be concerned because of the eventual consciousness of the workers about their position in succession plans and they may figure out hopes out of reach;

  - Open, when succession planning and management is managed out in the open, thus directors disclose all evaluation details to the employees. The succession planning and management program is explained to all those who request it. Employees are explained how they are assessed. Though, executives never even guarantee to the best employees that they will be promoted, so as not to allow them to "rest on their laurels";
  - Halfway;

- Amount of individual discretion:
  - Mandated succession planning and management, when employees' targets are passed over, thus executives look for the best replacements for key positions notwithstanding employees' personal goals;
  - Verified succession planning and management when employees' targets are instead are not ignored, thus executives look for the best replacements for key positions amongst the employees who showed an interest in that position, with no pressure towards the ones who are not interested.

According to these dimensions, two kind of approaches can be defined: traditional and alternative approaches. Following traditional approaches, employees can move along six dimensions within a firm (Haire, 1968):

- In (*e.g.* hiring);
- Out (*e.g.* firing or resignation);
- Up (*e.g.* advancement);

- Down (*e.g.* retrocession);
- Across (*e.g.* side moving);
- Progress in place (*e.g.* personal enhancement in the present rank).

The "in" dimension is linked with the hiring process. "Hiring off the street" is a method to come across replacement for critical ranks, but employees found in this way are often a hazard (Kasinitz & Rosenberg, 1996). Indeed, they do not have such an interest in the firm's state of affairs, although they might have significant skills the firm had been lacking since their hiring. Moreover, they might create a divergence attempting to implement new purposes. That divergence might be harmful or harmless. Given this level of uncertainty, executive directors are often skeptical when it comes to hiring employees outside the company for important roles. Their past performance is not easy to be assessed and their fit with firm culture might not be easy to be verified. The "out" dimension is mainly linked with firings and resignations. Firings usually do not have a good reputation, but, when used effectively, they can be a useful instrument to get rid of ineffective employees from key ranks, unlocking in this manner chances for effective workers. The "up" dimension is linked with advancement within the firm. Succession planning and management is mostly associated to this dimension. Indeed, the substitution of employees for key positions usually involves rather a promotion within the firm than hiring someone off the street. The pros of advancements are the eventual rise of incumbent workers' confidence and the streamlining of changes by assuring that critical ranks are met by employees who are already well know within the firm because of their skills. Though, a persistent internal advancements practice could strengthen the existing corporate culture and consequently limit cultural diversity as well as gender and ethnic one. Furthermore, employees who work very well in a certain position may not work as well in other more important positions, since different jobs have different requirements to be fulfilled. Therefore, succession planning and management must be rigorously addressed. The "down" dimension has a bad reputation as well as the "out" one. However, in some circumstances, retrocessions can be positive even for employees, as it could involve assigning a less risky job, such as in the case of relegation from a

managerial position. The “across” dimension is way more common during downsizings. Furthermore, the so-called "job rotation" can encourage the development of employees’ unique abilities that can be useful in view of an effective succession planning and management (Rothwell *et al.,* 1992). Lastly, “progress in place” lies between up and across dimensions. This dimension has been developing since the beginning of the globalization. Indeed, it is often not possible to promote the employees, but it is possible to allow them to grow professionally by having them work in the same position and entrusting them with more and more tasks. However, knowledgeable directors understand that there are several alternative approaches to replace a key rank (Carter *et al.*, 2013). Few instances of them are here described:

- Organizational redesign, wherein the workload is redistributed among the other employees, whenever someone is fired or resigns. This approach is used to reduce the workforce, but must be accompanied by an increase in the salaries of employees who remain, to compensate for the increase in work;
- Process redesign, where if a position becomes vacant, the top managers evaluate whether that position is strictly necessary and, if it is not, that position is eliminated directly;
- Outsourcing, where “products or services are produced […] by outside suppliers” (McCarthy & Anagnostou, 2004), thus when there is a vacancy, the management can entrust an external firm to accomplish the goals of that position;
- Trading personnel temporarily with other firms, thus basically sharing employees with other companies that may have employees with similar training, if it is necessary to deal temporarily with excess production capacity and not have enough employees to do so. This is an approach that works well if you set up a network of companies that have different needs for labor over time, though it can also lead some employees to move away from their firm to approach another in the network;
- Talent pools, in which replacements are not identified for each position but a whole set of talents are formed for as many positions as possible through a job

rotation system. The problem with this approach may be that an employee's productivity could be different depending on the job he is doing;

- Two-in-the-box arrangements, which Motorola used to use in this way: “since most Motorola businesses are run by a general manager and an assistant general manager, the assistant slot is used to move executives from one business to another for a few years so they can gain a variety of experiences” (Hennecke, 1991). Although it may be thought that this policy induces a surplus of personnel in managerial positions, it does however allow assistants to practice in multiple lines of business as well as job rotation does (Ancona & Nadler, 1989);
- Setting up competitive skill inventories of high-potential workers outside the organization, that is, to identify companies that might become sources of high-potential employees, whenever needed.

At the bottom of what is written in this paragraph, we can eventually underline that there are many ways to develop succession planning and management, but, in any case, the work done in this process cannot be irregular, neither disorganized (Rothwell, 2010).

Link between succession plans and share price reaction to sudden deaths

Although the usefulness of succession plans is recognized, within literature, in practice few companies have been using this tool, so far (Lublin, 1997). A possible reason for the failure in wide spreading of the succession plans within companies could be that they are difficult to develop, and their benefits are not 100% sure. However, the literature on the relevant practices is not unanimous, "when it comes to executive succession, there is little we know conclusively", indeed (Kesner & Sebora, 1994). However, the dissimilarities could be explained by diverse methodologies used in different studies. Indeed, as often happens in the study of the effects of sudden deaths, it is difficult to clearly identify the moment of the announcement and then build a consistent model that minimizes the possible misrepresentations about the turnover and the succession, for any reason, of an executive and the consequent effectiveness of a succession plan (Worrell *et al.*, 1993). For instance, it might be important to define the conditions in which a succession can have different impacts on the company in order to define the consequences of succession itself (Worrell & Davidson, 1987). For this purpose, it may be useful to define a proxy to establish whether a succession plan is present, such as, for example, the presence of an heir apparent[16] and use this proxy to assess the effects of a manager's sudden death on the company (Behn *et al*, 2005). An heir apparent, in the case of CEOs, can also be defined, in a more recognizable manner, as a president or a COO who is at least five years younger than the previous CEO (Cannella & Shen, 2001). Though having selected the right proxy, however, it is necessary, in order to evaluate the effectiveness of a succession plan, to find turnover instances which cannot be influenced by factors other than simple succession. For this reason, directors' unexpected deaths are excellent samples to be analyzed. According to this rationale, even sudden managers' dismissals might be considered. However, although sudden, they can hardly be considered good instances to be studied in order to test the effectiveness of succession plans, since it is likely that, if a manager is fired, the company is not performing well and this, in itself , is

[16] An heir apparent is a person who is clearly designated or perceived as a successor to the previous person.

a factor which generates expectations about the bad manager's dismissal. Indeed, most managers are fired because of the poor performance of the company they work for (Worrell *et al.*, 1993). Moreover, despite a change of management is caused by bad results and therefore we can expect a favorable reaction of the markets, if instead there is no succession plan, investors could react negatively to the uncertainty due to this change (Shapiro & Ogden, 1997). Thus, it is difficult to explain any stock price reaction. Then let us conversely face the connection between CEO demise, succession planning and share price response. Supposedly, a regular shareholder develops expectancies of a company's prospect cash flows and business-related risks. Whether an expectancy varies, company's share price varies too. Thus, if the CEO demise as well as the presence of an heir apparent can influence those expectancy variations, then those casualties influence the share price. An effective succession is the outcome of a procedure which helps to either stress the company strategies or indicate and begin strategic moving forward. Companies which have no heir apparent may seem to be "drifting" to the firms' stakeholders and hence their prospect value may be expected to fall and consequently share price will fall too (Hall, 1986). Thus, having a succession plan is required to boost chances of company's good performance. Indeed, "overtime, however, firms require more than one CEO. Consequently, what a firm becomes can be significantly influenced by how and to whom this power and authority are passed" (Kesner & Sebora, 1994). Hence, according to this assumption, firms wherein a CEO dies ought to record better performance if they have an actual succession plan or an heir apparent. Empirical data is in harmony with the thought that investors seem to consider worthy the existence of a succession plan, as proxied by the existence of an heir apparent, as previously defined, when the CEO departs this life. Thus, evidence suggests that succession planning is an important factor for firms' performance (Cannella & Shen, 2001). Shareholders may anyway observe that a succession plan is in place independently from the existence of an heir apparent as from the previously stated proxy for the presence of a succession plan. Indeed, internal promotions after CEO deaths usually happen[17] but it does happen amongst the chairman

[17] Internal promotions after CEO deaths happen with 72,6% of the casualties.

or the COO of the firm in far fewer times[18], though these results are still statistically significant. These findings relate both sudden and non-sudden deaths, but when speaking about sudden deaths these results are confirmed and they are even more significant (Behn *et al.*, 2005).

[18] This happens only in the 43,8% of times.

An empirical analysis of the sudden death effects

Sample and methodology

I collected a small sample of CEO sudden death casualties through a wide research of news within Google and Factiva. Factiva is a database of press, corporate and business releases provided by Dow Jones. Factiva has exclusive rights for the Wall Street Journal, Dow Jones and Reuters news agency. Moreover, Factiva provides companies' financials and market data as well as the content of several web sites and blogs[19]. The sources consulted through these search engines are, for instance:

- The Wall Street Journal[20];
- PR Newswire[21];
- Business Wire[22].

The news found were released amongst the 2004 and 2019. My research is focused on CEOs casualties, but headlines or texts of press releases sometimes do not refer to them with that name so several related or synonyms keywords were used as:

- Chief executive officer;
- Chief executive;
- Executive director;
- Director;
- Chairman;
- Founder;
- President;

These keywords were used together with keywords related to sudden deaths such as:

- Sudden death;

[19] https://www.dowjones.com/products/factiva/ [visited on 7/31/2019]
[20] https://www.wsj.com/ [visited on 7/31/2019]
[21] https://www.prnewswire.com/ [visited on 7/31/2019]
[22] https://www.businesswire.com/ [visited on 7/31/2019]

- Unexpected demise;
- Sudden demise;
- Unexpected death.

Using these keywords together result in many hits wherein the majority are false positives. Then I manually screened all this news in order to verify that the dead director was the CEO in office at the time of death and his or her company was listed. For all these casualties, I collected the date of death. I also collected information on the cause of death in order to understand whether the death was sudden or slow. I basically defined a sudden death as "a death that was unexpected and preceded by any indication of poor health" (Jenter *et al.*, 2016), but I added even another constraint, *i.e.* I did not consider a death as sudden if the dead CEO was aged more that 65, given that it might be argued that the death of an elderly CEO is not actually sudden. Causes of sudden deaths which were found are, for instance:

- Terrorist outrages;
- Plane crashes;
- Heart failures.

Age and tenure are broken up into two subsamples to be controlled[23]. I also controlled whether the deceased CEO is the founder of the firm. Press releases usually specify if the dead CEO was the founder. Otherwise comparing the year when a firm was founded to start year of the CEO can be a quick way to understand if they are or not founders. Relatives of the founder are also considered as founders. Moreover, I collected the age and the tenure of the dead CEO as well as information about the succession planning and the distinctions of the roles of CEO and chairman. I proxied the existence of any kind of succession plans seeing whether it was disclosed the identity of the successor of the dead CEO, either *interim* or not. I*nterim* succession is widely employed by public companies and basically consists in nominating a temporary successor to lead the company instead

[23] Age threshold to split the sample is 60 years, tenure threshold to split the sample is 10 years.

of nominating a permanent one right after the succession (Ballinger & Marcel, 2010). Distinctions of the roles of CEO and chairman as well as all these other pieces of information were collected by their companies' death statements or the obituaries published on the internet[24]. Companies' financials were collected through Factiva[25] and Yahoo! Finance[26] as well as data for building up the proxies of market and expected returns for cumulative abnormal return[27] analysis. Both these search engines can be considered reliable sources for financials because of the quite wide usage of them in financial literature (Larcker &Tayan, 2012; Nguyen & Nielsen, 2014). The market return is one of the benchmarks I used for the cumulative abnormal return analysis, as it can be assumed that the expected return of a stock is the market return, given that it is the average of the return of all the market stocks and thus it can be used as an unbiased estimator (Jenter *et al.*, 2016; Nguyen & Nielsen, 2014; Monti, 2008). The other benchmark used is the expected return of the stock computed through the Capital Asset Pricing Model. The Capital Asset Pricing Model is grounded on the Markowitz's modern portfolio theory (Markovitz, 1959). In this model is first assumed that an investor chooses to invest in a portfolio which will bear a random outcome in the next period. Investors are here assumed to be risk-averse and their selection criteria are exclusively based on the mean and variance of their one-period outcome. Thus, investors choose "mean-variance efficient" (*Ibidem)* portfolios such that:

- The variance of the portfolio return is minimized, given a certain mean of the one-period outcome;
- The mean of the portfolio return is maximized, given a certain variance of the one-period outcome.

[24] Publishing the obituary of the deceased beloved seems to be a common practice in English-speaking countries.
[25] https://www.dowjones.com/products/factiva/ [visited on 7/31/2019]
[26] https://finance.yahoo.com/ [visited on 8/3/2019]
[27] https://www.nasdaq.com/investing/glossary/c/cumulative-abnormal-return [visited on 6/2/2019]

Hence, this approach is often called a "mean-variance model" (Fama & French, 2003). Modern portfolio theory sets a mathematical tool to compute asset weights in mean-variance efficient portfolios. The Capital Asset Pricing Model develops this tool into a testable forecast about the link between risk and expected return by selecting an efficient portfolio according to the previously listed criteria. Further literature added two relevant constraints to Markowitz approach for selecting a mean-variance efficient portfolio (Sharpe, 1964; Litner, 1975):

- Complete agreement[28];
- It is possible to borrow and lend money at a risk-free rate which is the same regardless of the investor and the amount is borrowed or lent.

If these assumptions are confirmed, a "minimum variance frontier" can be drawn from all mean-variance efficient portfolios (*Ibidem*). Moreover, holding the previous assumption of risk-averse investors, it is implied that all investors will invest only in portfolios lying on the minimum variance frontier, thus the market portfolio must also be lying there. Hence, the mathematical relation that holds for any mean-variance efficient portfolio must hold for the market portfolio too. More in details, the minimum variance condition for the market portfolio is:

$$E(R_i) = E(R_{ZM}) + [E(R_M) - E(R_{ZM})]\beta_{iM} \text{ (1).}$$

$E(R_i)$ is the expected return of any asset i, β_{iM} is the market beta of that asset[29], $E(R_{ZM})$ is the expected return of a generic zero-beta asset whose return is not correlated to the market one and $E(R_M)$ is the expected market return. Thus, $E(R_M) - E(R_{ZM})$ is the market premium which multiplied to β_{iM} becomes the risk premium of the asset *i*. Given that the market beta of any asset is also the slope in the regression of its return against

[28] Investors agree on the mean and variance of the assets' returns and those variables are the actual ones. The assumption is not confirmed if investors agree on the probability distribution of asset returns but this differ from the actual one, indeed.

[29] The market beta of any asset *i* is the ratio of the covariance of its return with the market return and the market return's variance:

$$\beta_{iM} = \frac{cov(R_i, R_M)}{\sigma^2(R_M)} \text{ (2).}$$

market return, it is implied that the beta estimates the sensitivity of the asset's return to changes in the market one. Though, another implication is that the risk of the market portfolio[30] is a weighted average of the covariance risks of the assets in the market portfolio[31]. Hence, the beta is the covariance risk of any asset in the market portfolio compared to the average covariance risk of assets[32]. The financial interpretation is that the beta is related to the risk each euro invested in any asset weighs in the market portfolio. About the expected return of the zero-beta asset, it means that this asset is perfectly uncorrelated with market return. An asset's return is perfectly uncorrelated with the market return when the average of this asset's covariances with the returns on other assets counterbalances the variance of the asset's return. This asset would be riskless in the market portfolio such that it would weigh in no more variance of the market portfolio return. When there is risk-free borrowing and lending, the expected return on assets which are perfectly uncorrelated with the market return must equal the risk-free rate R_f. The equation (1) can then be written as:

$$E(R_i) = E(R_f) + [E(R_M) - E(R_f)]\beta_{iM} \quad (3).$$

Thus, the expected return of any asset is the sum of the risk-free rate and a risk premium computed as the market premium times the asset's beta (*Ibidem*). Risk-free borrowing and lending are assumptions out of reach, though. Further literature grows a variety of the Capital Asset Pricing Model where that assumption is eventually released (Black, 1972). Basically, it is shown that the CAPM's most important finding[33] can be achieved also by assuming that short sales of risky assets are allowed. Market-clearing prices imply that, when weighting the efficient portfolio chosen by the investors according to their investments, the resulting portfolio is the market portfolio. Hence, the market portfolio is a portfolio of the efficient ones selected by investors. If short selling of risky assets is allowed with no constraints, portfolios composed by efficient portfolios are eventually

[30] As computed by the variance of its return, which is the denominator of the beta in (2)
[31] The covariance of any asset return with the market one is the numerator of the beta in (2).
[32] That is basically the variance of the market portfolio. Indeed, $\sigma^2(R_M) = cov(R_M, R_M)$.
[33] That the market portfolio is mean-variance efficient.

themselves efficient. Therefore, the market portfolio is efficient such that (1) holds for this other version of the Capital Asset Pricing Model. The only difference between the two versions here presented is in the interpretation of the expected return on the zero-beta assets. The Black approach states only that the expected return on the zero-beta assets needs to be less than the expected market return, for the market premium to be greater that zero. Conversely, the Sharpe-Litner approach states more strictly that the expected return on the zero-beta assets needs to be the risk-free rate (Sharpe, 1964; Litner, 1975). When speaking about both short selling of risky assets and risk-free borrowing or lending, I assumed so far that both were subjected to no constraints. However, if there are constraints either in short selling of risky assets either in risk-free borrowing or lending, investors eventually keep choosing efficient portfolios, but portfolios composed by those ones are not usually efficient. Thus, the market portfolio is not eventually efficient and the link between expected return and the beta is no more found, within this framework (Fama & French, 2003). This model is however widely used in practice, despite criticism within literature. For instance, the Italian Accounting Body envisages its use in estimating the cost of equity for the so-called Impairment Test (Dodesini, 2009). This use was adopted by the Italian Accounting Body following the indications of the IAS 36 accounting principle concerning the Impairment Test (Kvaal, 2010). The Italian Accounting Body prepares the accounting principles for the preparation of the annual and consolidated financial statements of companies, of the budgets and financial statements of non-profit companies and public administration, either national either local. Furthermore, the Italian Accounting Body, coordinating its work with the activities of other European standard setters and complying with the laws and regulations in force, provides technical support for the application in Italy of International Accounting Standards[34] and European directives in accounting. The Italian Accounting Body also aids the national legislator in issuing accounting and related regulations for the adaptation of the internal budgetary discipline to the European directives and international

[34] Here IAS and IFRS are the same, being beyond the scope of this dissertation the analysis of their differences.

accounting standards approved by the European Commission[35]. Basically, the Italian Accounting Body and its principles are the main reference for Italian accountants and auditors. The International Accounting Standards, on the other hand, are the accounting principles that are used throughout the world by all those companies that have an international vocation[36]. For instance, Italian and European laws require non-financial listed companies and all financial companies to draw up the financial statements following the International Accounting Standards[37]. Given the widespread use in such important regulatory contexts throughout the world, together with the type of dissertation presented here, the use of the Capital Asset Pricing Model can be justified. Using equation (3) as our Capital Asset Pricing Model equation, I then estimated the elements of the right-hand side of the equation. I used the *betas* provided by the website of Yahoo! Finance[38]. The market return has been benchmarked with the S&P 500 index. This index is also widely used in the literature for similar purposes, indeed (Gómez & Zapatero, 2003; Garvey & Milbourn, 2003; Statman & Glushkov, 2009; Campbell *et al.*, 2001). The S&P 500 index was created by Standard & Poor's in 1957 and follows the trend of an equity basket formed by the 500 largest US companies. This basket includes the shares of five hundred large companies contracted to the New York Stock Exchange (NYSE), the American Stock Exchange (Amex) and the NASDAQ. It is considered the best index to represent the entire American market. Indeed, the Dow Jones incorporates only thirty companies failing in fact to represent the entire and vast American market, which is why S&P 500 is now considered the index to be used as a benchmark for portfolio performance. The weight attributed to each company in the S&P 500 is directly proportional to its market value (Spallino *et al.*, 2013). The use of the S&P 500 index is justified here because 77% of the sample examined is listed in the NYSE, in the Nasdaq or even explicitly forms part of the S&P 500 index[39]. Furthermore, as we will see later,

[35] www.fondazioneoic.eu [visited on 8/7/2019]
[36] https://www.ifrs.org [visited on 8/7/2019]
[37] See European Union Regulation No. 1606/2002 and Italian Legislative Decree (*Decreto Legge*) No. 38/2005 for further details.
[38] https://finance.yahoo.com/ [visited on 8/3/2019]
[39] This happens only in 15% of cases though.

controlling the companies in the sample for the inclusion in the S&P 500 index or the listing within the NYSE, the Cumulative Abnormal Returns trend does not change significantly. The risk-free rate has been benchmarked with the 10-years US bond. The "bond" in the financial field is a debt security, issued by companies or public authorities, which gives its holder, at maturity, the right to the repayment of the capital lent to the issuer plus an interest on this sum. The bond is a form of investment for the holder, in the form of a financial instrument. For the issuer the bond has the purpose of obtaining liquidity. An instance of a bond are the government bonds. Government bonds, as the name implies, are bonds issued by governments. Bonds can have the most varies durations, from a few months to decades. The 10-years US bonds are government bonds issued by the government of the United States of America which have a duration of 10 years. These are widely used in financial literature as a benchmark for the risk-free rate (Campbell *et al.*, 2001). To explain the choice of this rate, it is necessary to explain how to define a risk-free rate. There are two conditions that guarantee that an asset can be considered as risk free (Damodaran, 1999). First, that must be characterized by the absence of default risk. This implies that any corporate security must be excluded from this set, since even the most consolidated and stable companies are not, in theory, exempt from the possibility of bankruptcy and therefore inability to meet their obligations to repay outstanding liabilities. The only assets that can be considered risk-free are represented by government bonds. This is not since national governments are managed better than companies, but rather because the formers have the so-called "seigniorage power"[40]. This means that, at least in nominal terms, they should always be able to meet their payment commitments. Of course, such an argument can only be referred to a limited subset of countries: those that are characterized by greater stability and credibility from both an economic and political point of view. Basically, it is a matter of referring to those government bond issues to which the most well-known credit rating agencies attribute the highest rating class: for instance, "AAA" in the case of Standard & Poors

[40] The seigniorage is the set of real resources that a government earns when it prints money that it spends on goods and services (Obstfeld & Krugman, 2003). Thus, the seigniorage power is the possibility in charge of the governments to get this kind of rent.

and "Aaa" in the case of Moody's[41]. Moreover, a risk-free asset must be characterized by the absence of reinvestment risk. This last type of risk is generated in the case of securities that produce periodic coupon flows that must be reinvested until the assets reach maturity. The problem is that it is not at all known in advance what the future rate of return to which to refer in order to discount the income flows generated by a coupon bond (a coupon bond is "a debt obligation with coupons attached that represent semi-annual interest payments"[42]). The reinvestment of the coupons implies having to accept a certain randomness which, by definition, contrasts with the assumptions underlying the definition of risk-free asset. This explains why it is widely accepted at a theoretical level that the risk-free rate for a future period of n years should consist of the expected return from a zero-coupon bond with a maturity of n years[43]. The immediate implication is that "a purist's view of risk-free rates would then require different risk-free rates for each period" (*Ibidem*). Though it has just been argued that, from a purely theoretical point of view, it would be preferable to take into account a plurality of risk-free rates in determining the cost of equity there are several practical reasons that often justify the reference to other possible ways to estimate the risk-free rate of return. Thus, there are three possible variants to determine the risk-free rate (Capizzi, 2001):

- short-term government bond yield;
- long-term government bond yield to maturity;
- spot rates incorporated in the yield curve.

[41] A credit rating agency is a company that assigns a rating concerning the soundness and solvency of a securities issuer on the financial market (Frost, 2007).
[42] https://www.investopedia.com [visited on 8/10/2019]
[43] It is possible to show how this yield measure, definable as a n-period spot rate, is a geometric average of the short-term rates in force in the n periods in which the reference time horizon can be broken down. Moreover, since it is not possible to know in advance the extent of future short-term rates, the latter are approximated by one-period forward rates. The relationship of equality between forward rates and expected short-term rates is the basis of the "pure expectations theory", according to which the structure for interest rate maturities reflects, at any given moment, current market expectations about the dynamics of future short-term rates (Fabozzi & Modigliani, 2003).

For each of these variants a series of arguments are excusable, all endowed with an undoubted validity from purely economic point of view. Indeed, the first approach, which uses, as the risk-free rate, the actual yield of a short-term government bond (*e.g.* 3-months US Bills), can be justified because of two reasons: first, the Capital Asset Pricing Model is basically a one-period model. Thus, it does not adequately take into account the impact caused on investment decisions by other possible sources of risk besides, of course, the returns' variance generated, during the single period considered, from a given financial activity, such as, for instance, the uncertainty in the future income that will be possible to achieve after the analyzed period as well as the uncertainty in the investment opportunities that the financial market will offer in the future[44]. In such a timeless framework, it is argued that it would not be relevant, for practical purposes, to dwell too much on the temporal expiry of the bond to be chosen as proxy of the risk-free asset. Second, those who use the short-term government bond yield for the purpose of determining the risk-free rate rely on the assumption that current short-term rates of return can be considered an acceptable approximation of short-term future rates of return[45]. The most obvious contraindication to the use of this approach is, as can be easily understood, the obvious inconsistency which would be encountered in discounting cash flows likely to occur in the medium or long term with discounting rates referring to the short term. Moreover, the evidence that the yield curve almost rarely has a zero slope is a rather clear signal that it is difficult to think that future short-term rates will coincide with current short-term rates (*Ibidem*). Beyond the expectations on the evolution of the future short-term interest rates, the hypothesis of the attribution of a premium due to the lower liquidity characterizing the securities with greater maturities is already for self-sufficient to justify the positive inclination generally assumed by the yield curve[46]. The second

[44] From a theoretical point of view, the aforementioned issues led to the development of pricing models for financial assets in multi-period frameworks such as the Intertemporal Capital Asset Pricing Model and the Consumption Capital Asset Pricing Model (Elton *et al.*, 2009).
[45] This can be a reasonable assumption in the short run.
[46] According to the "liquidity premium theory", the long-term interest rate is given by an average of short-term interest rates, plus a liquidity premium. Thus, investors would not consider short-term and long-term securities as equivalent, but rather prefer the former, as they are less risky, and to hold the latter will demand a liquidity premium, or a higher return (Cox *et al.*, 2005).

approach, which, as mentioned, uses the yield to maturity of long-term government bonds as the return of risk-free assets (*e.g.* 10-years US Bonds) relies on the following arguments:

- the choice of an appropriate bond allows to achieve perfect consistency between the time horizon of the asset or company to be valued and the expiry of the risk-free security;
- the use of a long-term government bond is also consistent with the duration of the time intervals used to estimate the other parameters underlying the formulation of the Capital Asset Pricing Model, as the beta and the risk premium;
- The yield to maturity, being a geometric mean of the short-term future rates expected over the reference time horizon, it approximates quite well the behavior of a monotone yield curve with a weakly positive inclination, which represent basically most of the yield curves observed on the most efficient ones capital markets[47].

However, if the slope of the term structure shows anomalous trends and it is significantly divergent with respect to its historical trend, the yield to maturity of a long-term bond is no longer able to properly represent the dynamics of the short-term expected rates incorporated in the yield curve. In this way, a shift in market expectations about the evolution of future short-term rates, implying a change in the pattern of the term structure which could also end up with a negative slope, can lead to the manifestation of a significant spread between the yield to maturity of a long term bond to be used to calculate the required rate of return to discount an expected cash flow for a given year and the expected future spot rate for that year (*Ibidem*). Furthermore, the use of long-term government bonds to estimate the risk-free rate can bear issues because the maturity yield of long-term bonds is eventually influenced by changes in the value of the coupons too[48]. The problem is represented by the fact that the n-period spot rates which make up the

[47] This category includes all those yield curves in which long-term spot rates (5, 10 years) do not exceed short-term ones (3, 6 months) of more than 3%.
[48] Assuming reasonably that long-term bonds cannot be zero-coupon bond.

term structure should be influenced only by the trend in short-term rates in the time horizon between today's date and the maturity of the security, in n periods: returns would therefore depend only on the maturity. Such reasoning implies that the use of long term bonds does not guarantee the achievement of a completely satisfactory measure of the relationship between yield and maturity, precisely because different securities, though with the same maturity, can have different returns, depending on the value of the coupon and consequently on their price. Also for this reason, investors in government long term bonds have created zero-coupon bonds through the procedure known as “coupon stripping”, which consists in the "stripping" of the coupon flows produced by a long term bond from the related face value, so as to be able to actually derive the theoretical spot rates which make up the term structure (Livingston & Gregory, 2017). If, however, it is impossible to use zero coupon bonds, it is still possible to use an alternative method of derivation of the spot rates from the coupon securities, even if, in this case, the procedure is more laborious (Fabozzi & Choudhry, 2004). Finally, the third approach to determining the risk-free rate directly refers to the future spot rates incorporated in the yield curve. This is the most correct approach from a theoretical point of view as it allows you to discount each prospective cash flow with a rate corresponding to the relative period of the event. Basically, the yield curve, or term structure of interest rates, describes the relationship between spot rates with different maturities. Usually, this curve has an upward slope, implying that, *ceteris paribus*, investors must be remunerated with a higher spot rate as the maturity of a given financial asset grows[49]. Furthermore, the n-period spot rate expresses the return achievable by an investor who decides to constrain a certain part of his wealth for a reference time horizon of a n-years duration. I mentioned earlier that the coupon stripping is used to derive the future spot rates that make up the term structure. In practice it is possible to refer to agencies specialized in the production of economic information that carry out, daily, estimates of the yield curve for the main

[49] In addition to the pure expectations and liquidity premium theory there are at least two other theories which explain the term structure of interest rates (Modigliani & Sutch, 1966):

- The preferred habitat theory;
- Market segmentation theory.

industrialized countries. To counterbalance the greater stringency, from a purely theoretical point of view, of this approach, there is its greater complexity of calculation to make it impractical to use, especially within markets characterized by weakly upward slope monotonic yield curves. In this case, the spot rate, as derived from the term structure, may be used, computing that on a time horizon coinciding with the explicit forecast period used to estimate the prospective cash flows that it is desired to discount. Otherwise, however, it should always be kept in mind that the choice to use such an approach, involving the reference to a plurality of risk-free rates, implies the need to estimate as many risk rewards that the whole procedure would become too cumbersome. In light of what has been said so far, the choice of the 10-year US Bond as a benchmark for the risk-free rate is justified first of all by the large presence of companies listed in the US financial markets[50], so there is a generalized currency coherence between the benchmark and the sample. Secondly, though here we focus on short-term returns, the returns of the sample are influenced by a variable that could influence the long-term value of the company. This could justify the use of such a long-term benchmark together with the fact that a company is a long-term project. Its prospective cash-flows manifest themselves in the long-term, indeed (Capizzi, 2001). Lastly, though as said before "a purist's view of risk free rates would then require different risk free rates for each period" (Damodaran, 1999), the simplicity here required, together with the rating assigned to 10-year US bonds by credit rating agencies, makes this the most suitable benchmark in this case[51]. After estimating all the variables of the Capital Asset Pricing Model, I computed the Cumulative Abnormal Returns of the companies against the two benchmarks used. As written in the first chapter, the Cumulative Abnormal Return is the “sum of the differences between the expected return on a stock […] and the actual return often used

[50] Almost 85% of the companies of the sample are listed in US financial markets.
[51] https://countryeconomy.com/ratings/usa [visited on 8/12/2019]

to evaluate the impact of news on a stock price"[52]. Cumulative abnormal returns have been computed on several different intervals[53]:

- [-5,5];
- [-2,5];
- [-1,2];
- [-10,10];
- [-111,11];
- [-1,0];
- [-1,1];
- [0,1];
- [0,30].

I used these intervals because of their usage in further literature about directors' sudden death (Jenter *et al*, 2016; Johnson *et al.*, 1985; Nguyen & Nielsen, 2014; Salas, 2010). The underlying assumption which is tested here is that cumulative abnormal returns are equal to zero. Indeed, the formula of cumulative abnormal returns at the time can be written like this:

$$CAR_t = r_t - E(r_t) \ (4).$$

Where CAR is the cumulative abnormal return, t is a certain date, r is the actual return and E is the expectation operator. The expectation operator has three main properties[54]:

- The expected value of a constant is a constant itself[55];

[52] https://www.nasdaq.com/investing/glossary/c/cumulative-abnormal-return [visited on 6/2/2019]
[53] Intervals are indicated using the "0" as the event date and negative numbers as the days before the casualty and the positive ones as the days after that (*e.g.* "-1" indicates the day before the casualty while "10" indicates the tenth day after that).
[54] http://www.probabilityformula.org/expected-value.html [visited on 8/13/2019]
[55] $E(c) = c \ (5)$. Where "c" is a constant.

- The expectation operator is linear operator[56];
- The expectation operator is monotonic[57].

The proof of these properties is beyond the scope of this dissertation though their knowledge is useful, instead. Indeed, let us just write the expectation of t at t-1 of (4) and let us apply the properties:

$$\mathrm{E}(CAR_{t|t-1}) = E[r_{t|t-1} - E(r_{t|t-1})] \ (8);$$

$$\mathrm{E}(CAR_{t|t-1}) = E(r_{t|t-1}) - E(r_{t|t-1}) \ (9);$$

$$\mathrm{E}(CAR_{t|t-1}) = 0 \ (10).$$

Where "t|t-1" represents the expectation at t-1 of the value at t. This proof, together with the law of total expectation, shows that the expected value of the cumulative abnormal returns is zero (Weiss, 2006). This implies that the formal hypothesis to be tested is:

$$\begin{cases} H_0 : CAR_t = 0 \\ H_1 : CAR_t \neq 0 \end{cases} (11).$$ [58]

Although this writing is indeed correct, is not only the cumulative abnormal of a single company tested in this dissertation, but so is a sample of companies, albeit small. Thus, it is necessary to introduce a new writing: the CAAR. This is nothing but the simple average of the cumulative abnormal returns of all the companies of the sample, for each interval[59]. Hence, the formal hypothesis to be tested can be written again as:

$$\begin{cases} H_0 : CAAR_t = 0 \\ H_1 : CAAR_t \neq 0 \end{cases} (13).$$

[56] $E(aX + b) = aE(x) + b$ (6). Where "X" is a random variable and "a" is a constant as well as "b".

[57] This means that if $X > Y \Rightarrow E(X) > E(Y)(7)$.

[58] H_0 and $H_1$are respectively named "null hypothesis" and alternative hypothesis.

[59] $CAAR = \frac{1}{N}\sum_{i=1}^{N} CAR_i$ (12).

A cross-sectional test is used to test this hypothesis and this test is assumed to follow a Student's t-distribution[60]:

$$t_{CAAR} = \sqrt{N}\frac{CAAR}{S_{CAAR}} \quad (14).$$

Where "t" here is the test, "N" is number of cumulative abnormal returns of the interval taken[61], CAAR is the average of the taken interval's cumulative abnormal returns, as before, and "S" represents the CAAR's standard deviation[62]. All the tests are referred to a significance level of 5%, thus all the hypothesis accepted are the ones with a p-value lower than 0.025 (Abdi & Salkind, 2007). When a hypothesis test is performed, a null hypothesis is set as well as a threshold value α which indicates the significance level of the test. Calculated the p-value related to the observed data it is possible to behave as follows (Monti, 2008):

- if value p> α the empirical evidence is not sufficiently opposed to the null hypothesis which therefore cannot be rejected;
- if value p ≤ α the empirical evidence is strongly opposed to the null hypothesis which therefore must be rejected. In this case it is said that the observed data are statistically significant.

The p-value must be lower than half of the significance level because the alternative hypothesis is two-tailed directional. Indeed, alternative hypothesis can one-tailed or two-tailed directional. An alternative one-tailed directional hypothesis is a hypothesis wherein the variable can be greater or smaller than the null hypothesis, while an alternative two-tailed hypothesis implies that the variable can be different from the null hypothesis. The difference is significant because when the alternative hypothesis is one-directional, then the p-value needs to be lower of the significance level, while, as anticipated before, when

[60] https://www.eventstudytools.com [visited on 8/14/2019]
[61] I want to emphasize that the CARs and CAARs are calculated for each analyzed interval.
[62] In some tests in which I have intersected several control variables, I had to estimate the standard deviation through the linear combination of the variances of the single control variables, due to the insufficiency of data for the calculation of the standard deviations.

the alternative hypothesis is two-tailed directional, then the p-value needs to be lower than half of the significance level. In the end of this paragraph, I show and summarize the most important descriptive statistics of the sample:

- The casualties happened all within the years 2004 and 2018;
- All the selected directors were CEO of listed companies[63];
- At the time of the casualty, 46% of the sample's companies had a mechanism of succession planning;
- 38% of the sample's CEO were founders too;
- 85% of the sample's CEO were chairman too;
- The CEO's tenure has an average of 11.5 years and a standard deviation of 13 years within an interval from two months to 35 years;
- The CEO's age of death has an average of 56 years and a standard deviation of 7.5 years within an interval from 41 years to 64 years[64].

[63] The aim of this dissertation is indeed focused on the effects of the sudden death of CEO. The criteria of the listed companies is due to the study of market returns which would not be available for non-listed ones.

[64] I here remind that all casualties of CEOs older than 65 years are excluded from the sample regardless of the death's cause.

Cumulative abnormal return analysis

The first analysis I show to the reader is the one carried out on the whole sample. On average, the cumulative abnormal returns are negative for each interval, using both benchmarks[65]. However, their standard deviations are high enough to make these results not significant[66]. Thus, it cannot be eventually stated that the sudden death of a CEO bears abnormal returns compared to the expected ones, because apparently there are cases in which these cumulative abnormal returns are positive and other cases in which these are negative, therefore the first ones eventually offset the others when computing the averages. The most significant value amongst these averages[67] is the CAR MR at the interval [-1,0] of -2,73%. This would be indeed significant at a significance level of 20%. If we accepted this value as significant, hence you may state that during the 2-days interval between the day of the casualty and the previous one, on average, the companies of the sample underperform the market. Thus, the sudden death of a CEO would provoke a significant loss but only in the same trading day of the casualty[68].

	A	B	C	D	E
1	Interval	CAR MR	CAR FR	ST. DEV. MR	ST. DEV. FR
2	[-5,5]	-3.17%	-5.21%	12.24%	15.81%
3	[-2,5]	-3.16%	-5.80%	9.38%	15.27%
4	[-1,2]	-3.93%	-4.09%	7.61%	8.32%
5	[-10,10]	-2.09%	-4.63%	21.33%	26.52%
6	[-111,11]	-10.76%	-11.27%	29.49%	43.96%
7	[-1,0]	-2.73%	-2.29%	5.22%	5.66%
8	[-1,1]	-3.68%	-3.94%	8.65%	9.52%
9	[0,1]	-2.87%	-3.41%	8.70%	9.75%
10	[0,30]	-5.42%	-4.05%	13.05%	19.29%

Table 1: Average CARs and standard deviations for the whole sample

Afterwards, I show the analysis carried out controlling for the existence of a succession planning system within the company. On average, the cumulative abnormal returns are

[65] CAR MR is the CAR computed using the simple market return as the benchmark, while CAR FR is the CAR computed using the forecasted return according to the Capital Asset Pricing Model. MR and FR are basically used as acronyms of "market return" and "forecasted return".
[66] When I speak about statistical significance, I usually refer to a significance level of 5%, unless it is differently specified.
[67] *I.e.* the average CAR with the lowest p-value.
[68] The day before is not indeed considered because if the death is sudden the abnormal returns on the day before the casualty cannot be depend on that, by assumption.

negative for most intervals, using both benchmarks and either there is a succession planning system or not[69], though there are four cases in which the cumulative abnormal returns are positive. However, the standard deviations of each cumulative abnormal return, either positive either negative, are high enough to make these results not significant. Thus, it cannot be eventually stated that the sudden death of a CEO bears abnormal returns compared to the expected ones, also when controlling for the existence of succession planning systems. The most significant value amongst these averages is the cumulative abnormal return of -19,31% against the market return along the interval [-111,11] for the subsample of the companies which do not have a succession planning system. This would be indeed significant at a significance level of 20%. If we accepted this value as significant, hence you may state that during the 4-months interval between the 111 days before the casualty and the 11 following ones, on average, the companies of that subsample underperform the market. Thus, the sudden death of a CEO would provoke a significant loss against the market along such a long interval, whether there is not an effective succession planning system.

	A	B	C	D	E
12	Interval	Succession planning Y MR	Succession planning Y FR	Succession planning N MR	Succession planning N FR
13	[-5,5]	-0.95%	-5.63%	-5.08%	-4.85%
14	[-2,5]	-0.71%	-9.70%	-5.26%	-2.46%
15	[-1,2]	-1.14%	-1.69%	-6.32%	-6.16%
16	[-10,10]	-6.10%	-10.29%	1.35%	0.22%
17	[-111,11]	-0.78%	-7.08%	-19.31%	-14.85%
18	[-1,0]	-1.41%	-0.63%	-3.86%	-3.71%
19	[-1,1]	-1.53%	-3.39%	-5.52%	-4.41%
20	[0,1]	0.46%	-1.72%	-5.72%	-4.86%
21	[0,30]	-2.70%	-12.06%	-7.75%	2.81%

Table 2: Average CARs controlling for the existence of a succession planning system

[69] "Succession planning Y" means that a succession planning exists, "succession planning N" means that this does not exist. In general, "Y" means that the analyzed feature exists in the subsample.

	F	G	H	I
12	ST. DEV. Y MR	ST. DEV. Y FR	ST. DEV. N MR	ST. DEV. N FR
13	5.42%	12.30%	15.65%	18.29%
14	5.41%	13.06%	11.34%	16.21%
15	2.50%	6.70%	9.48%	9.00%
16	12.37%	16.32%	26.23%	32.04%
17	31.56%	52.02%	24.55%	35.23%
18	3.79%	5.23%	5.96%	5.62%
19	3.65%	5.77%	10.97%	11.80%
20	4.91%	7.01%	10.11%	11.40%
21	12.10%	16.85%	13.38%	18.59%

Table 3: Standard deviations controlling for the existence of a succession planning system

Then, I present the analysis performed controlling whether the dead CEO was a founder too or not. On average, the cumulative abnormal returns are negative for most intervals, using both benchmarks and either dead CEO was also a founder or not, though there are three cases in which the cumulative abnormal returns are positive, when the dead CEO was a founder. I found a significant value at a 5% significance level *i.e.* the average cumulative abnormal return of -3,84% against the forecasted return along the [0,1] interval for the subsample of companies wherein the dead CEO was not a founder. Thus, the sudden death of CEO who was not a founder leads, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return, within the 2-days interval between casualty's day and the following one.

	A	B	C	D	E
23	Interval	Founder Y MR	Founder Y FR	Founder N MR	Founder N FR
24	[-5,5]	-5.76%	-1.38%	-1.56%	-7.61%
25	[-2,5]	-6.77%	-1.33%	-0.90%	-8.59%
26	[-1,2]	-9.09%	-5.83%	-0.71%	-3.01%
27	[-10,10]	3.73%	8.58%	-5.72%	-12.89%
28	[-111,11]	-23.13%	-24.02%	-3.03%	-3.30%
29	[-1,0]	-4.62%	-2.48%	-1.55%	-2.17%
30	[-1,1]	-8.46%	-4.89%	-0.69%	-3.35%
31	[0,1]	-5.72%	-2.72%	-1.08%	-3.84%
32	[0,30]	-6.65%	0.69%	-4.65%	-7.02%

Table 4: Average CARs controlling the CEO-Founder condition

	F	G	H	I
23	ST. DEV. Y MR	ST. DEV. Y FR	ST. DEV. N MR	ST. DEV. N FR
24	18.41%	21.63%	4.96%	9.95%
25	13.14%	18.99%	4.66%	11.55%
26	9.70%	10.92%	2.87%	5.92%
27	30.71%	35.65%	10.73%	13.08%
28	27.67%	38.13%	27.91%	45.46%
29	7.04%	7.54%	3.11%	4.05%
30	11.59%	14.09%	3.80%	4.72%
31	13.43%	15.13%	1.42%	3.29%
32	16.18%	21.68%	10.57%	16.97%

Table 5: Standard deviations controlling the CEO-Founder condition

Subsequently, I display the analysis executed controlling for the separation of the roles of CEO and Chairman within the board of directors. On average, the cumulative abnormal returns are negative for most intervals, using both benchmarks and either the two roles are separated or not, though there are seven cases in which the cumulative abnormal returns are positive and most of these cases happen when those roles are actually separated and using the CAPM benchmark. However, the standard deviations of each cumulative abnormal return, either positive either negative, are high enough to make these results not significant. Thus, it cannot be eventually stated that the sudden death of a CEO bears abnormal returns compared to the expected ones, when controlling for the separation of the roles of CEO and Chairman. The most significant value amongst these averages is the cumulative abnormal return of -5,65% against the foreseen return along the interval [-1,2] for the subsample of the companies wherein CEO and Chairman roles are not separated. This would be indeed significant at a significance level of 10%. If we accepted this value as significant, hence you may state that during the 4-days interval between the day before the casualty and the two following ones, on average, the companies of that subsample underperform the return foreseen by the Capital Asset Pricing Model. Thus, the sudden death of a CEO would provoke a significant loss against

the benchmark within the interval, whether CEO and Chairman roles are not separated.

	A	B	C	D	E
34	Interval	Split CEO/Chairman Y MR	Split CEO/Chairman Y FR	Split CEO/Chairman N MR	Split CEO/Chairman N FR
35	[-5,5]	-2.22%	-0.79%	-3.35%	-6.02%
36	[-2,5]	-3.80%	-4.14%	-3.04%	-6.10%
37	[-1,2]	-0.47%	4.45%	-4.56%	-5.65%
38	[-10,10]	-14.32%	-5.81%	0.14%	-4.42%
39	[-111,11]	-10.92%	0.21%	-10.73%	-13.36%
40	[-1,0]	0.20%	3.94%	-3.26%	-3.42%
41	[-1,1]	-1.55%	1.99%	-4.06%	-5.02%
42	[0,1]	-1.89%	-0.05%	-3.04%	-4.02%
43	[0,30]	-11.20%	1.29%	-4.37%	-5.02%

Table 6: Average CARs controlling for the separation of the roles of CEO and Chairman

	F	G	H	I
34	ST. DEV. Y MR	ST. DEV. Y FR	ST. DEV. N MR	ST. DEV. N FR
35	5.23%	0.74%	13.11%	17.06%
36	5.74%	1.16%	9.89%	16.58%
37	1.10%	1.84%	8.10%	8.10%
38	18.13%	20.40%	21.11%	27.48%
39	51.96%	68.42%	23.17%	37.47%
40	1.47%	0.45%	5.47%	5.43%
41	0.43%	0.62%	9.35%	9.97%
42	0.62%	0.97%	9.44%	10.47%
43	17.53%	18.55%	11.76%	19.26%

Table 7: Standard deviations controlling for the separation of the roles of CEO and Chairman

After that, I exhibit the analysis carried out controlling for the dead CEOs age. On average, the cumulative abnormal returns are negative for most intervals, using both benchmarks and either age of death is over or below 60 years, though there are five cases in which the cumulative abnormal returns are positive. I found a significant value at a 5% significance level *i.e.* the average cumulative abnormal return of -16,81% against the foreseen return along the [-10,10] interval for the subsample of companies wherein the dead CEO was over 60. Thus, the sudden death of a CEO who was over 60, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return, within the 3-weeks interval taken into consideration.

	A	B	C	D	E
45	Interval	Split Age<60 Y MR	Split Age<60 Y FR	Split Age<60 N MR	Split Age<60 N FR
46	[-5,5]	-1.74%	-2.61%	-5.47%	-9.37%
47	[-2,5]	-2.46%	-4.24%	-4.28%	-8.30%
48	[-1,2]	-6.44%	-7.01%	0.08%	0.57%
49	[-10,10]	4.54%	2.98%	-12.69%	-16.81%
50	[-111,11]	-7.01%	0.05%	-16.76%	-29.38%
51	[-1,0]	-3.41%	-2.78%	-1.65%	-1.50%
52	[-1,1]	-5.52%	-6.33%	-0.73%	-0.11%
53	[0,1]	-3.81%	-4.17%	-1.36%	-2.19%
54	[0,30]	-2.86%	-3.70%	-9.51%	-4.62%

Table 8: Average CARs controlling for dead CEOs ages

	F	G	H	I
45	ST. DEV. Y MR	ST. DEV. Y FR	ST. DEV. N MR	ST. DEV. N FR
46	15.08%	17.34%	4.13%	11.87%
47	11.12%	15.38%	5.37%	14.77%
48	8.29%	7.62%	3.80%	7.21%
49	23.36%	30.50%	11.27%	9.96%
50	31.70%	45.39%	24.38%	34.56%
51	5.79%	6.08%	3.90%	4.79%
52	10.02%	10.43%	4.47%	6.14%
53	10.91%	11.93%	1.63%	4.12%
54	13.19%	22.52%	11.71%	12.46%

Table 9: Standard deviations controlling for dead CEOs age

Next, I expose the assessment carried out controlling for the dead CEOs tenure. On average, the cumulative abnormal returns are negative for most intervals, using both benchmarks, though there are four cases in which the cumulative abnormal returns are positive, when the tenure is over 10 years. I found a significant value at a 5% significance level *i.e.* the average cumulative abnormal return of -11,97% against the foreseen return along the [-10,10] interval for the subsample of companies wherein the dead CEOs tenure is below 10 years. Thus, the sudden death of a CEO whose tenure is below ten years, on average, leads the company where he or she used to work to underperform the CAPM

forecasts of its expected return, within the 3-weeks interval taken into consideration.

	A	B	C	D	E
56	Interval	Tenure <10 Y MR	Tenure <10 Y FR	Tenure <10 N MR	Tenure <10 N FR
57	[-5,5]	-2.62%	-3.65%	-4.06%	-7.72%
58	[-2,5]	-1.68%	-4.18%	-5.53%	-8.40%
59	[-1,2]	-1.29%	-2.76%	-8.16%	-6.24%
60	[-10,10]	-7.13%	-11.97%	5.98%	7.10%
61	[-111,11]	-9.30%	-2.59%	-13.10%	-25.15%
62	[-1,0]	-0.64%	-1.31%	-6.08%	-3.85%
63	[-1,1]	-0.82%	-3.20%	-8.25%	-5.14%
64	[0,1]	-0.67%	-2.68%	-6.37%	-4.58%
65	[0,30]	-9.26%	-13.76%	0.72%	11.47%

Table 10: Average CARs controlling for CEOs tenure

	F	G	H	I
56	ST. DEV. Y MR	ST. DEV. Y FR	ST. DEV. N MR	ST. DEV. N FR
57	5.01%	4.52%	18.65%	24.64%
58	6.24%	5.06%	12.54%	23.55%
59	4.20%	5.86%	9.65%	10.85%
60	10.38%	9.25%	30.08%	38.31%
61	22.11%	28.21%	38.34%	58.64%
62	1.79%	3.75%	6.89%	7.54%
63	4.66%	5.02%	11.22%	13.89%
64	6.02%	6.19%	10.90%	13.55%
65	11.17%	14.59%	13.49%	15.32%

Table 11: Standard deviations of CARs controlling for CEOs tenure

Thereafter, I show the assessment carried out controlling for both the succession planning systems and the founder-CEO condition[70]. On average, the cumulative abnormal returns are negative for most intervals, using both benchmarks, though there are twenty cases in which the cumulative abnormal returns are positive, whose thirteen are when the company has a working succession planning system as well as a dead CEO who was also founder. I found here three significant values:

- the average cumulative abnormal return of -7,59% against the foreseen return along the [-5,5] interval for the subsample of companies wherein there is neither a succession planning system neither the dead CEO was a founder[71];

[70] "F" means "founder".
[71] This value has a 1% significance level.

- the average cumulative abnormal return of -2,94% against the foreseen return along the [0,1] interval for the subsample of companies wherein there is neither a succession planning system neither the dead CEO was a founder[72];
- the average cumulative abnormal return of -1,69% against the market return along the [0,1] interval for the subsample of companies wherein there is a succession planning system, but the dead CEO was not a founder[73].

Thus, the sudden death of a CEO who was not a founder in a company with no succession planning systems, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return, within both the 11-days and 2-days intervals taken into account. However, the sudden death of a CEO who was not a founder in a company with a working succession planning system, on average, underperform the market, within the 2-days interval considered. This is consistent with the previous findings according to which the succession planning is not a significant control variable, at a 5% significance level, while the sudden death of CEO who was not a founder leads, on average, leads the company where he or she used to work to underperform, after the casualty.

	A	B	C	D	E	F	G	H	I
67	Interval	SP Y F Y MR	SP Y F N MR	SP N Y F MR	SP N F N MR	SP Y F Y FR	SP Y F N FR	SP N Y F FR	SP N F N FR
68	[-5,5]	-1.53%	-0.83%	-6.82%	-2.76%	4.29%	-7.62%	-2.79%	-7.59%
69	[-2,5]	3.85%	-1.62%	-9.43%	0.29%	3.32%	-12.30%	-2.50%	-2.42%
70	[-1,2]	0.83%	-1.54%	-11.57%	0.68%	3.56%	-2.74%	-8.18%	-3.46%
71	[-10,10]	-2.42%	-6.84%	5.26%	-3.86%	6.77%	-13.70%	9.04%	-11.54%
72	[-111,11]	-3.66%	-0.21%	-27.99%	-7.72%	-1.93%	-8.11%	-29.55%	4.73%
73	[-1,0]	2.83%	-2.26%	-6.48%	-0.38%	5.57%	-1.87%	-4.49%	-2.68%
74	[-1,1]	0.89%	-2.01%	-10.80%	1.52%	3.03%	-4.68%	-6.86%	-1.15%
75	[0,1]	11.25%	-1.69%	-9.96%	-0.07%	11.60%	-4.38%	-6.30%	-2.94%
76	[0,30]	1.80%	-3.60%	-8.76%	-6.41%	-22.40%	-9.99%	6.46%	-2.06%

Table 12: Average CARs controlling for both succession planning and founder condition

[72] This value has a 5% significance level.
[73] This value has a 5% significance level.

	J	K	L	M	N	O	P	Q
67	ST. DEV. SP Y F Y MR	ST. DEV. SP Y F N MR	ST. DEV. SP N Y F MR	ST. DEV. SP N F N MR	ST. DEV. SP Y F Y FR	ST. DEV. SP Y F N FR	ST. DEV. SP N Y F FR	ST. DEV. SP N F N FR
68	1.65%	5.93%	20.45%	2.16%	5.28%	12.57%	23.98%	0.82%
69	1.68%	5.49%	13.44%	2.29%	3.81%	12.80%	21.07%	4.63%
70	0.80%	2.57%	9.33%	2.82%	2.78%	6.87%	11.02%	3.79%
71	3.44%	13.43%	34.17%	1.11%	8.80%	15.81%	39.84%	6.09%
72	9.03%	34.54%	28.96%	7.28%	8.00%	56.93%	40.80%	2.22%
73	1.06%	3.59%	6.68%	1.44%	2.01%	4.86%	7.14%	1.97%
74	1.04%	3.82%	11.86%	2.54%	3.33%	5.48%	15.11%	1.22%
75	1.38%	1.02%	11.64%	1.39%	3.84%	4.04%	14.91%	0.55%
76	3.38%	13.07%	17.46%	2.87%	4.67%	17.75%	20.52%	14.27%

Table 13: Standard deviations controlling for both succession planning and founder condition

Subsequently, I display the analysis executed controlling for both the separation of the roles of CEO and Chairman within the board of directors and the existence of succession planning systems[74]. On average, the cumulative abnormal returns are negative for most intervals, using both benchmarks, though there are thirteen cases in which the cumulative abnormal returns are positive and most of these cases happen when succession planning systems exist. However, the standard deviations of each cumulative abnormal return, either positive either negative, are high enough to make these results not significant. Thus, it cannot be eventually stated that the sudden death of a CEO bears abnormal returns compared to the expected ones, when controlling for both the separation of the roles of CEO and Chairman and the existence of succession planning systems. The most significant value amongst these averages is the cumulative abnormal return of -18,73% against the foreseen return along the interval [0,30] for the subsample of the companies wherein CEO and Chairman roles are not separated, and succession planning systems exist. This would be indeed significant at a significance level of 10%. If we accepted this value as significant, hence you may state that during the 1-month interval between the day of the casualty and the following month, on average, the companies of that subsample underperform the return foreseen by the Capital Asset Pricing Model. Thus, the sudden death of a CEO would provoke a significant loss against the benchmark within the interval, whether CEO and Chairman roles are not separated, though

[74] Data about companies with no succession planning system but the separated roles of CEO and Chairman are not available because there are no companies within this subsample.

succession planning systems exist.

	A	B	C	D	E	F	G	H	I
78	Interval	SP Y C/C Y MR	SP Y C/C N MR	SP N C/C Y MR	SP N C/C N MR	SP Y C/C Y FR	SP Y C/C N FR	SP N C/C Y FR	SP N F N FR
79	[-5,5]	-2.22%	-0.31%	NA	-5.08%	-0.79%	-8.06%	NA	-4.85%
80	[-2,5]	-3.80%	0.84%	NA	-5.26%	-4.14%	-12.48%	NA	-2.46%
81	[-1,2]	-0.47%	-1.48%	NA	-6.32%	4.45%	-4.75%	NA	-6.16%
82	[-10,10]	-14.32%	-1.99%	NA	1.35%	-5.81%	-12.53%	NA	0.22%
83	[-111,11]	-10.92%	4.28%	NA	-19.31%	0.21%	-10.73%	NA	-14.85%
84	[-1,0]	0.20%	-2.22%	NA	-3.86%	3.94%	-2.91%	NA	-3.71%
85	[-1,1]	-1.55%	-1.52%	NA	-5.52%	1.99%	-6.08%	NA	-4.41%
86	[0,1]	-1.89%	1.64%	NA	-5.72%	-0.05%	-2.55%	NA	-4.86%
87	[0,30]	-11.20%	1.55%	NA	-7.75%	1.29%	-18.73%	NA	2.81%

Table 14: Average CARs controlling for both succession planning and split of CEO and Chairman roles

	J	K	L	M	N	O	P	Q
78	ST. DEV. SP Y C/C Y MR	ST. DEV. SP Y C/C N MR	ST. DEV. SP N C/C Y MR	ST. DEV. SP N C/C N MR	ST. DEV. SP Y C/C Y FR	ST. DEV. SP Y C/C N FR	ST. DEV. SP N C/C Y FR	ST. DEV. SP N F N FR
79	5.23%	5.40%	NA	15.65%	0.74%	14.46%	NA	18.29%
80	5.74%	4.51%	NA	11.34%	1.16%	15.23%	NA	16.21%
81	1.10%	2.91%	NA	9.48%	1.84%	6.11%	NA	9.00%
82	18.13%	3.81%	NA	26.23%	20.40%	13.28%	NA	32.04%
83	51.96%	8.20%	NA	24.55%	68.42%	40.97%	NA	35.23%
84	1.47%	4.30%	NA	5.96%	0.45%	5.03%	NA	5.62%
85	0.43%	4.46%	NA	10.97%	0.62%	5.29%	NA	11.80%
86	0.62%	5.65%	NA	10.11%	0.97%	8.43%	NA	11.40%
87	17.53%	3.43%	NA	13.38%	18.55%	10.95%	NA	18.59%

Table 15: Standard deviations controlling for both succession planning and split of CEO and Chairman roles

Thereafter, I show the assessment carried out controlling for both the succession planning systems and the tenure[75]. On average, the cumulative abnormal returns are negative for most intervals. However, amongst the few positive values I found, there is a significant one. Basically, I found three significant values:

- the average cumulative abnormal return of -7,29% against the foreseen return along the [-5,5] interval for the subsample of companies wherein there is not a succession planning system and the dead CEO's tenure is below ten years[76];
- the average cumulative abnormal return of -12,51% against the foreseen return along the [-10,10] interval for the subsample of companies wherein there is not a succession planning system and the dead CEO's tenure is below ten years[77];

[75] "T Y" indicates a tenure below ten years, while "T N" indicates a tenure over ten years.
[76] This value has a 0,1% significance level.
[77] This value has a 5% significance level.

- the average cumulative abnormal return of 6,19% against the market return along the [0,30] interval for the subsample of companies wherein there is a succession planning system and the dead CEO's tenure was over ten years[78].

Thus, the sudden death of a CEO whose tenure was below ten years in a company with no succession planning systems, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return, within both the 11-days and 3-weeks intervals taken into account. However, the sudden death of a CEO whose tenure was over ten years in a company with a working succession planning system, on average, outperform the market, within the 1-month interval considered. These findings are consistent with the previous findings according to which the sudden death of a CEO whose tenure is below ten years, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return, within the 3-weeks interval taken into consideration.

	A	B	C	D	E	F	G	H	I
89	Interval	SP Y T Y MR	SP Y T N MR	SP N T Y MR	SP N T N MR	SP Y T Y FR	SP Y T N FR	SP N T Y FR	SP N F N FR
90	[-5,5]	-1.23%	-0.39%	-4.01%	-6.50%	0.00%	-16.91%	-7.29%	-1.59%
91	[-2,5]	-0.36%	-1.39%	-3.00%	-8.29%	-3.82%	-21.46%	-4.54%	0.30%
92	[-1,2]	-0.30%	-2.84%	-2.28%	-11.71%	-0.35%	-4.36%	-5.16%	-7.49%
93	[-10,10]	-8.43%	-1.45%	-5.83%	10.93%	-11.43%	-8.03%	-12.51%	17.19%
94	[-111,11]	-12.85%	23.34%	-5.75%	-37.39%	-9.25%	-2.75%	4.06%	-40.08%
95	[-1,0]	-0.28%	-3.67%	-0.99%	-7.70%	-0.13%	-1.62%	-2.49%	-5.34%
96	[-1,1]	0.06%	-4.70%	-1.70%	-10.61%	-2.94%	-4.29%	-3.45%	-5.70%
97	[0,1]	1.79%	-2.19%	-3.14%	-9.16%	-0.64%	-3.87%	-4.71%	-5.06%
98	[0,30]	-7.14%	6.19%	-11.38%	-2.92%	-20.09%	4.01%	-7.42%	16.45%

Table 16: Average CARs controlling for both succession planning and tenure

	J	K	L	M	N	O	P	Q
89	ST. DEV. SP Y T Y MR	ST. DEV. SP Y T N MR	ST. DEV. SP N T Y MR	ST. DEV. SP N T N MR	ST. DEV. SP Y T Y FR	ST. DEV. SP Y T N FR	ST. DEV. SP N T Y FR	ST. DEV. SP N F N FR
90	6.17%	3.40%	2.86%	23.60%	3.67%	15.37%	0.87%	27.58%
91	6.17%	3.33%	6.03%	15.35%	4.63%	16.16%	5.43%	23.67%
92	1.12%	3.46%	5.67%	10.76%	6.14%	6.96%	4.41%	12.65%
93	14.12%	5.26%	3.54%	37.79%	11.83%	22.62%	5.53%	43.02%
94	30.02%	17.70%	7.17%	27.67%	38.70%	71.39%	2.25%	42.14%
95	1.86%	5.34%	1.64%	7.32%	4.72%	6.01%	1.74%	8.06%
96	2.45%	3.58%	5.99%	13.69%	5.77%	5.66%	4.12%	17.30%
97	5.52%	0.93%	5.45%	13.34%	7.66%	4.79%	3.10%	17.03%
98	12.67%	0.15%	8.96%	16.43%	10.33%	15.84%	15.46%	12.73%

Table 17: Standard deviations for both succession planning and tenure

[78] This value has a 5% significance level.

Subsequently, I display the analysis executed controlling for both the separation of the roles of CEO and Chairman within the board of directors and the CEO-founder condition[79]. On average, the cumulative abnormal returns are negative for most intervals, using both benchmarks, though there are ten cases in which the cumulative abnormal returns are positive, whose most of them are in the subsample of companies wherein CEO and Chairman roles are separated and the CEO is not a founder. However, I found three negative significant values at 5% significance value against the foreseen return within the subsample of companies wherein CEO and Chairman roles are not separated the CEO is not a founder:

- the average cumulative abnormal return of -15,25% along the [-10,10] interval;
- the average cumulative abnormal return of -4,21% along the [-1,0] interval;
- the average cumulative abnormal return of -5,10% along the [0,1] interval;

Thus, the sudden death of a CEO who was not a founder in a company wherein the roles of CEO and chairman are not separated, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return. This is consistent with the previous finding that the sudden death of CEO who was not a founder leads, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return, within the 2-days interval between casualty's day and the following one.

[79] Data about companies with the founder as a CEO but the separated roles of CEO and Chairman are not available because there are no companies within this subsample.

	A	B	C	D	E	F	G	H	I
100	Interval	F Y C/C Y MR	F Y C/C N MR	F N C/C Y MR	F N C/C N MR	F Y C/C Y FR	F Y C/C N FR	F N C/C Y FR	F N C/C N FR
101	[-5,5]	NA	-5.76%	-2.22%	-1.34%	NA	-1.38%	-0.79%	-9.88%
102	[-2,5]	NA	-6.77%	-3.80%	0.06%	NA	-1.33%	-4.14%	-10.08%
103	[-1,2]	NA	-9.09%	-0.47%	-0.79%	NA	-5.83%	4.45%	-5.49%
104	[-10,10]	NA	3.73%	-14.32%	-2.86%	NA	8.58%	-5.81%	-15.25%
105	[-111,11]	NA	-23.13%	-10.92%	-0.40%	NA	-24.02%	0.21%	-4.47%
106	[-1,0]	NA	-4.62%	0.20%	-2.14%	NA	-2.48%	3.94%	-4.21%
107	[-1,1]	NA	-8.46%	-1.55%	-0.40%	NA	-4.89%	1.99%	-5.13%
108	[0,1]	NA	-5.72%	-1.89%	-0.82%	NA	-2.72%	-0.05%	-5.10%
109	[0,30]	NA	-6.65%	-11.20%	-2.47%	NA	0.69%	1.29%	-9.79%

Table 18: Average CARs controlling for both founder condition and split of CEO and Chairman roles

	J	K	L	M	N	O	P	Q
100	ST. DEV. F Y C/C Y MR	ST. DEV. F Y C/C N MR	ST. DEV. F N C/C Y MR	ST. DEV. F N C/C N MR	ST. DEV. F Y C/C Y FR	ST. DEV. F Y C/C N FR	ST. DEV. F N C/C Y FR	ST. DEV. F N C/C N FR
101	NA	18.41%	5.23%	4.85%	NA	21.63%	0.74%	10.54%
102	NA	13.14%	5.74%	3.77%	NA	18.99%	1.16%	12.98%
103	NA	9.70%	1.10%	3.25%	NA	10.92%	1.84%	4.57%
104	NA	30.71%	18.13%	3.35%	NA	35.65%	20.40%	8.19%
105	NA	27.67%	51.96%	10.54%	NA	38.13%	68.42%	34.48%
106	NA	7.04%	1.47%	3.29%	NA	7.54%	0.45%	2.28%
107	NA	11.59%	0.43%	4.34%	NA	14.09%	0.62%	4.11%
108	NA	13.43%	0.62%	1.50%	NA	15.13%	0.97%	2.78%
109	NA	16.18%	17.53%	5.24%	NA	21.68%	18.55%	15.44%

Table 19: Standard deviations controlling for both founder condition and split of CEO and Chairman roles

Thereafter, I show the assessment carried out controlling for both the CEO-founder condition and the tenure. On average, the cumulative abnormal returns are negative for most intervals. However, amongst the few positive values I found, there is a significant one. Basically, I found four significant values:

- the average cumulative abnormal return of -14,52% against the foreseen return along the [-10,10] interval for the subsample of companies wherein there is not a founder-CEO and the dead CEO's tenure is below ten years[80];
- the average cumulative abnormal return of -3,83% against the foreseen return along the [0,1] interval for the subsample of companies wherein there is not a founder-CEO and the dead CEO's tenure is below ten years[81];

[80] This value has a 1% significance level.
[81] This value has a 5% significance level.

- the average cumulative abnormal return of -22,95% against the foreseen return along the [0,30] interval for the subsample of companies wherein there is a founder-CEO and the dead CEO's tenure is below ten years[82];
- the average cumulative abnormal return of 6,19% against the market return along the [0,30] interval for the subsample of companies wherein there is not a founder-CEO and the dead CEO's tenure was over ten years[83].

Thus, the sudden death of a CEO who was not the founder and whose tenure was below ten years, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return, within both the 2-days and 3-weeks intervals taken into account. Moreover, the same happens, within the 1-month interval, also when the CEO is a founder. However, the sudden death of a CEO who was not a founder whose tenure was over ten years, on average, outperform the market, within the 1-month interval considered. These findings are consistent with the previous findings according to which:

- the sudden death of a CEO whose tenure is below ten years, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return, within the 3-weeks interval taken into consideration;
- the sudden death of CEO who was not a founder leads, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return, within the 2-days interval between casualty's day and the following one.

[82] This value has a 5% significance level.
[83] This value has a 5% significance level.

	A	B	C	D	E	F	G	H	I
111	Interval	F Y T Y MR	F Y T N MR	F N T Y MR	F N T N MR	F Y T Y FR	F Y T N FR	F N T Y FR	F N T N FR
112	[-5,5]	-4.65%	-6.50%	-1.94%	-0.39%	-1.06%	-1.59%	-4.51%	-16.91%
113	[-2,5]	-4.50%	-8.29%	-0.74%	-1.39%	-3.78%	0.30%	-4.31%	-21.46%
114	[-1,2]	-5.16%	-11.71%	0.00%	-2.84%	-3.35%	-7.49%	-2.56%	-4.36%
115	[-10,10]	-7.07%	10.93%	-7.15%	-1.45%	-4.32%	17.19%	-14.52%	-8.03%
116	[-111,11]	-1.74%	-37.39%	-11.82%	23.34%	0.06%	-40.08%	-3.48%	-2.75%
117	[-1,0]	0.00%	-7.70%	-0.85%	-3.67%	1.82%	-5.34%	-2.35%	-1.62%
118	[-1,1]	-5.24%	-10.61%	0.65%	-4.70%	-3.66%	-5.70%	-3.04%	-4.29%
119	[0,1]	-0.55%	-9.16%	-0.71%	-2.19%	0.79%	-5.06%	-3.83%	-3.87%
120	[0,30]	-12.24%	-2.92%	-8.27%	6.19%	-22.95%	16.45%	-10.69%	4.01%

Table 20: Average CARs controlling for both founder condition and tenure

	J	K	L	M	N	O	P	Q
111	ST. DEV. F Y T Y MR	ST. DEV. F Y T N MR	ST. DEV. F N T Y MR	ST. DEV. F N T N MR	ST. DEV. F Y T Y FR	ST. DEV. F Y T N FR	ST. DEV. F N T Y FR	ST. DEV. F N T N FR
112	3.11%	23.60%	5.32%	3.40%	5.35%	27.58%	3.83%	15.37%
113	8.36%	15.35%	5.01%	3.33%	7.11%	23.67%	4.15%	16.16%
114	5.98%	10.76%	2.23%	3.46%	6.92%	12.65%	5.45%	6.96%
115	4.66%	37.79%	11.68%	5.26%	11.09%	43.02%	6.87%	22.62%
116	1.92%	27.67%	25.00%	17.70%	1.98%	42.14%	32.50%	71.39%
117	2.83%	7.32%	1.19%	5.34%	3.75%	8.06%	3.11%	6.01%
118	6.12%	13.69%	2.80%	3.58%	6.69%	17.30%	4.31%	5.66%
119	11.80%	13.34%	1.36%	0.93%	10.81%	17.03%	2.60%	4.79%
120	14.04%	16.43%	9.83%	0.15%	0.55%	12.73%	15.69%	15.84%

Table 21: Standard deviations controlling both founder condition and tenure

Next, I expose the assessment carried out controlling for the dead CEOs tenure and the separation of the roles of CEO and Chairman. On average, the cumulative abnormal returns are negative for most intervals, using both benchmarks, though there are 21 cases in which the cumulative abnormal returns are positive, most of them when the tenure is over 10 years and the roles of CEO and Chairman are separated within the board of directors. I found a significant value at a 5% significance level *i.e.* the average cumulative abnormal return of -9,93% against the foreseen return along the [-10,10] interval for the subsample of companies wherein the dead CEOs tenure is below 10 years and the roles of CEO and chairman are not separated. Thus, the sudden death of a CEO whose tenure is below ten years, when the company has two different directors as CEO and Chairman, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return, within the 3-weeks interval taken into consideration. These findings are consistent with the previous findings according to which the sudden death of a CEO whose tenure is below ten years, on average, leads the company where he or she used to work to underperform the CAPM

forecasts of its expected return, within the 3-weeks interval taken into consideration.

	A	B	C	D	E	F	G	H	I
122	Interval	C/C Y T Y MR	C/C Y T N MR	C/C N T Y MR	C/C N T N MR	C/C Y T Y FR	C/C Y T N FR	C/C N T Y FR	C/C N F N FR
123	[-5,5]	-7.45%	3.02%	-1.93%	-5.83%	-0.05%	-1.53%	-4.16%	-9.26%
124	[-2,5]	-9.54%	1.93%	-0.56%	-7.40%	-2.98%	-5.30%	-4.35%	-9.18%
125	[-1,2]	-1.57%	0.62%	-1.25%	-10.35%	6.29%	2.60%	-4.05%	-8.45%
126	[-10,10]	-32.45%	3.81%	-3.51%	6.52%	-26.22%	14.59%	-9.93%	5.23%
127	[-111,11]	-62.88%	41.04%	-1.64%	-26.63%	-68.21%	68.63%	6.78%	-48.59%
128	[-1,0]	-1.26%	1.67%	-0.55%	-8.02%	3.49%	4.39%	-2.00%	-5.91%
129	[-1,1]	-1.99%	-1.12%	-0.65%	-10.03%	2.60%	1.37%	-4.02%	-6.76%
130	[0,1]	-2.50%	-1.27%	-0.41%	-7.65%	-1.03%	0.92%	-2.91%	-5.96%
131	[0,30]	-28.73%	6.34%	-6.48%	-0.68%	-17.26%	19.84%	-13.26%	9.38%

Table 22: Average CARs controlling for split of CEO and Chairman roles and tenure

	J	K	L	M	N	O	P	Q
122	ST. DEV. C/C Y T Y MR	ST. DEV. C/C Y T N MR	ST. DEV. C/C N T Y MR	ST. DEV. C/C N T N MR	ST. DEV. C/C Y T Y FR	ST. DEV. C/C Y T N FR	ST. DEV. C/C N T Y FR	ST. DEV. C/C N F N FR
123	24.30%	17.67%	4.98%	20.47%	7.61%	33.13%	4.61%	27.33%
124	30.29%	12.75%	5.87%	13.38%	8.56%	31.66%	5.39%	26.27%
125	20.41%	8.78%	4.49%	9.61%	10.00%	14.62%	5.09%	11.08%
126	50.38%	32.89%	4.28%	33.61%	26.02%	52.62%	8.04%	42.63%
127	107.37%	63.50%	9.48%	30.36%	84.53%	86.70%	14.37%	39.36%
128	8.67%	6.39%	1.89%	6.36%	6.29%	10.13%	3.50%	7.05%
129	22.62%	10.14%	4.96%	11.90%	8.43%	18.67%	4.83%	15.09%
130	29.20%	9.86%	6.39%	11.85%	10.41%	18.22%	6.58%	14.83%
131	54.24%	21.70%	8.99%	14.75%	30.97%	22.81%	15.54%	16.48%

Table 23: Standard deviations controlling for split of CEO and Chairman roles and tenure

Thereafter, I show the assessment carried out controlling for both the succession planning and the age. On average, the cumulative abnormal returns are negative for most intervals. However, amongst the few positive values I found, there are several significant ones. Basically, I found seven significant values:

- the average cumulative abnormal return of 1,39% against the market return along the [-5,5] interval for the subsample of companies wherein there is a succession planning system and the dead CEO was under 60[84];
- the average cumulative abnormal return of 2,50% against the market return along the [-2,5] interval for the subsample of companies wherein there is a succession planning system and the dead CEO was under 60[85];

[84] This value has a 5% significance level.
[85] This value has a 5% significance level.

- the average cumulative abnormal return of 2,10% against the market return along the [0,1] interval for the subsample of companies wherein there is a succession planning system and the dead CEO was under 60[86];
- the average cumulative abnormal return of -1,22% against the foreseen return along the [-10,10] interval for the subsample of companies wherein there is a succession planning system and the dead CEO was under 60[87];
- the average cumulative abnormal return of 24,96% against the foreseen return along the [-111,11] interval for the subsample of companies wherein there is a succession planning system and the dead CEO was under 60[88];
- the average cumulative abnormal return of -10,81% against the foreseen return along the [0,30] interval for the subsample of companies wherein there is a succession planning system and the dead CEO was under 60[89];
- the average cumulative abnormal return of 7,18% against the foreseen return along the [-10,10] interval for the subsample of companies wherein there is not a succession planning system and the dead CEO was under 60[90].

Thus, the sudden death of a CEO who was under 60 and used to work in a company with a working succession planning system, on average, leads the company where he or she used to work to outperform the market. Moreover, the sudden death of a CEO who was under 60 and used to work in a company with no succession planning system, on average, leads the company where he or she used to work to outperform the foreseen return, along the interval [-10,10]. However, the sudden death of a CEO who was under 60 and used to work in a company with a working succession planning system, on average, leads the company where he or she used to work to outperform the foreseen return along the

[86] This value has a 0,5% significance level.
[87] This value has a 0,1% significance level.
[88] This value has a 0,05% significance level.
[89] This value has a 1% significance level.
[90] This value has a 5% significance level.

interval [-111,11], but to underperform that along the [-10,10] and [0,30].

	A	B	C	D	E	F	G	H	I
133	Interval	SP Y Age<60 Y MR	SP Y Age<60 N MR	SP N Age<60 Y MR	SP N Age<60 N MR	SP Y Age<60 Y FR	SP Y Age<60 N FR	SP N Age<60 Y FR	SP N Age<60 N FR
134	[-5,5]	1.39%	-5.62%	-4.87%	-5.36%	-0.37%	-16.16%	-4.86%	-4.83%
135	[-2,5]	2.50%	-7.13%	-7.43%	-2.37%	-4.39%	-20.30%	-4.09%	-0.29%
136	[-1,2]	0.25%	-3.93%	-13.12%	2.75%	-1.27%	-2.52%	-12.75%	2.63%
137	[-10,10]	0.64%	-19.58%	8.43%	-8.09%	-1.22%	-28.43%	7.18%	-9.07%
138	[-111,11]	13.13%	-28.62%	-27.15%	-8.85%	24.96%	-71.17%	-24.85%	-1.52%
139	[-1,0]	0.45%	-5.13%	-7.26%	0.67%	0.10%	-2.07%	-5.67%	-1.11%
140	[-1,1]	0.27%	-5.14%	-11.32%	2.21%	-3.25%	-3.67%	-9.42%	2.26%
141	[0,1]	2.10%	-2.81%	-9.72%	-0.39%	-0.16%	-4.85%	-8.19%	-0.42%
142	[0,30]	1.62%	-11.35%	-7.35%	-8.29%	-10.81%	-14.55%	3.41%	2.00%

Table 24: Average CARs controlling for succession planning and age

	J	K	L	M
133	ST. DEV. SP Y Age<60 Y MR	ST. DEV. SP Y Age<60 N MR	ST. DEV. SP N Age<60 Y MR	ST. DEV. SP N Age<60 N MR
134	5.10%	1.83%	20.22%	5.11%
135	3.18%	2.41%	13.70%	5.92%
136	0.88%	2.36%	6.88%	1.58%
137	3.22%	12.87%	32.41%	6.97%
138	18.06%	34.26%	29.54%	7.18%
139	1.90%	3.87%	5.81%	1.35%
140	2.29%	3.15%	11.33%	2.26%
141	5.30%	0.31%	11.83%	1.41%
142	3.53%	17.38%	17.19%	4.84%

Table 25: Standard deviations controlling for succession planning and age (Part 1)

	N	O	P	Q
133	ST. DEV. SP Y Age<60 Y FR	ST. DEV. SP Y Age<60 N FR	ST. DEV. SP N Age<60 Y FR	ST. DEV. SP N Age<60 N FR
134	3.73%	16.12%	24.03%	3.19%
135	4.63%	17.32%	21.24%	1.78%
136	5.29%	8.81%	4.71%	4.95%
137	12.27%	2.21%	40.92%	3.48%
138	31.22%	2.97%	43.65%	6.63%
139	4.90%	5.56%	5.78%	4.16%
140	5.49%	6.28%	12.97%	4.73%
141	7.68%	3.82%	13.91%	3.27%
142	20.43%	2.72%	22.27%	12.00%

Table 26: Standard deviations controlling for succession planning and age (Part 2)

Next, I expose the assessment carried out controlling for the dead CEO's age and whether they were the founders themselves of the company. On average, the cumulative abnormal returns are negative for most intervals, using both benchmarks, though there are 15 cases in which the cumulative abnormal returns are positive. I found a significant value at a 0,5% significance level *i.e.* the average cumulative abnormal return of -7,43% against the

foreseen return along the [-2,5] interval for the subsample of companies wherein the dead CEOs were not founders and they were younger than 60 years old. Thus, the sudden death of a CEO who was not a founder and was relatively young, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return, within the 1-week interval taken into consideration. These findings are consistent with the previous findings according to which the sudden death of CEO who was not a founder leads, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return.

	A	B	C	D	E	F	G	H	I
144	Interval	FO Y Age<60 Y MR	FO Y Age<60 N MR	FO N Age<60 Y MR	FO N Age<60 N MR	FO Y Age<60 Y FR	FO Y Age<60 N FR	FO N Age<60 Y FR	FO N Age<60 N FR
145	[-5,5]	-4.18%	-12.09%	0.70%	-3.81%	-1.63%	-0.36%	-3.60%	-11.62%
146	[-2,5]	-5.81%	-10.64%	0.88%	-2.69%	-1.05%	-2.45%	-7.43%	-9.76%
147	[-1,2]	-12.24%	3.52%	-0.63%	-0.78%	-9.68%	9.55%	-4.34%	-1.68%
148	[-10,10]	9.14%	-17.92%	-0.07%	-11.38%	13.64%	-11.66%	-7.68%	-18.10%
149	[-111,11]	-26.57%	-9.34%	12.56%	-18.61%	-27.30%	-10.90%	27.41%	-34.00%
150	[-1,0]	-6.17%	1.60%	-0.65%	-2.46%	-4.28%	4.72%	-1.29%	-3.05%
151	[-1,1]	-11.07%	1.97%	0.03%	-1.40%	-8.29%	8.74%	-4.38%	-2.33%
152	[0,1]	-6.95%	-0.78%	-0.67%	-1.50%	-4.44%	4.16%	-3.90%	-3.78%
153	[0,30]	-4.75%	-14.22%	-0.97%	-8.33%	1.18%	-1.27%	-8.58%	-5.45%

Table 27: Average CARs controlling for founder condition and age

	J	K	L	M	N	O	P	Q
144	SD FO Y Age<60 Y MR	SD FO Y Age<60 N MR	SD FO N Age<60 Y MR	SD FO N Age<60 N MR	SD FO Y Age<60 Y FR	SD FO Y Age<60 N FR	SD FO N Age<60 Y FR	SD FO N Age<60 Y FR
145	20.28%	9.18%	5.61%	2.75%	24.18%	11.34%	3.88%	12.27%
146	14.53%	9.06%	3.69%	4.83%	21.22%	11.68%	1.50%	16.18%
147	8.25%	6.50%	1.45%	3.79%	8.67%	6.19%	5.16%	6.31%
148	32.13%	19.73%	4.03%	12.26%	38.22%	15.89%	13.13%	10.75%
149	29.97%	35.65%	18.62%	26.94%	41.99%	25.65%	29.34%	37.23%
150	7.06%	6.08%	1.42%	3.96%	7.41%	4.20%	3.82%	4.08%
151	11.58%	7.69%	2.26%	4.77%	13.78%	6.85%	4.45%	4.75%
152	14.76%	5.69%	0.68%	1.79%	16.48%	6.72%	3.61%	2.93%
153	17.59%	17.50%	5.63%	12.83%	24.21%	11.57%	19.51%	13.80%

Table 28: Standard deviations controlling for founder condition and age

Then, I show the valuation performed controlling for the split of CEO and Chairman roles and age. On average, the cumulative abnormal returns are negative for most intervals, using both benchmarks, though there are 20 cases in which the cumulative abnormal returns are positive, most of them when the roles or CEO and Chairman are separated, and the dead CEO was relatively young. I found a significant value at a 5% significance level *i.e.* the average cumulative abnormal return of -8,38% against the foreseen return along the [-1,2] interval for the subsample of companies wherein the roles of CEO and Chairman are not separated and the dead CEOs were younger than 60 years old. Thus, the sudden death of a CEO who was relatively young, whether the roles of

CEO and Chairman are separated, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return, within the 4-days interval taken into consideration.

	A	B	C	D	E	F	G	H	I
155	Interval	C/C Y Age<60 Y MR	C/C Y Age<60 N MR	C/C N Age<60 Y MR	C/C N Age<60 N MR	C/C Y Age<60 Y FR	C/C Y Age<60 N FR	C/C N Age<60 Y FR	C/C N Age<60 N FR
156	[-5,5]	3.02%	-7.45%	-2.42%	-4.97%	-1.53%	-0.05%	-2.77%	-11.70%
157	[-2,5]	1.93%	-9.54%	-3.09%	-2.96%	-5.30%	-2.98%	-4.09%	-9.62%
158	[-1,2]	0.62%	-1.57%	-7.44%	0.49%	2.60%	6.29%	-8.38%	-0.86%
159	[-10,10]	3.81%	-32.45%	4.64%	-7.75%	14.59%	-26.22%	1.32%	-14.46%
160	[-111,11]	41.04%	-62.88%	-13.87%	-5.23%	68.63%	-68.21%	-9.74%	-19.68%
161	[-1,0]	1.67%	-1.26%	-4.13%	-1.75%	4.39%	3.49%	-3.81%	-2.74%
162	[-1,1]	-1.12%	-1.99%	-6.15%	-0.41%	1.37%	2.60%	-7.44%	-0.79%
163	[0,1]	-1.27%	-2.50%	-4.17%	-1.07%	0.92%	-1.03%	-4.90%	-2.48%
164	[0,30]	6.34%	-28.73%	-4.18%	-4.71%	19.84%	-17.26%	-7.06%	-1.45%

Table 29: Average CARs controlling for split of CEO and Chairman roles and age

	J	K	L	M	N	O	P	Q
155	SD C/C Y Age<60 Y MR	SD C/C Y Age<60 N MR	SD C/C N Age<60 Y MR	SD C/C N Age<60 N MR	SD C/C Y Age<60 Y FR	SD C/C Y Age<60 N FR	SD C/C N Age<60 Y FR	SD C/C N Age<60 Y FR
156	18.67%	16.29%	16.00%	4.48%	4.99%	23.58%	18.54%	12.20%
157	14.46%	20.99%	11.75%	5.23%	4.43%	29.35%	16.43%	16.24%
158	9.89%	14.53%	8.39%	4.15%	2.20%	14.40%	7.16%	7.41%
159	33.49%	45.42%	24.97%	6.07%	8.89%	25.24%	32.26%	9.81%
160	65.84%	101.98%	27.78%	8.84%	13.86%	86.46%	39.84%	31.96%
161	7.03%	14.90%	5.84%	4.35%	1.75%	9.53%	5.82%	4.58%
162	11.88%	17.06%	10.56%	4.95%	3.00%	12.20%	10.70%	6.69%
163	12.94%	6.22%	11.61%	1.70%	3.44%	8.21%	12.59%	4.56%
164	24.03%	46.85%	13.61%	7.49%	6.60%	28.56%	22.12%	12.00%

Table 30: Standard deviations controlling for split of CEO and Chairman roles and age

Lastly, I show the assessment performed controlling for both the age and the tenure. On average, the cumulative abnormal returns are negative for most intervals. However, amongst the few positive values I found, there is a significant one. Basically, I found two significant values at a 5% value along the [0,30] interval:

- the average cumulative abnormal return of -20,01% against the foreseen return for the subsample of companies wherein the dead CEO's tenure is below ten years and his or her age under 60;
- the average cumulative abnormal return of 23,49% against the foreseen return for the subsample of companies wherein the dead CEO's tenure is over ten years and his or her age under 60.

Thus, the sudden death of a CEO whose tenure was below ten years and whose age under 60, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return, within the 1-month interval considered. However,

the sudden death of a CEO whose tenure was over ten years and whose age under 60, on average, leads the company where he or she used to work to outperform the CAPM forecasts of its expected return, within the 1-month interval considered. These findings are consistent with the previous findings according to which the sudden death of a CEO whose tenure is below ten years, on average, leads the company where he or she used to work to underperform the CAPM forecasts of its expected return.

	A	B	C	D	E	F	G	H	I
166	Interval	T Y Age<60 Y MR	T Y Age<60 N MR	T N Age<60 Y MR	T N Age<60 N MR	T Y Age<60 Y FR	T Y Age<60 N FR	T N Age<60 Y FR	T N Age<60 N FR
167	[-5,5]	-1.90%	-3.82%	-1.47%	-7.94%	-2.99%	-4.73%	-1.98%	-16.32%
168	[-2,5]	-1.48%	-2.01%	-4.10%	-7.68%	-6.40%	-0.47%	-0.65%	-20.03%
169	[-1,2]	-2.69%	1.05%	-12.67%	-1.39%	-5.33%	1.54%	-9.80%	-0.89%
170	[-10,10]	-3.65%	-12.93%	18.17%	-12.32%	-10.79%	-13.92%	25.94%	-21.15%
171	[-111,11]	1.14%	-26.70%	-20.59%	-1.85%	8.22%	-20.62%	-13.56%	-42.52%
172	[-1,0]	-0.85%	-0.28%	-7.67%	-3.70%	-1.18%	-1.52%	-5.45%	-1.46%
173	[-1,1]	-1.85%	0.90%	-11.64%	-3.16%	-5.24%	0.22%	-8.15%	-0.61%
174	[0,1]	-0.50%	-0.96%	-9.32%	-1.95%	-2.99%	-2.15%	-6.14%	-2.25%
175	[0,30]	-6.94%	-13.12%	3.93%	-4.09%	-20.01%	-3.33%	23.49%	-6.55%

Table 31: Average CARs controlling for tenure and age

	J	K	L	M	N	O	P	Q
166	SD T Y Age<60 Y MR	SD T Y Age<60 N MR	SD T N Age<60 Y MR	SD T N Age<60 N MR	SD T Y Age<60 Y FR	SD T Y Age<60 N FR	SD T N Age<60 Y FR	SD T N Age<60 Y FR
167	5.71%	3.18%	23.49%	4.15%	4.99%	3.33%	27.57%	15.96%
168	6.68%	5.42%	15.84%	2.96%	5.04%	2.00%	23.82%	17.59%
169	4.43%	2.38%	9.40%	4.91%	5.49%	3.43%	9.59%	10.44%
170	5.05%	13.81%	33.39%	5.60%	9.10%	9.18%	38.72%	9.49%
171	8.24%	26.57%	47.66%	7.49%	16.78%	33.64%	68.76%	31.62%
172	1.96%	1.37%	7.35%	5.30%	3.84%	3.58%	7.92%	6.18%
173	5.14%	3.04%	12.79%	5.13%	5.16%	2.07%	15.50%	9.34%
174	7.48%	1.76%	13.24%	1.17%	7.78%	0.92%	16.51%	6.41%
175	10.43%	11.30%	14.46%	10.13%	9.74%	15.36%	3.43%	5.28%

Table 32: Standard deviations controlling for tenure and age

Conclusions

Having reached the conclusion of this dissertation, it is first necessary to underline the limitations of this study:

- Sample size;
- Simple methodology;
- Few variables analyzed;

The sample analyzed is very small, to the extent that many statistical tests performed could show that a value is not significant, though a larger sample could have shown the opposite. Despite this, many tests showed significant values, even with very low significance levels. The methodology is very simple, as can be seen from the dedicated paragraph, but once the necessary assumptions have been made and the references cited are respected, it can give an updated point of view about the evaluation of the financial effects of the sudden deaths of executive directors. Moreover, a lot of further variables may be considered, though here the most common and simple to analyze are considered[91]. The first conclusion is that, controlling for no other variable, the sudden death itself does not lead to significant cumulative abnormal returns, either positive or negative. This is consistent with further literature, given the high cross-sectional variance found within the sample. Indeed, that implies that the sudden death of a CEO can provoke either positive either negative cumulative abnormal returns (Johnson *et al*., 1985; Worrell *et al*., 1986; Brown, 1982; Eitzen & Yetman, 1972). This finding justifies the usage of several control variables as done here. Controlling for the founder condition of CEO[92] a significant negative cumulative abnormal return is found when the CEO is not a founder, thus it can be implied that the investors' perception is that a CEO who is not a founder adds more value than founder-CEO. This is consistent with further literature, given that a professional CEO usually gets a slighter share of the benefits deriving from

[91] A variable which is not considered which is instead considered by some literature is the firm performance before the sudden death of the CEO. Moreover, I consider only the share price effect.

[92] Whether the dead CEO is also the founder of the company.

the principal-agent rapport between CEO and shareholders (Johnson *et al*., 1985). Controlling for the age of the dead CEO a significant negative cumulative abnormal return is found when the CEO dies between 60 and 65 years old[93], contrarywise to the cited literature (Jenter *et al.*, 2016). This could depend on a perception by investors or an actual greater experience and acquired wisdom that could add more value to the company, compared to a younger CEO. This finding might be confirmed by the positive cumulative abnormal returns obtained, when controlling for both succession planning and age, for the subsample of dead CEOs younger than 60, either when there are succession plans either when there are not. Controlling for the tenure of dead CEO a significant negative cumulative abnormal return is found with short-tenured CEOs, consistently with the cited literature (*Ibidem*). This implies that a short-tenured CEO, on average, adds more value for investors than long-tenured, or at least investors perceive that. Indeed, short-tenured CEO are more difficult to be entrenched and then to deliver a bad performance than long-tenured ones (Salas, 2010). Controlling for both tenure and succession planning, even more insights about that can be seen. Even though succession planning all alone seems to be not significant, within my sample, when analyzed together with tenure it becomes far more significant. Indeed, when the dead CEO is long-tenured and there is a working succession planning system within the company, a significant positive cumulative abnormal return is observed. This might be since the investors believe that the successor of the long-tenured CEO is likelier to add more value to the company than the predecessor, if he is chosen through a succession plan. Long-tenured dead CEOs also provoke significant positive cumulative abnormal returns when they were neither founders. Thus, when the professional CEO[94] becomes long-tenured may be no more able to add value for the investors and then they eventually believe that the successor of the long-tenured professional CEO is likelier to add more value to the company than the predecessor. Though neither the separation of the roles of CEO and Chairman within the Board of Directors neither the young age of the CEO are significant,

[93] I here remind that I excluded from the sample CEOs older than 65.
[94] A professional CEO is the opposite of a founder CEO (Johnson *et al.*, 1985).

they become more significant when analyzed together. Indeed, if the roles are not separated and the dead CEO is young, the CARs are significantly negative. So, even though these two conditions all alone do not deliver value to investors[95], when they exist together, they are eventually valuable. In the end, when age is analyzed together with tenure it can be highlighted as a young and short-tenured CEO is believed to be very valuable by investors while a long-tenured though young CEO is believed to be very harmful by investors. This might be since the entrenchment of a CEO might be worst if he or she does not have such a long experience in the role[96]. Finally, the effects of the sudden death of executive directors can have several effects according to the variables considered. The best merit that might be attributed to this dissertation is the one to have controlled several variables also together highlighting the differences that can bear the union of different variables instead of considering them all alone. Of course, the limitations make it desirable a greater investigation, by the subsequent literature, regarding the variables which, analyzed jointly, can give more detailed explanations to the financial effects of the sudden deaths of the CEOs.

[95] At least this must be the investors' perception.
[96] Age is a proxy of the experience.

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