Article

CEO Duality: Newspapers and Stock Market Reactions

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Abstract: This study aims to investigate the unsettled issue of the relationship between CEO duality and a firm's value through the perspective of investors' reaction to news which mention apical directors with a single role and Board Chair CEOs. With a unique and hand-collected database of 60,805 newspaper articles, text-analysis, event-study and regression analysis methodologies were applied to capture news sentiment and study the direction and the magnitude of the stock market reaction. Results reveal that news mentioning Board Chair CEOs are negatively processed by investors, revealing a negative perception by investors about CEO duality. The study provides empirical support for the agency theory, in contrast to the stewardship theory, in the interpretation of CEO duality. It also proposes the methodology of systematically quantifying language to explore corporate governance issues and their link with financial markets.

Keywords: CEO duality; corporate governance; mass media; sentiment; stock-market; text-analysis; event-study; agency theory; stewardship theory

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1. Introduction

Day-to-day displaying of news on selected characters, topics and institutions grabs the public's attention and establishes the salience of the same among the audience affecting opinions (McCombs and Reynolds 2002). Research on this role of media, defined as agenda-setting, has initially concerned public issues, but has lately been extended to corporate actors (Carroll and McCombs 2003). The literature on strategic management widely observe that media might help firms to be perceived more favourably even when not demonstrating a superior economic performance (Staw and Epstein 2000). Congruently, studies in finance and in communication science reveal that the flow of information is crucial in financial markets (Strauss and Smith 2019) and media coverage has a significant impact on stock prices formation (Antweiler and Frank 2004; Dell'Acqua et al. 2010; Doukas et al. 2005; Tetlock et al. 2008; Tetlock 2007). In representing companies, mass media not only affect their reputation and visibility but have also an impact on shares prices, conducting the passive role of information broker and the active one of influencing market participants' opinions (Deephouse 2000). The impact of media coverage on financial markets has been explored considering different features of the information conveyed as the sentiment (positive or negative) (Tetlock et al. 2008), the tone (strong or weak) (Carretta et al. 2011), the celebrity and the visibility of the actors mentioned (Caiffa et al. 2019), or the recency of the information (Huberman and Regev 2001; Tetlock 2011). Empirical research considers different information sources, ranging from major newspapers (Carretta et al. 2011), top-tier news sources (Carlini et al. 2020), experts' opinions (Bar-Haim et al. 2011), information outlets as Reuters news (Uhl 2014), firm conference calls and financial statements (Jiang et al. 2019), corporate annual reports (Li 2006), earnings' press release (Davis et al. 2012), and social media (McGurk et al. 2020). Among the different types of news, corporate governance news gained much importance in the last decades since the debate on the importance of corporate governance has been stimulated by regulatory

reforms and corporate scandals and crimes. Corporate governance is widely recognized as able to impact shareholder value (Bebchuk et al. 2009; Fiordelisi and Molyneux 2010). The evidence that computational linguistics techniques are helpful in extracting informative elements that are reflected in stock prices and add value besides the traditional quantitative measures underpins the importance for scholars in economics, finance and communication science to explore the complex interaction between corporate features, news flows and stock market reactions (Bollen et al. 2011; Tetlock et al. 2008; Tetlock 2007). One of the much discussed and ambiguous issues in corporate governance is represented by Chief Executive Officer (CEO) duality (Dalton and Dalton 2011; for a literature review on CEO duality, see Krause et al. 2014). While the agency theory suggests a negative impact of CEO duality on a firm's performance given the reduction of a board's ability to monitor and constrain CEO self-interest (Eisenhardt 1989; Fama and Jensen 1983), stewardship theory proposes a positive impact driven from the unity of command (Donaldson and Davis 1991); at the same time, contingency models indicate that the duality-performance relationship is influenced by other factors as environmental uncertainty (Boyd 1995; Chang et al. 2019), or information costs (Hsu et al. 2019). Studies on the relationship between duality and firm performance have focused on different performance measures, as accounting-based measures, market-based measures, and avoidance of firm bankruptcy. CEO duality research over the last two decades does not provide a unique vision on the impact of the phenomenon on a firm's value and addresses the pressing need to explore new methodologies, new frameworks and new contexts to shed light on the issue (Krause et al. 2014). In this sense, in order to shed light on the CEO duality issue, we propose to study the phenomenon through the lens of mass media, which have been found to impact on the share prices' fluctuations and reveal investors' opinions. With this aim, we analyse if news mentioning Board Chair CEOs have a stronger impact on investors' opinions and, in turn, on stock market prices, than that mentioning CEOs with a single role. Collecting newspaper articles and focusing on CEOs who have a single or double role, we seek to measure the direction and the magnitude of the impact of news on stock market prices, observing if investor' behaviour mirrors the agency or stewardship theory. Since scholars underline that news can switch from positive to negative sentiment for a specific company over time (Moniz et al. 2011), the degree of positive and negative sentiment has been extracted for each piece of news, applying textual analysis and ensuring the reproducibility, the stability, and the accuracy of the measures. To answer this research question, the Italian context represents an interesting setting, for different reasons. Firstly, the practice of CEO duality has been found to be more widely spread than in other countries (Assonime 2016). Secondly, the high level of ownership concentration, the relevant presence of family firms and the scarce protection of investors make this mechanism of corporate governance significant for minority shareholders (Espinosa-Méndez et al. 2018; La Porta et al. 1997). In addition, the powerful and well-known directors of the Italian stock market constitute a suitable sample to study the process of public opinion formation and investors' reaction (Caiffa et al. 2019; Fattobene et al. 2018; Santella et al. 2007). Finally, previous empirical research regarding the impact of CEO duality on firms' performance is heavily weighted toward the US experience (Wahba 2015), disregarding financial systems that are different from the Anglo-Saxon one. Our empirical analysis on 60,805 news across 18 years shows that the impact of newspapers on securities' prices when news mentions Boards' Chairs–CEOs is stronger than when apical directors with single roles are mentioned, supporting the agency theory. The impact is detected after controlling for the news sentiment, positive or negative, which is the main driver of securities prices movements. Bridging the framework of CEO duality with that of mass media communication in the financial market, this study therefore contributes to a more nuanced understanding of a relevant phenomenon in the corporate governance literature.

The remainder of the paper is organized as follows. Section 2 presents the literature on CEO duality and stock market reactions to mass media while Section 3 describes the sample and the research methodology. In Section 4, empirical results and robustness tests are presented, and followed by concluding remarks in Section 5.

2. Literature Review

The importance of a CEO's role in the company and for financial markets has led scholars to intensify research on the topic over years (Dragotă et al. 2020; Huu Nguyen et al. 2020). Among the different CEO characteristics, one of the most ambiguous aspects in corporate governance is CEO duality: the practice of a single subject serving the board both as CEO and as Chairman (Bhagat and Bolton 2008; Peng et al. 2007). If on the one side, the dual role is associated with negative effects due to the dependence of the board from the management, on the other side, this duality can ensure unity of command and, therefore, have a positive impact on a firm's performance (Dalton et al. 2007; Finkelstein and D'Aveni 1994; Finkelstein et al. 2009). Beside this conflict about the effects of CEO duality on a firm's performance, a contrast between two fundamental theoretical frameworks exists: the agency theory and the stewardship theory. The first suggests that shareholders' returns are not maximized if appropriate governance mechanisms are not implemented to ensure effective monitoring of managerial actions; it fails if the chairperson is dependent of the executive management and so his/her impartiality is compromised (Abels and Martelli 2013; Eisenhardt 1989; Fama and Jensen 1983; Halioui et al. 2016). Moreover, a Board Chair CEO can weaken boards' role selecting directors loyal to him/her, creating norms that do not examine management efficacy and control directors' attention allocation to organizational matters (Petrou and Procopiou 2016). On the other hand, the stewardship theory (Donaldson and Davis 1991, 1993), building on organizational psychology and sociology, assumes a different "model of man" with respect to the individualistic and self-interest one of the agency theory. It supposes that managers' actions are in line with principals' interests (Donaldson 2008) and there is goal convergence among the parties involved in corporate governance (Van Slyke 2006). In this sense, a CEO should be given opportunities to take actions which will improve a company's value (e.g., Brickley et al. 1997; Chen et al. 2008; Jensen and Meckling 1976; Sridharan and Marsinko 1997). Applying a contingency perspective Boyd (1995) proposes that CEO duality can have both positive and negative effects given the moderating role of environmental uncertainty on firms' performance. It follows that CEO duality can be seen as a "double-edged sword" for firms' values and different methodologies should be applied to try to shed light on this controversy.

A different research stream, which regards information disseminated through mass media, recently suggested that systematically quantifying news content can be helpful in expressing novel information that is incorporated in aggregate market evaluations (Tetlock 2007). Antweiler and Frank (2006), running an event-study, analysed the Wall Street Journal corporate news, classified by topic, during the period 1973–2001 and documented the phenomenon of overreaction; Doukas et al. (2005), using regression models, explored the depth of analyst coverage showing that when abnormal, it causes stocks to be traded at a value different from companies' fundamentals. Tetlock (2007) elaborates a measure of media pessimism which, as revealed by vector autoregressions, predicts a downward pressure on market prices in the cases of low investor sentiment; in a following study, it is revealed that negative words contained in financial news from the Wall Street Journal and Dow Jones News Service forecast low firm earnings (Tetlock et al. 2008). The study by Carretta et al. (2011), combining event-study and econometric approach, analyses the impact of corporate governance news on stock market prices, finding that stock returns are negatively influenced by news related to change in the board of directors (BoD) for profitable firms, positively related to ownership news if the firm is not profitable at the moment of the news release, and positively influenced by the tone of the communication for profitable firms; moreover, after the news publications, investors are influenced by both the tone and the content of the news. Overall, these studies highlight the importance of applying textual analysis techniques to quantify information that impacts on the investors' opinion formation process.

To investigate the corporate governance issue of CEO duality through the lens of mass media and investors' behaviour, Italy could be considered an appropriate setting given the simultaneous presence of high concentration of direct ownership, where a major role is

played by family, a low level of investors' protection (Bianchi and Bianco 2006; Volpin 2002) and scarce stock market liquidity, which make the second type of agency problems relevant (La Porta et al. 1997). Moreover, even if international best practice, the OECD Principle of Corporate Governance (OECD 2015) and the Italian Codice di Autosciplina (2015) call for separation of the Chair and the CEO role and discourage the accumulation of directorships, these phenomena are still widespread. Finally, a suitable sample to investigate the opinion formation process through newspapers is one where the audience's attention can be easily captured, as from the Lords of the Italian Stock Market (Santella et al. 2007) who represent a small group of powerful and well-known directors.

Given that linguistic communication has been shown to be powerful in providing new sources of information, and that corporate governance literature suggests that CEO duality can be either positively or negatively perceived by investors, we raise an open research question:

(RQ1). How do pieces of news that mention a CEO who holds more positions in the same board impact on the relative firms' stock market prices?

3. Data and Methodology

3.1. Data

This study focuses on the information dissemination channel of newspaper articles; the sample consists of all the news related to the CEO and/or the Chairmen of the BoD of all Italian listed companies during the period 1998–2013. Data also include Vice-chairmen. The names are obtained from the website of the public authority responsible for regulating the Italian financial markets (CONSOB) in the section Emittenti—Società quotate—Organi sociali. The news published in the Italian newspapers are downloaded using LexisNexis™ Academic.

Data about all Italian companies listed on the Italian Stock Exchange (FTSE MIB) are collected from Datastream. The number of listed companies varies from a minimum of 238 in 1998 to a maximum of 301 in 2001; the total number of observations is 4339.

The number of Chairmen, Vice-chairmen, and CEOs for the whole sample period is 2153. The number rises to 3123 when taking into consideration if a director's name is associated with the boards of different companies. Of these directors, 1108 are a Chairman, 994 are a Vice-chairman and 1021 are a CEO. This is in line with previous studies that detect a small group of interlocked directors that are remarkably stable over time (Santella et al. 2007), defined as the Lords of the Italian stock market.

The number of news items extracted are about 190,000, but the number drops after the merging with the companies' variables database because of missing values. The final number of newspaper articles that is processed, analysed and associated to firms' variables is 60,805. The number of news mentioning Chairmen (47.1%) is higher than those referring to CEOs (34.9%), or Vice-chairmen (11.4%). The percentage of news mentioning directors who hold a dual position is 2.4.

3.2. Research Methodology

Different methodologies are applied to investigate the theoretical framework according to which after an event occurs, the different forms or channels of information dissemination impact on the investors' attention level and produce different effects on the financial market.

Firstly, the text analysis (Stone et al. 1966) is used to classify the content and it is based on the "bag of words" model from which a predetermined list of words is matched with the documents. In this study, the Linguistic Inquiry and Word Count (LIWC) for the Italian language is used; it is a text analysis program which counts words in psychologically meaningful categories (Tausczik and Pennebaker 2010). The content can be defined as the degree to which news have positive and negative meanings and it is computed by scaling the positive and negative words for the total length of the article, following the formula P/Length and N/Length, where P is the number of words considered positive,

N the number of words considered negative, and Length is the total number of words, in each single article. For each piece of news, indicators that express the degree of positive and negative content are extracted. Each board member's name is associated with the company where he sits to ensure that the news is economically relevant. If a member sits on more than one board, different companies are separately associated to him/her; therefore, different analyses are run for the same person who sits on the boards of different companies. To extract all the information and avoid losing observations, different names (such as acronyms or short names) for the same companies are considered. For each news item that refers to the person and his/her company, the publication date, the total number of words and positive/negative categories are extracted. To assess whether after a piece of news is published there is a stock market reaction and, as a second step, the direction and the magnitude of this reaction, event-study methodology is applied. This commonly used methodology to measure the stock market reaction to the announcement of a particular event (Dodd and Warner 1983; Brown and Warner 1985) is based on the Efficient Market Hypothesis (EMH) (Fama et al. 1969; Fama 1970) that defines a market as efficient if "prices fully reflect all available information". The aim is to observe if after the news are published at the announcement time (*t*), Abnormal Return (AR), the difference between the Actual Return on a stock *i* and the Expected Return on the stock *i*, is displayed over various event windows. With the aim to compute AR, we used the Market Model (Sharpe 1963), as shown below:

$$R_{it} = \alpha_i + \beta_i\, R_{mt} + \varepsilon_{it}, \tag{1}$$

where R_{it} is a firm's *i* stock return at time *t*, R_{mt} is the daily market return of the FTSE MIB, and ε_{it} is the error term. A coefficient is estimated for each α_i and β_i using the Ordinary Least Squares (OLS) method. In particular, α_i measures the mean return over the period not explained by the market, while the β_i measures the security's *i* sensitivity to the market.

Next, Cumulative Abnormal Returns (CARs) are computed between any two dates T_1 and T_2 as:

$$CAR_i\,(T_1, T_2) = \sum_{t=T_1}^{T_2} AR_{it}, \tag{2}$$

where i is the stock and t the time. In order to avoid confounding effects, short symmetric and asymmetric event-windows are selected (McWilliams and Siegel 1997), as summarised in Table 1.

Table 1. Stock market variables.

Variable	Symbol	Description
Abnormal Return (AR) at the day of news publication	AR	abnormal return at the day of news publication
AR one day after the news	AR1	abnormal return one day after news publication
Cumulative AR (CAR) over the event window (0, 1)	CAR (0, 1)	cumulative abnormal return calculated between the day and the day after news publication
CAR over the event window (−1, 0)	CAR (−1, 0)	cumulative abnormal return calculated between the day before and the day of news publication
CAR over the event window (0, 2)	CAR (0, 2)	cumulative abnormal return calculated between the day and two days after news publication
CAR over the event window (−2, 0)	CAR (−2, 0)	cumulative abnormal return calculated between two days before and the day of news publication
CAR over the event window (−1, 1)	CAR (−1, 1)	cumulative abnormal return calculated between the day before and the day after news publication
CAR over the event window (−2, 2)	CAR (−2, 2)	cumulative abnormal return calculated between two days before and two days after news publication

The last step of the methodology is to specify the econometric models to investigate the link between press news and stock market returns.

3.3. Model Specification

Two linear models are specified, taking into account single roles (Model 1) and CEO duality (Model 2). CAR is the dependent variable of the model while the independent ones include variables related to the press news (content and category of the board member), to the company's performance, and to the market's performance. Sectorial and year dummy are also inserted in the models as control variables. Variables included in the models are specified as follows:

Abnormal Return: a quantitative variable that represents the Abnormal Returns computed at different times;

Cumulative Abnormal Return: a quantitative variable that represents the Cumulative Abnormal Returns computed at different times, following Equation (2);

Chairman: a dummy variable that assumes value 1 if the board member is the Chairman, 0 otherwise;

Vice-Chairman: a dummy variable that assumes value 1 if the board member is the Vice-Chairman, 0 otherwise;

CEO: a dummy variable that assumes value 1 if the board member is the CEO, 0 otherwise

CEO Duality: a dummy variable that assumes value 1 if the CEO is also the Chairman (or Vice-chairmen); otherwise it is taken as 0;

Length: a quantitative variable. It counts the number of words for each piece of news;

Positive Index: a quantitative variable computed scaling the number of positive words to the length of the article. It expresses the degree to which an article has a positive meaning;

Negative Index: a quantitative variable computed scaling the number of negative words to the length of the article. It expresses the degree to which an article has a positive meaning;

Return On Equity: a quantitative variable. It is the amount of net income returned as a percentage of shareholders' equity;

Leverage: a quantitative variable. It is computed as debt (loans) scaled by common equity

Dividend Yield: a quantitative variable and is computed by scaling the annual dividends paid per share by the price per share;

Market To Book Value: a quantitative variable that is computed scaling the market capitalization by the book value

Equations (3) and (4) describe the two econometric models:

$$
\begin{aligned}
\text{Model1}: \ & Abnormal\ Return_{it}\ or\ Cumulative\ Abnormal\ Return_{it} = \alpha_0 + \alpha_1\ Abnormal\ Return_{(t_0-1)} + \\
& \alpha_2 Chairman_{it} + \alpha_3 Vice\ Chairman_{it} + \alpha_4 CEO_{it} + + \alpha_5 Length_{it} + \alpha_6 Negative\ Index_{it} + \\
& \alpha_7 Positive\ Index_{it} + \alpha_8 Return\ On\ Equity_{it} + \alpha_9 Leverage_{it} + \alpha_{10} Dividend\ Yield_{it} + \\
& \alpha_{11} Market\ To\ Book\ Value_{it} + + a_{12}\ldots a_{21} Sectorial\ Dummy + a_{22}\ldots a_{37} Year\ Dummy + \varepsilon_{it}
\end{aligned}
$$

(3)

$$
\begin{aligned}
\text{Model2}: \ & Abnormal\ Return_{it}\ or\ Cumulative\ Abnormal\ Return_{it} = \alpha_0 + \alpha_1\ Abnormal\ Return_{(t_0-1)} + \\
& \alpha_2 CEO\ duality_{it} + \alpha_3 Length_{it} + \alpha_4 Negative\ Index_{it} + \alpha_5 Positive\ Index_{it} + \alpha_6 Return\ On\ Equity_{it} + \\
& \alpha_7 Leverage_{it} + \alpha_8 Dividend\ Yield_{it} + \alpha_9 Market\ To\ Book\ Value_{it} + + a_{10}\ldots a_{19} Sectorial\ Dummy + \\
& a_{20}\ldots a_{35} Year\ Dummy + \varepsilon_{it}
\end{aligned}
$$

(4)

4. Results

4.1. Descriptive Statistics

Average news length is 427 ($\pm$309) words. For what concerns sentiment indicators, the average value of the negative index is 0.3% ($\pm$0.5%) with a maximum of 6.8%, while the positive index is, on average, 0.1% ($\pm$0.2%) with a maximum of 7%.

Table 2 shows the descriptive statistics of short-term ARs and CARs. The highest average market reaction is observed for the event window including the day the news are published and the day before it (CAR ($-$1, 0) = 0.15%, sd: $\pm$4.38 %), while the lowest

average one is on the day after the news are published ($AR_{(t+1)}$ = −0.02%, sd: ±0.11%). When considering the four-day event window around the announcement date, results reveal that CARs ranged from −86.37% and 124.18%.

Table 2. Descriptive statistics of short-term ARs and CARs.

	N° of Obs.	Mean	Sd	Min	Max	Median
AR_{it}	60,805	0.12%	3.49%	−25.76%	50.91%	0.00%
$AR_{(t−1)}$	60,805	0.03%	3.36%	−26.04%	50.91%	−0.03%
$AR_{(t+1)}$	60,805	−0.02%	0.11%	−44.16%	50.91%	−0.01%
CAR (0, 1)	60,805	0.10%	4.37%	−64.67%	87.36%	−0.02%
CAR (−1, 0)	60,805	0.15%	4.38%	−41.36%	87.36%	0.06%
CAR (0, 2)	60,805	0.08%	4.85%	−80.80%	104.07%	−0.10%
CAR (−2. 0)	60,805	0.11%	4.91%	−61.66%	84.64%	0.01%
CAR (−1, 1)	60,805	0.14%	5.07%	−85.52%	104.07%	−0.01%
CAR (−2, 2)	60,805	0.07%	5.73%	−86.37%	124.18%	−0.07%

Table 3 shows the descriptive statistics of short-term ARs and CARs, according to sentiment.

Table 3. Descriptive statistics of short-term ARs and CARs sorted by negative and positive news sentiment.

	N° of obs.	Mean	Sd	Min	Max	Median	N° of Obs.	Mean	Sd	Min	Max	Median
			Negative						Positive			
AR_{it}	22,272	0.08%	3.53%	−25.76%	50.91%	−0.01%	4254	0.3%	3.7%	−22.9%	50.9%	0.20%
$AR_{(t−1)}$	22,272	−0.01%	3.40%	−24.60%	50.33%	−0.08%	4254	0.0%	3.0%	−17.6%	37.4%	−0.03%
$AR_{(t+1)}$	22,272	−0.02%	3.35%	−35.77%	50.91%	−0.02%	4254	0.0%	3.4%	−20.0%	50.9%	−0.01%
CAR (0, 1)	22,272	0.06%	4.41%	−61.53%	87.36%	−0.06%	4254	0.3%	4.6%	−27.2%	59.8%	0.08%
CAR (−1, 0)	22,272	0.06%	4.41%	−32.07%	87.36%	0.03%	4254	0.4%	4.4%	−25.9%	59.8%	0.20%
CAR (0, 2)	22,272	0.04%	4.94%	−80.80%	104.07%	−0.12%	4254	0.3%	4.8%	−32.6%	55.3%	−0.02%
CAR (−2. 0)	22,272	0.02%	5.02%	−41.81%	84.64%	−0.06%	4254	0.5%	4.8%	−32.6%	55.2%	0.23%
CAR (−1, 1)	22,272	0.04%	5.15%	−41.81%	104.07%	−0.08%	4254	0.4%	5.1%	−27.0%	55.3%	0.08%
CAR (−2, 2)	22,272	−0.02%	5.83%	−53.04%	124.18%	−0.12%	4254	0.5%	5.6%	−34.0%	55.2%	0.21%

Table 4 presents textual analysis descriptive statistics sorted by news referring to CEO duality or not, which reveal longer newspaper articles when dual CEOs are mentioned, but overall, more moderate sentiment indicators, compared to articles mentioning CEOs or Chairmen and Vice-Chairmen who do not have a double role.

Table 4. Descriptive statistics of text-analysis variables.

	N° of Obs.	Mean	Sd	Min	Max	Median
			CEO Duality: no			
Length	59,320	423.94	307.29	35	7770	386
Negative Index	59,320	0.32%	0.55%	0.00%	6.82%	0.00%
Positive Index	59,320	0.05%	0.24%	0.00%	6.96%	0.00%
			CEO Duality: yes			
Length	1485	527.24	347.92	55	5796	507
Negative Index	1485	0.25%	0.48%	0.00%	4.46%	0.00%
Positive Index	1485	0.04%	0.19%	0.00%	2.12%	0.00%

Table 5 shows correlation matrix for all variables, suggesting that multicollinearity does not affect the analysis. This is also supported by the Variance Inflation Factors (VIFs)

of our dependent variables that are all well below 10 (Studenmund 2010), as displayed in Table 6.

4.2. CEO Duality, Sentiment, and Market Reactions

In this section, we address the relationship between news mentioning CEOs and dual CEOs, textual analysis of financial information and stock market prices.

CEO duality directly conflicts with agency theory, which suggests board independence from management to prevent managerial entrenchment (Eisenhardt 1989; Fama and Jensen 1983), but it is positively considered by the stewardship theory according to which empowering structures, as CEO duality, will increase effectiveness and, therefore, produce superior returns to shareholders (Donaldson and Davis 1991). Our results underpin that investors have a stronger reaction to news that refers to personalities who are a firm's CEO-Chairman, supporting the agency theory, as revealed by our analysis that examines the influence of single roles and double roles.

Table 7 displays the results of the analysis based on Equation (3).

CARs reveal a positive and statistically significant relationship with the variables that capture the member position within the board. Mentioning the Chairman within the piece of news is associated with a positive stock market reaction, for all the event-windows considered, except for AR_{t+1}. Regression coefficients range from a minimum of 0.00222 in AR ($p < 0.001$) and CAR ($-1, 0$) ($p < 0.001$), to a maximum of 0.00277 in CAR ($0, 2$) ($p < 0.001$). The same positive effect on the stock market is observed when the member mentioned is a Vice-Chairman. A positive and statistically significant relationship is also observed between stock market returns and the variable related to the CEO position. Coefficients range from a minimum of 0.00161 in CAR ($0, 1$) ($p < 0.05$) and CAR ($-1, 1$) ($p < 0.05$) to a maximum of 0.00197 in CAR ($-2, 0$) ($p < 0.05$). Coefficients associated to the variable related to the CEO are slightly lower than those related to the Chairmen and the Vice-Chairmen.

Data reveals a specular effect of the press content on the financial market. Positive content is associated with a positive and statistically significant impact on share prices, while negative content is associated with a statistically significant negative one. In more detail, in Table 7, the sentiment positive indicator has a positive impact and is statistically significant in AR and CAR ($-2, 2$) ($p < 0.05$). Conversely, the sentiment negative indicator has a negative impact and is statistically significant in all the event-windows except for AR_{t+1}, ranging from -0.109 in AR ($p < 0.001$) and CAR ($-1, 0$) ($p < 0.001$), to a maximum of 0.177 in CAR ($-2, 2$) ($p < 0.001$).

The results of the analysis based on Equation (4) are displayed in Table 8.

CARs reveal a negative and statistically significant relationship with the variables that capture CEO duality. Coefficients range from a minimum of -0.00533 in CAR ($-2, 2$) ($p < 0.001$) to a maximum of -0.00256 in AR and CAR ($-1, 0$) ($p < 0.01$). The impact of positive and negative sentiment on stock market returns confirms the trend discussed for the results in Table 7. The impact of the media sentiment on the stock market reaction is in line with previous literature concerning media role in financial markets, where a stronger and more consistent impact of negative news over positive one has been detected (Tetlock 2007; Tetlock et al. 2008), with prospect theory (Kahneman and Tversky 1979), and with the literature on the negativity bias (Kanouse 1972), thus highlighting the robustness of the models specified.

Table 5. Correlation matrix.

	AR$_{(t-1)}$	Chairman	Vice-Chairman	CEO	CEO Duality	Length	Negative Index	Positive Index	Return On Equity	Leverage	Dividend Yield	Market To Book Value $_{it}$
AR$_{(t-1)}$	1.0000											
Chairman	0.0109	1.0000										
Vice-Chairman	−0.0036	−0.3378	1.0000									
CEO	−0.0019	−0.6909	−0.2624	1.0000								
CEO Duality	0.0028	−0.1492	−0.0567	−0.1159	1.0000							
Length	0.0061	−0.0013	0.0324	−0.0363	0.0516	1.0000						
Negative Index	−0.0174	0.0257	−0.0278	−0.0055	−0.0189	−0.0906	1.0000					
Positive Index	−0.0029	−0.0141	0.0032	0.0181	−0.0067	−0.1458	−0.1239	1.0000				
Return On Equity	−0.0045	0.0330	−0.1025	0.0277	0.0099	0.0050	0.0009	0.0027	1.0000			
Leverage	−0.0128	0.0137	0.0292	−0.0170	−0.0784	0.0579	0.0366	−0.0280	0.0882	1.0000		
Dividend Yield	0.0188	−0.0567	−0.0159	0.0887	−0.1208	−0.0492	0.0071	0.0056	0.0408	−0.1258	1.0000	
Market To Book Value	−0.0048	0.0381	0.0029	−0.0234	0.0161	−0.0329	−0.0229	0.0259	0.0875	−0.1130	−0.0731	1.0000

Table 6. Mean variance inflation factors (VIFs) for dependent variables of Model 1 (Panel A) and Model 2 (Panel B).

Panel A: Model 1		
Variable	**VIF**	**1/VIF**
Chairman	4.3	0.2
Ceo	4.1	0.2
Vice-Chairman	2.4	0.4
Leverage	1.1	1.0
Length	1.0	1.0
Positive Index	1.0	1.0
Dividend Yield	1.0	1.0
Market To Book Value	1.0	1.0
Return On Equity	1.0	1.0
Negative Index	1.0	1.0
Abnormal Return$_{(t-1)}$	1.0	1.0
Mean VIF	1.7	
Panel B: Model 2		
Variable	**VIF**	**1/VIF**
Leverage	1.1	0.9
Dividend Yield	1.1	1.0
Lenght	1.0	1.0
Positive Index	1.0	1.0
Market To Book Value	1.0	1.0
Negative Index	1.0	1.0
Ceo Duality	1.0	1.0
Return On Equity	1.0	1.0
Abnormal Return	1.0	1.0
Mean VIF	1.0	

Overall, the analysis suggests that investors negatively react when economically relevant news mention members who are Board Chair CEOs, and thus do not appreciate the concentration of power in a single individual who serves the same company with more than one role, supporting the perspective of the agency theory. In fact, CEO Duality can weaken the protection sought by shareholders and may incentivize CEO entrenchment by diminishing board monitoring effectiveness. This evidence is in line with other studies focussing on CEO Duality and its effects in terms of firm performance and value creation (Bui et al. 2020; Ujunwa 2012; Zahra et al. 2000). For this reason, Board Chair CEOs and companies that violate the separation between decision management and decision control are not generally favourably perceived by the market. In other words, news related to CEOs who are powerful because they hold more than one position in the same board are negatively perceived, even after controlling for the sentiment of the news.

Dalton and Dalton (2011) make reference to the absence of multilevel studies of CEO duality. These results extend the already existing evidence in favour of the agency theory. Their novelty relies on the use of a different methodological approach in order to consider the investors' perspective on CEO Duality, examined through the effect of governance news released by the mass media.

4.3. Robustness

Regression analysis considers stock abnormal returns in different periods around the event date; however, the effect of different independent variables may vary considering CARs in other periods further from the event date. As a robustness test, we re-estimated the regressions considering different and longer event windows: from six days around the announcement date up to 20 days. Results are confirmed and shown in Tables 9 and 10.

Table 7. Directors' single roles, sentiment, and stock market reaction.

	AR	AR$_{(t+1)}$	CAR (0, 1)	CAR (−1, 0)	CAR (0, 2)	CAR (−2, 0)	CAR (−1, 1)	CAR (−2, 2)
AR$_{(t-1)}$	−0.190 ***	−0.0202 **	−0.211 ***	0.810 ***	−0.295 ***	0.626 ***	0.789 ***	0.521 ***
	(−46.01)	(−2.73)	(−17.36)	(88.76)	(−19.18)	(51.56)	(65.04)	(30.96)
Chairman	0.00222 ***	0.000319	0.00254 ***	0.00222 ***	0.00277 ***	0.00225 **	0.00254 ***	0.00280 **
	(3.85)	(0.56)	(3.51)	(3.63)	(3.51)	(2.94)	(3.51)	(3.04)
Vice-Chairman	0.00222 **	0.000607	0.00283 **	0.00222 **	0.00257 **	0.00304 ***	0.00283 **	0.00339 **
	(3.26)	(0.88)	(3.20)	(3.08)	(2.63)	(3.37)	(3.20)	(3.01)
CEO	0.00177 **	−0.000164	0.00161 *	0.00177 **	0.00127	0.00197 *	0.00161 *	0.00147
	(3.00)	(−0.28)	(2.20)	(2.86)	(1.60)	(2.52)	(2.20)	(1.57)
Length	−0.000000992 *	−0.000000811	−0.00000180 **	−0.000000992 *	−0.00000112	−0.000000929	−0.00000180 **	−0.00000106
	(−2.16)	(−1.83)	(−3.29)	(−2.37)	(−1.82)	(−1.66)	(−3.29)	(−1.45)
Negative Index	−0.109 ***	−0.0397	−0.149 ***	−0.109 ***	−0.116 **	−0.170 ***	−0.149 ***	−0.177 ***
	(−4.22)	(−1.55)	(−4.61)	(−4.30)	(−3.22)	(−5.00)	(−4.61)	(−4.24)
Positive Index	0.121 *	−0.063	0.0583	0.121	0.0495	0.188*	0.0583	0.117
	(2.03)	(−1.17)	(0.83)	(1.84)	(0.68)	(2.50)	(0.83)	(1.47)
Return On Equity	−0.00000109	0.0000826 ***	0.0000815 **	−0.00000109	0.0000954 *	0.00000807	0.0000815 **	0.000105 **
	(−0.04)	(4.17)	(2.78)	(−0.04)	(2.57)	(0.23)	(2.78)	(2.96)
Leverage	−0.00004	−0.000114 ***	-0.000154 ***	−0.00004	−0.000140 **	−0.000292 ***	−0.000154 ***	−0.000392 ***
	(−1.25)	(−3.74)	(−3.61)	(−1.21)	(−2.95)	(−6.65)	(−3.61)	(−7.23)
Dividend Yield	0.0367 ***	0.0199 **	0.0565 ***	0.0367 ***	0.0488 ***	0.0547 ***	0.0565 ***	0.0668 ***
	(10.58)	(2.81)	(6.19)	(6.52)	(5.45)	(8.10)	(6.19)	(6.77)
Market To Book Value	−0.000413 ***	0.00000273	−0.000411 ***	−0.000413 ***	−0.000670 ***	−0.0000235	−0.000411 ***	−0.00028
	(−3.82)	(0.03)	(−3.47)	(−4.31)	(−5.09)	(−0.19)	(−3.47)	(−1.83)
_cons	−0.000697	−0.0000814	−0.000778	−0.000697	−0.000781	−0.00117	−0.000778	−0.00125
	(−1.09)	(−0.12)	(−0.93)	(−1.03)	(−0.86)	(−1.36)	(−0.93)	(−1.18)
N	60,805	60,805	60,805	60,805	60,805	60,805	60,805	60,805
adj. R-sq	0.036	0.001	0.03	0.388	0.044	0.188	0.278	0.098

The symbols *, **, and *** represent statistical significance levels of 10%, 5% and 1% respectively. Years and Sectors not Reported. Standard errors are displayed in the brackets.

Table 8. CEO duality, sentiment and stock market reaction.

	AR	AR$_{(t+1)}$	CAR (0, 1)	CAR (−1, 0)	CAR (0, 2)	CAR (−2, 0)	CAR (−1, 1)	CAR (−2, 2)
AR$_{(t-1)}$	−0.190 ***	−0.0202 **	−0.210 ***	0.810 ***	−0.295 ***	0.626 ***	0.790 ***	0.522 ***
	(−20.84)	(−2.73)	(−17.33)	(88.76)	(−19.15)	(51.56)	(65.08)	(30.97)
CEO Duality	−0.00256 **	−0.000545	−0.00311 *	−0.00256 **	−0.00484 ***	−0.00304 *	−0.00311 *	−0.00533 ***
	(−2.68)	(−0.67)	(−2.53)	(−2.68)	(−3.67)	(−2.50)	(−2.53)	(−3.48)
Length	−0.000000958 *	−0.000000772	−0.00000173 **	−0.000000958 *	−0.000001	−0.000000869	−0.00000173 **	−0.000000913
	(−2.30)	(−1.75)	(−3.16)	(−2.30)	(−1.63)	(−1.56)	(−3.16)	(−1.25)
Negative Index	−0.109***	−0.0399	−0.149 ***	−0.109 ***	−0.116 **	−0.171 ***	−0.149 ***	−0.178 ***
	(−4.31)	(−1.56)	(−4.63)	(−4.31)	(−3.21)	(−5.05)	(−4.63)	(−4.28)
Positive Index	0.121	−0.0639	0.0574	0.121	0.0467	0.189 *	0.0574	0.115
	(1.84)	(−1.19)	(0.82)	(1.84)	(0.65)	(2.52)	(0.82)	(1.44)
Return On Equity	−0.0000027	0.0000794 ***	0.0000767 **	−0.0000027	0.0000936 *	0.00000175	0.0000767 **	0.0000980 **
	(−0.09)	(4.07)	(2.64)	(−0.09)	(2.54)	(0.05)	(2.64)	(2.81)
Leverage	−0.0000427	−0.000114 ***	−0.000156 ***	−0.0000427	−0.000149 **	−0.000294 ***	−0.000156 ***	−0.000400 ***
	(−1.29)	(−3.73)	(−3.66)	(−1.29)	(−3.12)	(−6.69)	(−3.66)	(−7.37)
Dividend Yield	0.0356 ***	0.0192 **	0.0547 ***	0.0356 ***	0.0457 ***	0.0534 ***	0.0547 ***	0.0636 ***
	(6.31)	(2.72)	(5.99)	(6.31)	(5.09)	(7.88)	(5.99)	(6.43)
Market To Book Value	−0.000393 ***	0.0000102	−0.000382 **	−0.000393 ***	−0.000638 ***	−0.000000871	−0.000382 **	−0.000247
	(−4.12)	(0.11)	(−3.27)	(−4.12)	(−4.88)	(−0.01)	(−3.27)	(−1.62)
_cons	0.00130 **	0.0000942	0.00139 *	0.00130 **	0.00145 *	0.00101	0.00139 *	0.00116
	(3.15)	(0.22)	(2.48)	(3.15)	(2.39)	(1.94)	(2.48)	(1.68)
N	60,805	60,805	60,805	60,805	60,805	60,805	60,805	60,805
adj. R-sq	0.036	0.001	0.03	0.388	0.044	0.188	0.278	0.098

The symbols *, **, and *** represent statistical significance levels of 10%, 5% and 1% respectively. Years and Sectors not Reported. Standard errors are displayed in the brackets.

Table 9. Robustness tests. CEO duality, sentiment and stock market reaction, over longer event-windows.

	CAR ($-3, 3$)	CAR ($-4, 4$)	CAR ($-5, 5$)	CAR ($-6, 6$)	CAR ($-7, 7$)	CAR ($-8, 8$)	CAR ($-9, 9$)	CAR ($-10, 10$)
$Ar_{(t-1)}$	0.548 ***	0.445 ***	0.537 ***	0.457 ***	0.539 ***	0.505 ***	0.515 ***	0.496 ***
	(74.68)	(49.15)	(60.17)	(47.91)	(53.74)	(48.47)	(47.34)	(44.43)
Chairman	0.00181	0.00134	0.00169	0.000851	0.00151	0.000181	0.000167	−0.000466
	(1.77)	(1.06)	(1.36)	(0.64)	(1.08)	(0.12)	(0.11)	(−0.30)
Vice-Chairman	0.00472 ***	0.00606 ***	0.00609 ***	0.00604 ***	0.00730 ***	0.00515 **	0.00525 **	0.00526 **
	(3.91)	(4.07)	(4.14)	(3.85)	(4.42)	(3.01)	(2.93)	(2.86)
CEO	0.000599	0.000104	0.000195	−0.000913	−0.000319	−0.00124	−0.00118	−0.00262
	(0.57)	(0.08)	(0.15)	(−0.67)	(−0.22)	(−0.84)	(−0.76)	(−1.65)
Length	−0.00000201 *	−0.00000354 ***	−0.00000273 **	−0.00000479 ***	−0.00000543 ***	−0.00000553 ***	−0.00000596 ***	−0.00000496 ***
	(−2.47)	(−3.53)	(−2.76)	(−4.52)	(−4.88)	(−4.79)	(−4.94)	(−4.01)
Negative Index	−0.220 ***	−0.354 ***	−0.304 ***	−0.303 ***	−0.362***	−0.338 ***	−0.321 ***	−0.337 ***
	(−4.80)	(−6.26)	(−5.45)	(−5.09)	(−5.79)	(−5.20)	(−4.73)	(−4.84)
Positive Index	0.130	0.180	0.263 *	0.296 *	0.213	0.0538	0.109	0.136
	(1.22)	(1.38)	(2.04)	(2.15)	(1.47)	(0.36)	(0.69)	(0.84)
Return On Equity	0.000215 ***	0.000284 ***	0.000314 ***	0.000381 ***	0.000400 ***	0.000448 ***	0.000438 ***	0.000464 ***
	(4.20)	(4.50)	(5.04)	(5.72)	(5.72)	(6.17)	(5.78)	(5.97)
Leverage	−0.000909 ***	−0.00157 ***	−0.00143 ***	−0.00162 ***	−0.00165 ***	−0.00179 ***	−0.00192 ***	−0.00207 ***
	(−16.03)	(−22.40)	(−20.75)	(−21.94)	(−21.33)	(−22.25)	(−22.85)	(−23.96)
Dividend Yield	0.0600 ***	0.0441 ***	0.0642 ***	0.0331 ***	0.0429 ***	0.0352 ***	0.0635 ***	0.0724 ***
	(9.76)	(5.82)	(8.59)	(4.14)	(5.10)	(4.04)	(6.97)	(7.75)
Market To Book Value	−0.000359	−0.000469 *	−0.000397	−0.000332	−0.000162	−0.000646 *	−0.000534	−0.000795 **
	(−1.87)	(−1.98)	(−1.70)	(−1.33)	(−0.62)	(−2.37)	(−1.88)	(−2.72)
_cons	0.00135	0.00615 ***	0.00382 **	0.00718 ***	0.00618 ***	0.00878 ***	0.00792 ***	0.00970 ***
	(1.19)	(4.39)	(2.76)	(4.86)	(3.98)	(5.45)	(4.71)	(5.61)
N	60,805	60,805	60,805	60,805	60,805	60,805	60,805	60,805
adj. R-sq	0.091	0.049	0.067	0.047	0.056	0.047	0.047	0.044

The symbols *, **, and *** represent statistical significance levels of 10%, 5% and 1% respectively. Years and Sectors not Reported. Standard errors are displayed in the brackets.

Table 10. Robustness test. CEO duality, sentiment and stock market reaction over longer event-windows.

	CAR (−3, 3)	CAR (−4, 4)	CAR (−5, 5)	CAR (−6, 6)	CAR (−7, 7)	CAR (−8, 8)	CAR (−9, 9)	CAR (−10, 10)
$AR_{(t-1)}$	0.548 ***	0.445 ***	0.537 ***	0.457 ***	0.539 ***	0.505 ***	0.515 ***	0.496 ***
	(74.72)	(49.17)	(60.19)	(47.92)	(53.74)	(48.48)	(47.35)	(44.42)
CEO Duality	−0.00637 ***	−0.00735 ***	−0.00718 ***	−0.00722 ***	−0.00681 **	−0.00880 ***	−0.00832 ***	−0.00725 **
	(−3.94)	(−3.69)	(−3.65)	(−3.44)	(−3.08)	(−3.84)	(−3.47)	(−2.95)
Lenght	−0.00000175 *	−0.00000319 **	−0.00000239 *	−0.00000438 ***	−0.00000503 ***	−0.00000510 ***	−0.00000554 ***	−0.00000449 ***
	(−2.15)	(−3.17)	(−2.41)	(−4.14)	(−4.53)	(−4.41)	(−4.59)	(−3.63)
Negative Index	−0.225 ***	−0.362 ***	−0.311 ***	−0.312 ***	−0.371 ***	−0.347 ***	−0.330 ***	−0.346 ***
	(−4.91)	(−6.41)	(−5.58)	(−5.24)	(−5.93)	(−5.34)	(−4.87)	(−4.97)
Positive Index	0.129	0.18	0.262 *	0.295 *	0.212	0.0524	0.108	0.133
	(1.22)	(1.38)	(2.03)	(2.14)	(1.46)	(0.35)	(0.69)	(0.82)
Return On Equity	0.000194 ***	0.000252 ***	0.000283 ***	0.000345 ***	0.000358 ***	0.000416 ***	0.000406 ***	0.000425 ***
	(3.82)	(4.01)	(4.56)	(5.21)	(5.15)	(5.76)	(5.38)	(5.49)
Leverage	−0.000917 ***	−0.00157 ***	−0.00144 ***	−0.00162 ***	−0.00165 ***	−0.00181 ***	−0.00193 ***	−0.00207 ***
	(−16.11)	(−22.44)	(−20.77)	(−21.95)	(−21.28)	(−22.36)	(−22.93)	(−23.97)
Dividend Yield	0.0560 ***	0.0395 ***	0.0595 ***	0.0278 ***	0.0379 ***	0.0294 ***	0.0579 ***	0.0664 ***
	(9.07)	(5.18)	(7.92)	(3.46)	(4.49)	(3.35)	(6.33)	(7.07)
Market To Book Value	−0.000326	−0.000434	−0.000357	−0.000294	−0.000116	−0.000618 *	−0.000507	−0.000763 **
	(−1.70)	(−1.83)	(−1.53)	(−1.18)	(−0.44)	(−2.27)	(−1.78)	(−2.62)
_cons	0.00316 ***	0.00773 ***	0.00559 ***	0.00817 ***	0.00778 ***	0.00935 ***	0.00849 ***	0.00941 ***
	(4.52)	(8.97)	(6.58)	(9.00)	(8.15)	(9.43)	(8.20)	(8.85)
N	60,805	60,805	60,805	60,805	60,805	60,805	60,805	60,805
adj. R-sq	0.091	0.049	0.066	0.046	0.055	0.047	0.047	0.044

The symbols *, **, and *** represent statistical significance levels of 10%, 5% and 1% respectively. Years and Sectors not Reported. Standard errors are displayed in the brackets.

5. Concluding Remarks

The contribution of this paper relies on the exploration of the phenomenon of CEO duality through the lens of the mass media and their impact on the investor opinions' formation process. In order to answer the research question addressed, an analysis of the stock market reaction to newspapers articles that mention CEOs or Board Chair CEOs has been conducted, taking into account the content of the news as well. The analysis points out that, generally, CEO duality is not favourably perceived by investors, given the negative stock market reaction observed. Our paper contributes to the literature applying the perspective of investors' behaviour and media information dissemination to shed light on the ambiguous issue of CEO duality and the corroborating agency theory. Therefore, our results can be explained in terms of weaker protection sought by shareholders. In fact, when CEOs dominate the board with a dual role, it can interfere and undermine the shareholders protection. Moreover, our findings are relevant in showing that systematically quantifying language can improve our knowledge of asset price formation: newspapers play a relevant and significant role in shaping investors' opinions and their expectation formation process. This research has also potential implications for researchers testing trading strategies when suggesting the relevance of taking into account not only the content of the news but also the characteristics of the directors mentioned in the articles, such as CEO duality. Our results have management implications for firms striving to create market value. In this sense, changes in CEO duality should be incorporated into evaluations of the most appropriate governance structures for a certain firm. Moreover, it might be interesting to recognize the existence of a link between stock reaction and media coverage and its amplification effects, even if only in the short-term. Media exposure, in fact, may be a relevant corporate governance mechanism (Dyck and Zingales 2002). Results also have policy implications for the design of corporate governance mechanisms in a way that foster value creation and market participation by increasing investors' perceived protection. However, when it comes to performance and value creation, Misangyi and Acharya (2014) noticed that the effectiveness of CEO duality depends on how well it is combined with other mechanisms within the governance bundle.

For this reason, the study could be further developed exploring how the impact of media coverage changes according to companies' different economic and financial situations and firms' fundamentals. Moreover, following the methodology of Tang et al. (2019), we could study news co-occurrences and the link with abnormal retail investor attention, considering also the impact of news sentiment. A further analysis could also investigate a possible "waterfall" or "spill over" effect on stock prices associated with interlocking directorships of board members.

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