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The Board of Directors and Firm Performance: Empirical Evidence from Listed Companies — [Source link](#)

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The Board of Directors and Firm Performance: Empirical Evidence from Listed Companies

Purpose: This study seeks to reconcile some of the conflicting results in prior studies of the board structure/firm performance relationship, and to evaluate the effectiveness and applicability of agency theory in the specific context of Italian corporate governance practice.

Design/methodology/approach: This research applies a dynamic Generalized Method of Moments (GMM) methodology on a sample of Italian listed companies over the period 2003-2015. Proxies for corporate governance mechanisms are the board size, the level of board independence, ownership structure, shareholder agreements and CEO-Chairman leadership.

Findings: While directors elected by minority shareholders are not able to impact upon performance, independent directors do have a non-linear effect on performance. Board size has a positive effect on firm performance for lower levels of board size. Ownership structure *per se* and shareholder agreements do not affect firm performance.

Research Implications: This paper contributes to the literature on agency theory by reconciling some of the conflicting results inherent in the board structure-performance relationship. Firm performance is not necessarily improved by having a high number of independent directors on the board. Ownership structure and composition do not affect firm performance; therefore, greater monitoring provided by concentrated ownership does not necessarily lead to stronger firm performance.

Practical Implications: We suggest that Italian corporate governance law should improve the rules and effectiveness of minority directors by controlling whether they are able to impede the main shareholders to expropriate private benefits on the expenses of the minority. The legislator should not impose any restrictive regulations with regard to CEO-duality, as the influence of CEO-duality on performance may vary with respect to the unique characteristics of each company.

Originality/Value: The results enrich the understanding of the applicability of agency theory in listed companies, especially in Italy. Additionally, this paper provides a comprehensive synthesis of research evidence of agency theory studies.

Keywords: Corporate Governance, Board of Directors, Agency Theory, Listed Companies, Performance, Italy

Introduction

The active role in company affairs that boards of directors play (Judge and Reinhardt, 1997; Coles, McWilliams, and Nilanjan, 2001) can provide a platform (Aluchna, 2010) and an essential mechanism for mitigating the agency problem that arises between shareholders and management (Jensen and Meckling, 1976; Monks and Minow, 2004). Given that boards are responsible for the direction and leadership of their enterprises, it seems reasonable to conclude that directors actively influence firm performance (Dalton, Daily, Ellestrand and Johnson, 1999; Stiles and Taylor, 2001), and that they are therefore responsible (on behalf of shareholders) for deciding upon the types of board structure that may enable them to maximize shareholders' wealth (O'Connell and Cramer, 2009; Knauer et al. 2018).

For many years, the major theoretical context of corporate governance research has been agency theory (Seal, 2006), and the method for evaluating the relationship between board features and firm performance has typically been Return On Assets. Furthermore, the majority of agency theory studies are based on quantitative methodologies, and analyse Anglo-American listed companies (Yermak, 1996; Dalton, Daily, Ellestrand, and Johnson, 1998; Raheja, 2005); emerging and developing markets (Ehikioya, 2009), and selected European countries, such as Spain, Germany, France (De Andres and Vallelado, 2008; Donadelli, Fasan and Magnanelli, 2014; Bottenberg, Tuschke, and Flickinger, 2017). Little attention is paid to the case of Italy, despite its place as a large European economy with a corporate governance model that presents some features in common with two archetypes in the existing literature: the Anglo-Saxon and German-Japanese models. However, the Italian model has some distinctive characteristics which differentiate it from the two main corporate governance models. These include: ownership concentration; the limited role of financial markets; and the prevalence of family-owned listed companies. Therefore, it is important to understand whether and how corporate governance mechanisms

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3 affect the performance of Italian listed companies, as these mechanisms are the main drivers of corporate
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5 governance best practice in Europe (Melis and Zattoni, 2017).
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8 Additionally, prior research into the performance of Italian companies (Melis, 2000; D'Onza,
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10 Greco and Ferramosca, 2014; Allegrini and Greco, 2011; Zona, 2014) has identified some conflicting
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12 results regarding the impact on firm performance of a range of board characteristics, including the board
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14 structure, the role of independent directors, the CEO leadership and ownership concentration,. For
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16 instance, Di Pietra, Grambovas, Raonic and Riccaboni (2008) found no relationship between the board
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18 size and performance; whereas Romano and Guerrini (2014) found a positive relationship, especially in
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20 the water utility sector. Research into CEO duality (whether the CEO simultaneously serves as board
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22 chairman) also appears to generate ambiguous results in the Italian context. In particular, CEO duality
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24 has negative effects (Allegrini and Greco, 2011) or positive effects (Zona, 2014) or no significant effects
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26 on performance (Fratini and Tettamanzi, 2015). As a consequence, it is still unclear if and how the
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28 assumptions of agency theory are verified in the Italian context. Therefore, this research seeks to
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30 reconcile some of the conflicting findings in prior studies of the board structure/firm performance
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32 relationship, and to evaluate the effectiveness and applicability of agency theory in the specific context
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34 of Italian corporate governance practice. In particular, this study measures and quantifies the relationship
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36 between the board of directors' structure and the performance of Italian firms listed on the STAR segment
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38 of the Italian Stock Exchange over the period 2003-2015. We take into account those aspects which are
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40 considered to be fundamental to agency theory (Jensen, 1993): board size, independent directors,
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42 CEO/CM duality (when the CEO acts simultaneously as Chairman) and ownership. This research
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44 resolves the contrasting results of previous studies by finding a non-linear relationship between
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46 independent directors and firm performance; a positive effect of board size on firm performance only for
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48 lower number of directors; and a lack of influence of directors appointed by minority shareholders on
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50 performance.
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3 The paper proceeds as follows: theory and hypotheses development are explained in section 2.
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5 Section 3 addresses the Italian context and the research design. The core findings from the empirical
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7 study are outlined in section 4. Section 5 discusses our conclusions.
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11 **Theory and Hypothesis Development**

12 *The impact of board size on firm performance*

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17 The board of directors is considered to be one of the primary internal corporate governance
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19 mechanisms (Brennan, 2006; Aguilera, Desender, Bednar, and Lee 2015). A well-established board with
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21 an optimum number of directors should monitor management effectively (Bhimani, 2009), and drive
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23 value enhancement for shareholders (Brennan, 2006). The board size, therefore, is a key factor that
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25 influences firm performance (Kumar and Singh, 2013). The board of directors, acting on behalf of
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27 shareholders, plays a central role as an internal mechanism and is viewed as a major decision-making
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29 body within companies. Different and opposing theoretical evidence is presented to support the efficacy
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31 of both large and small board dimensions on firm performance. A minor stream of research advocates
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33 that larger board size could improve the efficacy of the decision-making process due to information
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35 sharing (Lehn, Patro and Zhao, 2009). A larger board can take advantage of greater potential variety,
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37 with directors being appointed from diverse professional fields, with different expertise, and different
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39 skills (Pearce and Zahra, 1992). Against this, supporters of the mainstream of agency theory (Jensen,
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41 1993; Eisenberg, Sundgren and Well, 1998; de Andres et al., 2005) suggest that a larger board is less
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43 effective in enhancing corporate performance, because new ideas and opinions are less likely to be
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45 expressed in a large pool of directors, and the monitoring process is likely to be less effective (Ahmed,
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47 Hossain and Adams, 2006; Dalton et al., 1999). Larger boards increase problems of communication and
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49 coordination (Jensen, 1993; Bonn, Yoshikawa and Phan 2004; Cheng, 2008) and higher agency costs
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51 (Lipton and Lorsh, 1992; Cheng, 2008). Furthermore, larger boards could face problems of greater levels
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3 of conflict (Goodstein, Gautam and Boeker, 1994) and lower group cohesion (Evans and Dion, 1991).
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5 Poor coordination among directors leads to slow decision making and delays in information transfer, as
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7 well as causing inefficiencies in firms with larger board size (Goodstein et al., 1994). In fact, several
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9 empirical studies confirm that when board size increases, firm performance decreases progressively
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11 (Mark and Kusnadi, 2005; O'Connell and Cramer, 2009). For instance, Conyon and Peck (1998) find a
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13 negative association between board size and return on equity for a sample of European companies.
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18 Table 1 outlines empirical research conducted at an international level. We, therefore, define
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20 Hypothesis 1 as:

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22 *Hypothesis 1: There is a negative relationship between the board size and firm performance*
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The impact of independent directors on firm performance

While it is clear that all directors whether executive (those who hold positions within the enterprise) and nonexecutive (those who are appointed from outside) should be treated equally in terms of their board responsibilities, a crucial role of the latter is to ensure that the interests of all shareholders are protected. A further distinction may be made between those who act as nonexecutive directors (NEDs) on behalf of specific investors and shareholder groups and this who might be defined as independent directors and have no affiliation with the firm except for their directorship (Clifford and Evans, 1997). The role of both NEDs and the independent directors is to monitor management decisions and activities by corporate boards and to ensure that the executive is held to account. (Fama, 1980) This implies that they are highly responsive to investors, because they have to ensure that management decisions are made in the best interests of shareholders. Independent directors are reliable instruments of their companies, in terms of monitoring the management while remaining independent of the firm and its CEO (Daily et al. 1996). This role has been seen as a vital element in corporate governance codes and guidance since the earliest publications, and the role and duties of independent members of a board are clearly defined in corporate governance codes from all parts of the world and for all sizes of enterprise¹.

Only a fraction of empirical agency theory research finds a negative relationship (Khumar and Singh, 2012) or no relationship (Bhagat and Blac, 2002) between the proportion of independent directors and firm performance. On the other hand, the majority of empirical (Brickley, Coles and Rory 1994; Anderson, Manzi and Reeb, 2004) and theoretical (Beasley, 1996) agency theory focused research suggests that independent directors have a positive effect on firm performance. A higher proportion of independent directors on boards should result in a more effective monitoring role and limit managerial opportunism. This should lead to increased shareholder benefits (Byrd and Hickman, 1992) and an

¹ For example, Cadbury (UK), 1992; Comitato per la Corporate Governance (Italy), 2015; Hawkamah (UAE), 2011.

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3 enhancement to the economic and financial performance of the firm (Waldo, 1985; Vancil, 1987)
4 measured by return on assets, profit margins and dividend yields (Brown and Caylor, 2004). Consistent
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6 with this research, Rosenstein and Wyatt (1990) suggest that shareholder wealth is influenced by the
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8 proportion of outside directors; their study document a positive stock price reaction at the announcement
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10 of the appointment of an additional outside director. This means that the monitoring and controlling role
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12 on management provided by independent directors is fundamental in order to reduce the likelihood of
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14 financial statement fraud (Beasley, 1996), and it is also likely to benefit shareholders (Byrd and Hickman,
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16 1992). For the purposes of this study regressions were only practicable on the composition of the
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18 management board.

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21 Table 2 shows prior international literature that explores the relationship between independent
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23 directors and corporate performance.

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26 Our second hypothesis is therefore as follows:

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29 *Hypothesis 2: There is a positive relationship between the proportion of independent directors*
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31 *and firm performance.*

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41 42 43 44 45 46 ***The impact of board size with the moderating effect of independent directors on firm performance***

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49 The impact of board size on firm performance can be moderated by the percentage of independent
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51 directors sitting on the board (Dalton et al., 1998). Based on the mainstream of agency theory, greater
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53 board size means more problems for communication, coordination, and decision-making (Eisenberg et
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55 al., 1998 and Beiner, Drobetz, Schmid, and Zimmermann, 2006). Similarly, independent directors with

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3 an excessively high number of other positions can have a negative impact on firm performance, given
4 their commitments in other companies (Ibrahim and Samad, 2006), their lack of time (Masulis and Mobbs,
5 2009) and information asymmetry (Baysinger and Hoskisson, 1990). Previous research (e.g., Yermack,
6 1996; Eisenberg et al., 1998) proposes that large boards with a high number of independent directors do
7 not generate positive firm performance because the board size in conjunction with a high proportion of
8 independent directors worsens the free riding problem² (Hermalin and Weisbach, 2003) among directors
9 relating to the monitoring of management (Lasfer, 2002), resulting in the board taking decisions that
10 negatively affect firm performance. Accordingly, independent directors can improve effective board
11 monitoring (Tihanyi, Johnson, Hoskisson and Hitt, 2003), because they can be valuable in aligning
12 shareholders and managers' interests⁶. By doing so, independent directors ensure that managers
13 implement executive decisions that lead to performance enhancement (Musteen, Datta and Hermann,
14 2009). Some studies (Agrawal and Knoeber 1996; Guest, 2009) suggest that an excessive number of
15 independent directors negatively affects board size and firm performance, and that smaller boards with a
16 higher proportion of independent directors are more effective than larger boards with a lower proportion
17 of independents (Del Guercio et al., 2003). Therefore, independent directors can have a moderating effect
18 on the impact of the board size on firms' performance (Dalton et al., 1998). Therefore, we propose that:

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41 *Hypothesis 3: The proportion of independent directors moderates the negative relationship*
42 *between board size and firm performance.*
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48 ***The impact of CEO/CM duality on firm performance***

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50 CEO duality (where the CEO simultaneously serves as board chairman) has become a topic of
51 great interest and a focus for analysis (Lorsch and MacIver, 1989; Brickley et al., 1994; Mallin, 2010)
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56 ² Free-riding occurs when directors do not properly monitor the management of the firm; this typically occurs when the board becomes too
57 large (Yermack, 1996)
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3 within an international debate on the impact of the separation of ownership and control. Interest in duality
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5 has emerged primarily because it is assumed to have significant implications for organizational
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7 performance and corporate governance (Baliga et al., 1996). Two main opposing schools highlight the
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9 benefits (Lorsch and MacIver, 1989) and the costs (Millstein and Katsh, 1992) related to CEO/CM
10
11 duality. Supporters of CEO/CM duality consider the benefits to outweigh the potential disadvantages.
12
13 For example, the CEO and the Chair might have conflicts between them, leading to confusion among
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15 employees (Goodwin and Seow, 2000), and damage firm performance (Li and Li, 2009). Additionally,
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17 a dual leadership structure can provide cost savings by eliminating information transferring and
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19 processing costs (Yang and Zhao, 2013; Goodwin and Seow, 2000). CEO/CM duality might also
20
21 facilitate a more timely and effective decision-making process (Peng, Sun, Pinkham and Chen, 2009), as
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23 the chairman does not have to mediate the points of view of the independent directors and the CEO. On
24
25 the other hand, with respect to the CEO duality costs, the agency theory literature suggests that when one
26
27 person is in charge of both tasks, managerial dominance is deeply fostered because *«that individual is*
28
29 *more aligned with management than with shareholders and is likely to act to protect his or her job and*
30
31 *enhance personal well-being»* (Mallette and Fowler, 1992, p. 1016). As a consequence, merging the role
32
33 of chairman and CEO means that the capacity to monitor and oversee management is decreased as a
34
35 result of their lack of independence (Lorsch and MacIver, 1989; Fazel and Louie, 1990). Additionally,
36
37 given the fact that CEOs with specific expertise could negatively affect firm performance (Serra, Trés
38
39 and Ferreira, 2016), CEO non-duality may lead to a variety of skills and expertise between a CEO and a
40
41 chairman. In a similar vein, Baliga et al. (1996) and Dalton et al. (1998) suggest that CEO duality
42
43 seriously damages the independence of the board. Indeed, when only one person leads a company, the
44
45 role of independent directors becomes ‘hypothetical’ (Rechner and Dalton, 1989; Daynton, 1984), i.e. in
46
47 the case of the dual leadership structure the board is likely to function as a “rubber stamp” given the
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49 total control of the CEO (Rechner, 1989).
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3 Many empirical and agency-related studies (Palmon and Wald, 2002; Pi and Timme, 1993; Rechner and
4 Dalton, 1991) find a negative relationship between CEO/CM duality and firm performance. The key
5 findings of existing empirical studies are reported in Table 3. In line with the core findings from prior
6 international literature, we predict that:
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13 *Hypothesis 4: Firm performance exhibits a negative association under a leadership structure that*
14 *combines the roles of the CEO and the chairman of the board.*
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The Italian Context, Data, Variables, Models and Methods

The objective of this research is to measure the relationship between firm performance and a number of characteristics of boards, including board size, independent directors, the CEO/CM duality and ownership composition for Italian companies listed on the STAR segment of the Italian Stock Exchange over the period 2003-2015.

The Italian Context

The corporate governance system in Italy has unique features that make it an interesting case to analyse. Firstly, the Italian governance structure is characterized by the so-called traditional model or dualistic ‘horizontal’ model (Fiori, 2003; Alvaro, Ciccaglioni and Sicialiano, 2013; Mallin et al., 2015; Melis and Zattoni, 2017), i.e. a shareholders’ assembly appoints both the board of directors and the supervisory board. The role of the supervisory board is to ensure that laws are observed, and has partially remained non-political, i.e. not involved in strategic issues (Melis, 2000). Secondly, the Italian stock exchange is mainly dominated by medium enterprises with concentrated ownership (Moro Visconti, 2001; Bianchi and Enriques, 2005). Thirdly, the Italian system is characterised by the limited role of the financial market; indeed Melis (2000) argues that bank debts are the main sources for corporate funding. Fourthly, in the family businesses that constitute 60% of Italian listed companies (Aidaf, 2017), the main shareholder is the CEO and/or the Chairman, increasing the risk that the largest shareholder may misuse the company’s resources at the expense of the minority and/or the firm (Atanason, Black and Ciccotello, 2011). As result, the Italian listed companies face not only the principal-agent issue (Fama and Jensen, 1983) but also the principal-principal problem (Melis, 2000), i.e. conflicts between blockholders and minority shareholders (D’Onza et al., 2014). For this reason, in 2005 the Italian legislator (Law 262/2005 - The Protection of Savings) extended the slate voting for boards of directors to the Italian Listed companies in order to guarantee that minority shareholders have at least one director elected to the board. The Italian corporate governance legislation (including soft and hard laws) has experienced substantial

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3 changes since 1995. Table 4 shows and explains the milestones of the Italian corporate governance
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5 legislation from the first guideline (1995) to the latest regulation (2016).
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15 **Data**

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18 To test our hypotheses, we use several data sources. Firstly, we hand collected data regarding
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20 corporate governance by analysing each company's corporate governance reports from 2003-2015.
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22 Secondly, we hand collected ownership data from the CONSOB database³. In case of missing data in
23
24 either corporate governance reports or the CONSOB database, we analysed another official source called
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26 'Il Calepino dell'Azionista' issued by MedioBanca⁴. Thirdly, in order to obtain financial data, we used
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28 the database *DataStream* by Thomson Reuters.
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32 We use a sample of Italian companies listed on the STAR segment in the Italian Main Market
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34 (MTA), Italian Stock Exchange over the period 2003-2015. The STAR segment is dedicated to medium
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36 companies that voluntarily comply with requirements of excellence in terms of liquidity, information
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38 transparency and high quality of corporate governance. Given the emphasis on liquidity, information
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40 transparency and corporate governance, we considered 73 companies listed on the STAR segment in
41
42 2015. We eliminated three non-Italian companies (two from Luxemburg and one from Switzerland).
43
44 Consistent with Barnhart and Rosenstein (1998) and O'Connell and Cramer (2010), we excluded
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46 companies from the financial services sector (five in total), because they are subject to a special
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55 ³ The CONSOB database is available at http://www.consob.it/main/en/issuers/listed_companies/advanced_search/index.html

56 ⁴ 'Il Calepino dell'Azionista' provides brief reports on all Italian Listed Companies; it is available at
57 <http://www.mbres.it/en/publications/calepino-dellazionista>.
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3 regulatory environment. The final population is 65 Italian companies listed on the STAR segment over
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5 13 years with 731 observations in total.
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Corporate Governance

Variables measurement

Dependent Variable. Consistent with prior studies (Bennedsen, Kongsted, Hans and Nielsen, 2004; Dey, Engel and Liu, 2011; Donadelli et al., 2014), the dependent variable is the Return on Assets (ROA), as measured by income before depreciation divided by fiscal year-end total assets (Hsu, 2010; Wintoki, Linck and Netter, 2012).

Independent Variables. The three main explanatory variables are: board size, independent directors and CEO/CM duality. ‘Board Size’⁵ is measured as the total number of all directors. ‘Independent Directors’ is the percentage of independent/nonexecutive directors in management boards⁶. ‘CEO/CM Duality’ is a binary variable which takes a value of one if it is found that the CEO also serves as the chairman (i.e. CEO/CM duality), and a value of zero otherwise (Zajac and Westphal, 1995; Conyon and Peck, 1998).

Control Variables. A number of control variables have been included in the study in order to remove the problem of endogeneity. These variables have been used in many prior studies, and are correlated with firm performance (Hermalin and Weisbach, 1991; Vafeas and Theodorou, 1998; Bonn et al., 2004; Boone, Field, Karpoff and Raheja, 2007; Yammeesri and Herath, 2010). In particular, we consider the *number of directors appointed by the minority shareholders*; the *number of roles* that directors have in other companies; *Firm size* measured as the natural logarithm of the firm’s total assets (Eisenberg et al., 1998); *Pretax income*; *Firm age* as the number of years since the company foundation; *Pre crisis period* measured as a dummy variable that takes the value one for the years before 2008; otherwise zero; *Debt* as the sum of long and short term debt; *market to book value* as market value of equity divided by the book value of equity. In line with ownership features of the Italian listed companies (Bianchi and Enriques, 2005), other variables are collected, namely *CEO and shareholder dummy* which is a binary

⁵ We also use a dummy variable as a proxy for board size; the dummy variable takes the value of one when the board has at least 7 members, and zero otherwise.

⁶ We do not measure the number of members of the supervisory board, as there is no variation between companies during the period analysis. The number of independent directors sitting in the supervisory board is always three.

variable that takes a value of one if the CEO is also a shareholder, otherwise zero (Petrou and Procopiou, 2016); the percentage of *shareholder agreements* over the total firms' property; *ownership concentration* (the percentage of shares held by the largest shareholder of the company); and *ownership composition*, which is measured as the percentage of shares held by institutional investors, the board, management, governments, the company itself (own shares), and banks. Table 5 shows variable definitions and sources.

[INSERT TABLE 5 HERE]

Models and Methodology

We develop several models to examine the relationship between corporate governance features and firm performance, and validate our hypotheses.

To test Hypothesis 1, we develop the following model:

$$\text{Firm Performance} = \alpha_0 + \alpha_1 \text{Board size}_{it} + \alpha_2 \text{Board size}_{it}^2 + (\alpha_3 + \gamma_1 \text{Board size}_{it}) \text{Precrisis} + \varphi \text{Control variables}_{it} + \varepsilon_{it} \quad (1)$$

where ε_{it} is the error term.

To test Hypothesis 2, we develop the following model:

$$\text{Firm Performance} = \alpha_0 + \alpha_1 \text{Independent Directors}_{it} + \alpha_2 \text{Independent Directors}_{it}^2 + (\alpha_3 + \gamma_1 \text{Independent Directors}_{it}) \text{Precrisis} + \varphi \text{Control variables}_{it} + \varepsilon_{it} \quad (2)$$

To test Hypothesis 3, we consider the interaction of the board size with the percentage of independent directors in the following model:

$$\text{Firm Performance} = \alpha_0 + (\alpha_1 + \gamma_1 \text{ Independent Directors}_{it})\text{Board size}_{it} + \varphi \text{ Control variables}_{it} + \varepsilon_{it} \quad (3)$$

To test Hypothesis 4,

$$\text{Firm Performance} = \alpha_0 + \alpha_1 \text{ CEO duality}_{it} + (\alpha_2 + \gamma \text{ CEO duality}_{it})\text{Precrisis} + \varphi \text{ Control variables}_{it} + \varepsilon_{it} \quad (4)$$

To validate the previous hypotheses, and in line with previous agency theory studies (e.g. Jensen, 1993), we substitute the board size variable with a board size dummy variable, that takes the value of one when board has at least seven members (otherwise zero). Therefore, we develop the following model:

$$\text{Firm Performance} = \alpha_0 + (\alpha_1 + \gamma_1 \text{ Independent Directors}_{it})\text{Board size_Dummy}_{it} + \varphi \text{ Control variables}_{it} + \varepsilon_{it} \quad (5)$$

Given concerns about Italian ownership composition (Melis, 2000; D'Onza et al., 2014), we run models (1)-(5) a second time, where the main dependent and independent variables remain unchanged and where the ownership concentration – which is a control variable - is substituted with the ownership composition (Institutional Investors, Board ownership, Management, Government, Own shares, Bank), CEO_shareholder dummy and shareholder agreements, as part of the control variables. By doing that, we then develop models (6), (7), (8) and (9).

We estimate the models using a panel data methodology and the Generalized Method of Moments (GMM), specifically the system GMM estimator, by using Stata14. The advantages of using GMM are that it deals with endogeneity (Wintoki, 2007), unobserved heterogeneity and cases where explanatory variables are not strictly exogenous⁸. Additionally, this approach includes lagged performance as an explanatory variable and the other lagged variables (by no more than two periods) as instruments that control for both dynamic and simultaneous endogeneity. Consistent with prior studies (Glen, Lee and

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3 Singh, 2001; Wintoki, 2012), two lags are sufficient to capture the persistence of performance and to
4 ensure dynamic completeness (Wintoki, 2012). Therefore, we include two lags in our GMM model.
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7 Finally, after running the models, we conduct some specification tests. We run a Hansen test that checks
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9 for the lack of correlation between the instruments and the random disturbance. In order to assess the
10 validity of the instrument variables and *the success of the instrumentation process in purging the*
11 *estimates of second order serial correlation* (Guest, 2009, p. 395), the Sargan test and the Arellano and
12 Bond (1991) test for second order serial correlation are estimated respectively. The diagnostic for the
13 instruments are acceptable, as shown in Table 5 and 6. Both Sargan and Arellano and Bond test p-values
14 are insignificant for all models, i.e. our results are not influenced by unobserved firms' effects,
15 simultaneous endogeneity, or dynamic endogeneity. Finally, consistent with prior research (Guest, 2009),
16 all the models are run an additional time where all variables are winsorised at the 1st and 99th percentile
17 to remove some possible effects of outliers.
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33 **Results**

34 *Summary statistics*

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37 Table 6 provides the descriptive statistics and the correlation matrix of the variables. In particular,
38 the mean (median) of ROA is 0.03 (0.09). Board size in Italian listed companies ranges from five to
39 fifteen directors, with 9.02 (2.49) being the mean (median). The mean board size is below the figure of
40 11.67 reported by de Andres et al. (2005) for 10 OECD countries, and also smaller than the fourteen
41 reported by Allegrini and Bianchi Martini (2006) for all Italian listed companies. The board size of the
42 present sample appears to be generally larger than that of US companies (Linck et al., 2008), which is
43 7.5, and also the 8.07 reported by Vafeas and Theodorou (1998) for the UK. Furthermore, 46.5% of
44 companies have CEO/CM duality, meaning that almost half of the firms do not comply with the code of
45 corporate governance recommendations (i.e. CEO/CM non-duality). This finding also suggests that
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3 practice is not consistent with an agency theory approach which encourages CEO/CM non-duality
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5 (Rechner and Dalton, 1989/1991; Daily and Dalton, 1994a). The average number of independent
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7 directors sitting on the boards is 3.28 and they represent 36% of the boards, which is similar to the 39%
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9 reported by Vafeas and Theodorou (1998) for the UK, even though in the last decade the proportion of
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11 independents in the UK has risen considerably (Pye, 2000), reaching 50% of all board members (De
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13 Andres et al., 2005). The number of independent directors is rather low; this has also been criticised by
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15 the Association of Italian Joint Stock Companies (Assonime, 2018). The mean number of directors
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17 appointed by the minority shareholders through the slate voting is 0.23 with a range from 0 to 3.
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33 ***Regression results***

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35 Table 7 shows the findings from the estimation of Models 1-4. Column 1 refers to Model 1 that
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37 tests Hypothesis 1; Column 2 refers to Model 2 and tests Hypothesis 2; Column 3 refers to Model 3 that
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39 combines Models 1 and 2; Column 4 refers to Model 3 that tests Hypothesis 3; Column 5 refers to Model
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41 4 that tests Hypothesis 4.
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Column 1 of Table 7 shows that the **board size** has a positive effect on firm performance for lower levels of board size (3.909, $p < 0.01$) and a negative effect on firm performance for higher levels of board size (-0.019, $p < 0.01$). This result supports Hypothesis 1. This means that at lower levels of board size, directors are more likely to co-operate efficiently; however, when the board size increases, the costs related to directors consequentially rise, and firm performance declines. Additionally, we find that the higher the commitments of directors in other companies (board roles), the lower the firm performance, as confirmed in the columns 1, 2, 3, 4 and 5 of Table 7. This suggests that if directors spend a lot of time and effort in other firms, they are less likely to take the right decisions to maximise performance. Consequently, directors should limit their commitments in other companies in order to concentrate on corporate decisions in a given firm. In this context, an adequate board size could improve the efficacy of the decision-making process due to information sharing (Lehn et al., 2009), allowing the board to take the right decisions that maximise firm performance. In the volatile context in which STAR companies operate, a larger board size is not justified, because directors have to spend significant time and effort on decisions that may affect firm performance. These findings are consistent with the Italian (soft and hard) laws of Corporate Governance that recommend an adequate number of directors.

In the light of the above, our results seem to confirm that a large board of directors could lead to:

- problems of *coordination and communication*, because it is difficult to arrange board meetings, reach consensus, causing slow transfer of information and a less-efficient decision-making process (Judge and Zeithamal, 1992; Jensen, 1993; Bonn et al., 2004; Cheng, 2008),
- problems in terms of *board cohesiveness*, because directors may be less likely to share a common goal and to communicate with each other (Evans and Dion, 1991; Lipton and Lorsch, 1992), causing greater levels of conflict (Goodstein et al., 1994);

- *free rider problems* because the cost to any individual board member of not exercising diligence falls in proportion to board size (Lipton and Lorsch, 1992; Guest, 2009);
- greater *agency costs*, because if board size increases beyond a certain number, disadvantages greatly outweigh the initial advantages of having more directors to draw on, causing a lower level of corporate performance (Lipton and Lorsch, 1992; Jensen, 1993).

Column 2 of Table 7 also shows that the percentage of **independent** directors has a positive effect on firms' performance (0.771 and $p < 0.05$). Thus, the results support Hypothesis 2. More interestingly, we find that the percentage of independent directors has a positive effect on firm performance (0.771 and $p < 0.05$) for lower levels of independent directors and a negative effect on firms' performance (-0.059 and $p < 0.05$) for higher levels of independent directors. **We find the same results by combining Model 1 and Model 2 (as shown in Column 3).** Our findings are in line with the prescription of the Italian Corporate Governance laws that recommends *an adequate number of independent directors* sitting on the board. Additionally, these findings are consistent with those displayed in prior research (Agrawal and Knoeber, 1996; Bhagat and Black, 2002; Bhagat and Bolton, 2008). Our negative result could be explained by the fact that independent directors' compliance with Italian hard and soft laws of Corporate Governance has meant increased costs which have had a negative impact on firm performance.

Another possible reason for the negative impact of a higher number of independent directors on firm performance could be explained by the fact that they might not be so effective in their role because CEOs may employ several tactics to neutralise the power of independent directors (Peng, 2004). For instance, CEOs – if part of the majority - could appoint directors with experience on other passive boards and exclude those with experience on more active boards (Zajac and Westphal, 1996). CEOs may also appoint directors who are from strategically irrelevant backgrounds who do not have the knowledge base to challenge the CEO's power and to effectively take part in strategic decision making (Carpenter and Westphal, 2001). Alternatively, CEOs may appoint independent directors who are more sympathetic to

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3 the Chief Executive (Zajac and Westphal, 1996). So, once again, it could be reasonable to note that the
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5 potential lack of independence of outside directors could lead to a worsening of performance.
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7 Additionally, we find that the effects of minority directors (who are all independents) on performance is
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9 insignificant; this means that their appointments have no impact on firms' performance, probably due to
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11 the lack of power they have. Even though independent directors should play a crucial role in effective
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13 governance of the firm, they may not be able to fulfil their duties effectively and to maximize firm
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15 performance. Independent directors could thus affect firm performance in a negative manner; they could
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17 make decisions that do not maximize firm performance in order to avoid hindering controlling
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19 shareholders' interests. Furthermore, we ran another test to verify the existence of a U-shaped
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21 relationship between board size and proportion of independent directors (t-value = 2.37; $p < 0.01$), as
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23 shown in Figure 1. We found a non-linear relationship between the level of independent directors and
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25 the board size. Particularly, board size first decreases with the proportion of independent directors at a
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27 decreasing rate to reach a minimum, after which board size increases at an increasing rate as the
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29 proportion of independent directors continues to rise.
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47 Column 4 of Table 7 shows that the moderating effect of independent directors in the board size-firm
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49 performance relationship is negative and significant (-0.959, $p < 0.01$). Our result supports Hypothesis 3.
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51 This means that increasing the proportion of independent directors relative to board size appears to
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53 increase the likelihood that firms' performance will worsen. Presumably, directors, having additional
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55 roles in other companies, have less time to commit to a given company. This is confirmed by the negative
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3 and significant effect of the roles of the board on firms' performance. Furthermore, the negative impact
4 of the interaction (between board size and independent directors) on firms' performance stresses the
5 importance of having a balanced board composition. As shown by Figure 2 (following Albers, 2012;
6 Kostyshak, 2015), we found an inverted-U shaped relationship between firm performance and the
7 moderating effects of independent directors on the board size. This confirms that the proportion of
8 independent directors moderates the inverted U-shaped relationship between the board size and firm
9 performance. In other words, firm performance increases with the interaction between board size and
10 independent directors at a decreasing rate to reach a maximum, after which firm performance decreases.
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24 [INSERT FIGURE 2 HERE]

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27 Additionally, in line with some previous agency theory research (Jensen 1993), it has been argued
28 that **board size** should not exceed seven directors. We therefore introduce a dummy variable to represent
29 board size: Dummy_7 takes the value of 1 when the board size is more than 7, otherwise 0. Column 6 of
30 Table 7 shows that these findings are also supported when the dummy variable of board size (Dummy_7)
31 is used as an independent. Particularly, the effects of board size and independent directors, and their
32 interaction on firms' performance, are supported when the board is composed of 7 or more directors.
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41 Columns 5 of Table 7 show that there are no significant effects of CEO/CM duality on firms'
42 performance⁷. This result does not support Hypothesis 4. Consistent with Coles and Hesterly (2000), and
43 Krause, Semadeni and Cannella (2014), CEO/CM duality and CEO/CM non-duality do not differ in their
44 effect on firm performance. This suggests that CEO/CM duality is a more complex issue than the simple
45 splitting of roles. The duality is not a random phenomenon (Kang and Zardkoohi, 2005: 786), because it
46 depends on different and not easily measurable factors, such as the presence of powerful CEOs who over-
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56 ⁷ We also find a lack of effects on firms' performance when the Chairman is an executive director, or when a an executive director (other
57 than a CEO, like a CFO) acts as a Chairman. These results are available on request.
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3 ride board members, CEO personality, his/her beliefs, values, priorities, personal characteristics and
4 principles. Furthermore, the CEO/CM duality may also depend on other factors which in part recede
5 from agency approach, such as a solution to environmental resource scarcity, complexity and dynamism,
6 and conformity to institutional pressures. Our results confirm that there is no single optimal leadership
7 structure, as both duality and separation perspectives have related costs and benefits (Brickley et al.,
8 1997). The lack of significance may be due to the balancing effects between costs and benefits of
9 CEO/CM duality. The potential monitoring benefits of non-duality imply the separation of management
10 and control. The potential costs of non-duality relate to information asymmetry, inconsistent decisions,
11 and extra remuneration in maintaining two directors. Thus, it confirms that it may be overly simplistic to
12 argue that CEO/CM duality is uniformly good or bad for firm performance. Even though CEO/CM
13 duality may indeed reduce board independence (Rhoades et al., 2001), this does not necessarily mean
14 that the firms with CEO/CM duality will perform worse than CEO/CM non-duality companies. On the
15 other hand, firms with CEO/CM duality may benefit from having strong and consistent leadership at the
16 top, and may minimize some costs of conflicts between the CEO and the board. CEO/CM duality may
17 provide the firm with strong leadership and consistent vision fundamental for firm success.

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38 Given the particular ownership composition of Italian listed companies, we ran further analysis
39 on ownership composition (Granado-Peiró and López-Gracia, 2016). In particular, we ran models 1-5 a
40 second time while substituting the shareholder concentration variable with six shareholder composition
41 variables (including Institutional Investors, Board ownership, Management, Government, Own shares
42 and Bank), CEO_shareholder dummy and the percentage of shareholder agreements. Table 8 shows that
43 there is no relationship between ownership composition and firm performance, even in the presence of
44 shareholder agreements.

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3 Some research points out that results may be driven by industry factors (Cho et al., 2014) and
4 years of analysis. We therefore control for industry and year by introducing dummy variables and we
5 find that the results confirm our previous findings (results are available from the authors on request).
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7 Additionally, we introduce a post crisis dummy that has insignificant effects on firm performance for all
8 models. Finally, in order to minimise the effects of outliers, we additionally ran all the models a second
9 time where all variables are winsorised at the 1st and 99th percentile (Guest, 2009); all results are
10 confirmed, and are available on request.
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21 **Conclusions and Implications**

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23 This research studies the effects of the main corporate governance characteristics (board size, the
24 independence of the board and CEO/CM duality) on firm performance among Italian listed companies
25 by adopting an agency theory approach. We use a sample of Italian listed companies that adopt the best
26 corporate governance practices: those firms listed in the STAR segment over the period from 2003 to
27 2015. This research uncovers a number of interesting results that have implications for both scholars and
28 practitioners with an interest in corporate governance issues.
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37 This research contributes to the understanding of the Italian corporate governance where agency
38 theory assumptions need to be ‘relaxed’ and adapted to this interesting context. Particularly, this paper
39 contributes to the literature on agency theory and listed companies (Di Pietra et al. 2008; D’Onza et al.,
40 2014) by reconciling some of the conflicting results and explaining some new Italian corporate
41 governance insights. Our findings also help to cast light on some of the conflicting results in prior
42 research (Melis, 2000; Allegrini and Greco, 2011) inherent in the board structure-performance relation.
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51 First, we find that board size has a positive effect on firm performance for lower levels of board
52 size, and negative effects on performance for higher levels of board size. This finding highlights that the
53 board of directors should be of an adequate size – but not too large, considering that a largers boardroom
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3 does not necessarily result in positive performance. This may be due to the fact that the higher the number
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5 of directors on a board, the higher the likelihood that they have other external commitments in other
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7 companies. We find that the higher the number of roles held by directors, the lower the firm performance.
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10 Therefore, our results highlight that there is no ideal agency-theory archetype model of corporate
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12 governance (Yoshikawa and Rasheed, 2009) in Italy. In particular, this study emphasises that when
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14 deciding upon board size, shareholders (who appoint directors) should take into consideration that the
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16 higher the number of directors, the higher the likelihood of them having other external commitments,
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18 and hence the higher the possibility that their presence on the board may negatively affect firm
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20 performance.
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24 Second, we find that the board of directors, despite the agency theory assumptions, does not
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26 necessarily benefit from a high number of independent directors; rather a more balanced composition of
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28 the board is beneficial. In this respect, the percentage of independent directors has a positive effect on
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30 firm performance for lower levels of independents and negative effects on firm performance for higher
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32 levels of independents. Our results suggest that the agency theory assumptions in the Italian context need
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34 to be reconsidered; confirming that independent directors on the board play a prominent role, but they
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36 do not have to be higher in number than executives. On the other hand, we find no evidence that the
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38 ownership concentration and composition (although they are not our main independent variables) have
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40 any effect on firms' performance. This means that large shareholders may neutralise the costs and
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42 benefits of their influence/activity on performance. This again suggests that the legislator should
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44 introduce better regulation in order to control the costs and benefits associated with large ownership.
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49 Third, the leadership structure (CEO/CM duality) does not seem to play a significant role in
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51 affecting the firms' performance. This reconciles the contrasting results of previous research (Krause et
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53 al., 2014): CEO/CM duality is '*not a random phenomenon*' (Kang and Zardkoohi, 2005, p. 786),
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55 especially in Italy where CEO and/or Chair can be the main shareholder and, therefore, it does not appear
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3 to have an impact if their roles are split. This means that the CEO duality as a corporate governance
4 mechanism is not sufficient on its own to show the benefits of having a divided role between the CEO
5 and the CM, despite the suggestions of the Italian corporate governance code. Therefore, it may be
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10 opportune to consider that each company has its own characteristics where the benefits of the CEO/CM
11 (non) duality may vary with respect to the unique characteristics of each company. In effect, when the
12 relationship between a CEO and a CM is not productive, it may lead to major governance problems
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17 (Cadbury, 2002) and therefore to worse firm performance.

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19 This research has several implications for practice. Most importantly, the composition of the
20 board and the number and type of directors is less important than the quality and potential contribution
21 of individuals. This is an issue for both regulators and investors. The 2005 Italian legislator extended the
22 slate voting for board of directors of listed companies in order to assure that minority shareholders can
23 appoint their representative to the board. We find that these minority directors, who are all independents,
24 do not appear to have any impact on firms' performance. This raises the issue of whether they are
25 sufficiently powerful to protect the minority's interests and whether these directors are ineffective in
26 preventing exploitation by the major shareholders. We suggest that the Italian corporate governance law
27 should enhance the rules and the effectiveness of the minority directors by controlling whether they are
28 actually able to impede the main shareholders to expropriate private benefits at the expense of the
29 minority. Investors and owners also have a role to play in ensuring that independent directors in particular
30 are selected for their experience and strength of character. They must also have the time and commitment
31 to act in the best interests of both minority and majority investors. Secondly, ensuring the separation of
32 the CEO/CM roles as a control for enhanced corporate governance does not stand up to examination.
33 Our findings suggest that a more important control is to ensure the appointment of effective board
34 members.

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3 This research points to some interesting avenues for future research. First, it may be important to
4 consider a more comprehensive theoretical framework, such as *multiple agency theory* (Arthurs,
5 Hoskisson, Busenitz and Johnson, 2008) which adopts a more holistic view of corporate governance
6 issues. Indeed, it combines different theories starting from *agency* assumptions (Merendino and Sarens,
7 2016). Second, we measure firm performance using ROA as a proxy, which is consistent with previous
8 works (Yermack, 1996, Bebchuck and Cohen 2005). However, it would be worthwhile to consider other
9 firm performance measures, such as Economic Value Added (Elali, 2006; Adjaoud, Zeghal and Andaleeb,
10 2007). **Thirdly, due to methodological issues this study focused only on the role and composition of the**
11 **management board. A more appropriate method for examining the supervisory board may be a qualitative**
12 **study of individual board members and their stakeholders.** Finally, a future study may include other
13 variables, which could help explain the relationship between board of director structures, controlling
14 mechanisms and their impact on firms' performance. Other variables which could be tested include the
15 level of expertise (Chan and Li, 2008), education, professional background and the number of meetings
16 per year that directors have.

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19 While this research offers several insights into the relationship between internal corporate
20 governance mechanisms, some limitations should be pointed out. First, we study Italian listed companies;
21 it would also be interesting to study and compare other institutional settings, such as Italian non-listed
22 companies. Second, we consider the main board characteristics (composition, size, number of roles,
23 number of shares per director) and the firms features (age, year of listing, family business, size, sectors);
24 however, future research could also take into account other variables relating to boards of directors, such
25 as CEO and independent directors' tenure, age, experience, education, nationality of directors in Italian
26 listed companies and cognitive capabilities.

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Corporate Governance

Table 1 International Empirical Research on Board size

	Author	Publication Year	Independent Variable	Dependent Variable	Sample	Year(s) of analysis	Findings
1.	Adams and Mehran	2003	Board size	Tobin's Q, market-to-book ratio	35 publicly traded bank holding companies	1986-1996 1997-1999	Positive relationship
2.	Allam	2018	Board size	ROA and Q ratio	FTSE All-Share Index	2005-2011	Positive relationship
3.	Assenga et al.	2018	Board size	ROA, ROE	80+12 Tanzanian listed companies	2006-2013	No relationship
4.	Basu et al.	2007	Board size	Accounting performance	174 large Japanese companies	1992-1996	Negative performance – Large boards destroy corporate value
5.	Beiner et al.	2006	Board size	Tobin's Q	Swiss Public listed companies	2001	No consistent relationship
6.	Belkhir	2004	Board size	Tobin's Q, ROA	USA financial companies	1995-2002	No convincing evidence
7.	Bennedsen et al.	2004	Board size	ROA	Danish companies	1999	Non-linear relationship
8.	Bhagat and Black	2002	Board size	Tobin's Q	USA Large Public companies	1988-1993	No consistent relationship
9.	Bozec and Dia	2007	Board size	Technical efficiency	Canadian Public owned companies	1976-2001	Large companies is more effective at coping with a complex and uncertain environment
10.	Cheng	2008	Board size	Tobin's Q, ROA	USA listed companies	1996-2004	Firm with large boards of directors have less variable performance
11.	Coles et al.	2008	Board size	Tobin's Q	USA large companies	1992-2001	Positive relationship (Tobin's Q increases in board size for complex firms)
12.	Conyon and Peck	1998	Board size	ROE	UK listed companies	1991-1994	Negative relationship
13.	Dalton et al.	1999	Board size	Market based measures	Us companies	Meta-analysis of 27 studies with a total of 131 companies	Positive relationship

14.	de Andres et al.	2005	Board size	Market-to-book ratio Tobin's Q	10 OECD countries (450 companies)	1996	Negative relationship
15.	de Andres et al.	2005	Board size	Tobin's Q, Market to book value	10 OECD countries companies	1996	Negative relationship
16.	Donadelli et al.	2014	Board size	ROA	Australia, Canada, France, Germany, Italy, Japan, UK and US	2002-2012	Negative relationship (especially in corruption-sensitive industries)
17.	Di Pietra et al.	2008	Board size	Share price	Italian non-financial listed companies	1993-2000	Limited relationship
18.	Dwivedi and Jain	2005	Board size	Tobin's Q,	340 large, listed Indian firms - 24 industry groups.	1997-2001	Positive relationship
19.	Ehikioya	2009	Board size	ROA, ROE, PE and Tobin's Q	107 firms quoted in the Nigerian Stock Exchange	1998-2002	Positive relationship
20.	Eisenberg et al.	1998	Board size	ROA	Small and midsize Finnish firms	1992-1998	Negative relationship (negative board size effect)
21.	Guest	2009	Board size	Profitability, share returns, Tobin's Q	2,746 UK listed firms	1981-2002	Negative relationship
22.	Huther	1997	Board size	Total variable cost	US Electricity companies	1994	Negative relationship
23.	Jensen	1993	Board size	RandD, capital expenditures, depreciation, dividends, market value	1,431 firms on COMPUSTAT	1979-1990	Negative relationship
24.	Kamran et al.	2006	Board size	Earnings	New Zealand firms	1991-1997	Negative relationship
25.	Kao et al.	2018	Board size	ROA, ROE, Tobin's Q, Market-to-book value of equity	151 Taiwanese Listed companies	1997-2015	Negative relationship
26.	Kathuria and Dash	1999	Board size	ROA	504 Indian companies belonging to 18 industries	1994-1995	Positive relationship
27.	Kaymak and Bektas	2008	Board size	ROA	Turkish banks	2001-2004	No relationship
28.	Kiel and Nicholson	2003	Board size	Tobin's Q, ROA	Australian Public listed companies	1996	Positive relationship (board size is correlated positively)

								with market value)
29.	Kiel and Nicholson	2003	Board size	ROA, Tobin's Q	348 of Australia's largest publicly listed companies	1996		Positive relationship
30.	Klein	2002	Board size	abnormal accruals	SandP 500 Sample US	1992-1993		Positive relationship
31.	Larmou and Vafeas	2009	Board size	Market to book value, Raw stock return, Abnormal return	Firms with poor operating performance	1994-2000		Positive relationship
32.	Loderer and Peyer	2002	Board size	Tobin's Q	Swiss firms	1980-1995 interval 5 years		Negative relationship (negative board size effect)
33.	Loderer and Peyer	2002	Board size	ROA	Swiss firms	1980-1995 interval 5 years		No consistent relationship
34.	Loderer and Peyer	2002	Board size	Market value of equity	All firms traded on Switzerland Stock Exchange	1980,1985,1990, 1995		Negative relationship
35.	Mak and Kusnadi	2005	Board size	Tobin's Q	Singapore Public Listed companies	1995-1996		Negative relationship (using OLS) – No consistent relationship (using 2SLS)
36.	Mak and Kusnadi	2005	Board size	Tobin's Q	230 Singapore firms and 230 Malaysian firms	1999-2000		Negative relationship
37.	O'Connell and Cramer	2009	Board size	TOBIN'S Q, ROA, RET ¹	Irish listed companies	2001		Negative relationship
38.	Ødegaard and Böhren	2003	Board size	Tobin's Q	Norwegian Public listed companies	1989-1997		Negative relationship (negative board size effect)
39.	Postma van Ees and Sterken	2003	Board size	ROA, ROS, ROE, Market To Book Value	Dutch manufacturing companies	1996		Negative relationship (negative board size effect)

¹ RET = market-based measure. It is calculated as the change in stock price plus dividend for the period.

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3	40.	Rashid	2018	Board size	EBIT	135 listed firms on Dhaka Stock Exchange	2006-2011	Positive relationship
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6	41.	Rodriguez-Fernandez et al.	2014	Board size	ROA, ROE, Tobin's Q	121 companies from Madrid Stock Exchange	2009	Positive relationship
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10	42.	Yermack	1996	Board size	ROA, ROS, Tobin's Q	US Large companies	1984-1991	Inverse (negative) relationship
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Table 2 *International Empirical Research on Independent Directors*

	Author	Publication Year	Independent Variable	Dependent Variable	Sample	Year(s) of analysis	Findings
43.	Agoraki et al.	2009	Independent directors	Stochastic frontier model	57 large European banks	2002-2006	Inverted U-shaped
44.	Agrawal and Knober	1996	Independent directors	Tobin's Q	400 US companies	1983-1987	Negative relationship
45.	Allam	2018	Independent directors	ROA and Q ratio	FTSE All-Share Index	2005-2011	NO relationship
46.	Assenga et al.	2018	Independent directors	ROA, ROE	80+12 Tanzanian listed companies	2006-2013	Positive relationship
47.	Barnhart and Rosenstein	1998	Independent directors	Tobin's Q	321 firms from Standard and Poor's 500 dataset	1990	Positive relationship
48.	Baysinger and Butler	1985	Independent directors	Tobin's Q	US 266 firms	1970-1980	No relationship
49.	Baysinger and Butler	1985	Independent directors	ROE	US 266 firms	1970-1980	Positive relationship
50.	Beasley	1996	Independent directors	Accounting fraud	US 75 fraud and US 75 no-fraud firms	1980-1991	Negative relationship (ID reduces likely of fraud)
51.	Bhagat and Black	1998	Independent directors	Tobin's Q, ROA, market adjusted stock price returns	334 large US public corporations	1985-1995	No convincing evidence
52.	Bhagat and Black	2002	Independent directors	Tobin's Q, ROA, Ratio of sales to assets, Market	934 large US public corporations	1988-1991	No relationship

adjusted stock price returns							
53.	Borokhovich et al.	1996	Independent directors	Abnormal returns	969 CEO successions at 588 large public firms	1970-1988	Positive relationship
54.	Brickley et al.	1994	Independent directors	Stock market reaction	247 firms adopting poison pills	1984-1986	Positive relationship
55.	Bhatt et al. 2018	2018	Independent directors	ROI, ROE, RCI	Malaysian listed companies	2008-2013	Positive relationship (Independent directors calculated within a CG index)
56.	Brown and Caylor	2006	Independent directors	ROE, profit margins, dividend yields, stock repurchases	1868 US firms Stock Exchange	2003	Positive relationship
57.	Byrd and Hickman	1992	Independent directors	Abnormal stock returns	128 tender offer bids	1980-1987	Positive relationship
58.	Campa, Marra	2008	Independent directors	ROI	Italian Listed companies	2005-2006	Positive relationship
59.	Cotter et al.	1997	Independent directors	Target shareholders gains; tender offer premium	169 tender offer target – traded on NYSE, AMEX or NASDAQ	1989-1992	Positive relationship
60.	Daily and Dalton	1992	Independent directors	ROA, ROE, Price-Earnings ratio	100 fastest-growing small publicly held US firms	1990	Positive relationship
61.	De Andres and Vallelado	2008	Independent directors	market-to-book value ratio	69 commercial banks from six OECD countries (Canada, the US,	1996–2006	Inverted U-shaped

					and the UK, Spain, France, and Italy).		
62.	de Andres et al.	2005	Independent directors	Market-to-book ratio Tobin's Q	10 OECD countries (450 companies)	1996	No relationship
63.	Donadelli et al.	2014	Independent directors	ROA	Australia, Canada, France, Germany, Italy, Japan, UK and US	2002-2012	Positive relationship (especially in corruption-sensitive industries)
64.	Dulewicz and Herbert	2004	Independent directors	Cash Flow Return on Total Assets, Sales Return	137 Manufacturing, Transport, Service Sector UK firms	1997	No relationship
65.	El Mir and Sebui	2008	Independent directors	EVA	357 us firms	1998-2004	Positive relationship
66.	Eloumi and Gueyie	2001	Independent directors	financial distress status of the firm	92 Canadian publicly traded firms,	1994-1998	Small likelihood of financial distress (with proportion of higher ID)
67.	Erickson et al.	2005	Independent directors	Tobin's Q	Canadian public firms	1993-1997	Negative relationship
68.	Ezzamel and Watson	1993	Independent directors	Return on capital employed	113 UK companies	1982-1985	Positive relationship
69.	Hermalin and Weisbach	1991	Independent directors	Tobin's Q	142 NYSE companies	---	No relationship
70.	Hill and Snell	1988	Independent directors	Value added per employee, ROE,	122 Fortune 500 firms	1979-1981	Positive relationship
71.	Hossain et al.	2001	Independent directors	Firm performance	New Zealand companies	Before and after 1994	Positive relationship

72.	Kaplan and Minton	1994	Independent directors	Company stock returns, sales growth, change in pre-tax income	119 traded Japanese companies	1981	Positive relationship
73.	Kaplan and Reishus	1990	Independent directors	dividend	101 companies	1979-1973	Positive relationship
74.	Klein	1998	Independent directors	ROA, market value of equity minus ROA, market returns	485 US firms listed on the SandP 500	1992-1993	Insignificant relationship
75.	Klein	2002	Independent directors	Earnings management	692 US listed companies	1992-1993	Negative relationship
76.	Kao et al.	2018	Independent directors	ROA, ROE, Tobin's Q, Market-to-book value of equity	151 Taiwanese Listed companies	1997-2015	Positive relationship
77.	Laing and Weir	1999	Independent directors	ROA	115 randomly selected UK listed companies	1992, 1995	No significant relationship
78.	Mehran	1995	Independent directors	Tobin's Q, ROA	153 manufacturing firms	1979-1980	Insignificant relationship
79.	O'Connell and Cramer	2009	Independent directors	TOBIN'S Q, ROA, RET ²	Iris listed companies	2001	Positive relationship
80.	Pearce and Zahra	1992	Independent directors	ROA, ROE, Earnings per share	119 <i>Fortune 500</i> industrial companies	1983-1989	Positive relationship
81.	Rashid	2018	Independent directors	EBIT	135 listed firms on Dhaka Stock Exchange	2006-2011	No relationship
82.	Rodriguez-Fernandez et al.	2014	Independent directors	ROA, ROE, Tobin's Q	121 companies from Madrid Stock Exchange	2009	Insignificant relationship

² RET = market-based measure. It is calculated as the change in stock price plus dividend for the period.

83.	Rosenstein and Wyatt	1990	Independent directors	Stock prices reaction	US listed companies	1981-1985	Positive relationship between stock prices and announcement of new IDs
84.	Schellenger et al.	1989	Independent directors	ROA, ROE, RET, risk-adjusted shareholder's annualized total marker return on investment	750 firms listed on the Compustat Industrial	1986-1987	Positive relationship
85.	Uribe-Bohorquez et al.	2018	Independent directors	Efficiency	2185 companies International Sample	2006 to 2015	Positive relationship
86.	Vafeas and Theodorou	1998	Independent directors	Market-to-book ratio, ROA	250 UK publicly traded firms	1994	No relationship
87.	Weisbach	1988	Independent directors	Stock returns, earnings,	367 US listed companies	1974-1983	Positive relationship
88.	Yermack	1996	Independent directors	ROA, ROS, Tobin's Q	Us Large companies	1984-1991	Negative relationship

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Table 3 *International Empirical Research on CEO/CM duality*

	Author	Publication Year	Independent Variable	Dependent Variable	Sample	Year(s) of analysis	Findings
75.	Abatecola et al.	2011	CEO/CM duality	---	40 quantitative articles published in 26 journals	1985-2008	Positive relationship
76.	Abdullah	2004	CEO/CM duality	ROA, ROE, EPD, profit margins	Kuala Lumpur Listed Companies	1994-1996	No relationship
77.	Allam	2018	CEO/CM duality	ROA and Q ratio	FTSE All-Share Index	2005-2011	NO relationship
78.	Assenga et al.	2018	Independent directors	ROA, ROE	80+12 Tanzanian listed companies	2006-2013	Negetive relationship
79.	Baliga et al.	1996	CEO/CM duality (the announcement effect of changes in duality structure on organizational performance)	Daily excess returns of stocks are selected as they are measures of organizational performance	Fortune 500 companies	1980-1981	Superior performance for firm Split CEO-chair position. Positive relationship 1) the market is indifferent to changes in a firm's duality status, 2) the duality-structure has no significant effect on the firm's operating performance; 3) the duality-structure has no significant effect on the firm's long-term performance
80.	Ballinger and Marcel	2010	CEO/CM duality	ROA, Tobin's Q, bankruptcy	540 CEO succession events at SandP 1500 firms	1996-1998	Poor negative effect of interim CEO successions
81.	Berg and Smith	1978	CEO/CM duality	ROI, ROE, stock price	Fortune 200 firms	---	Negative relationship of duality with ROI, and no relation

							with ROE or change in stock price
82.	Boyd	1995	CEO/CM duality	ROI	192 publicly traded US companies	1980-1984	Positive relationship
83.	Brickley et al.	1997	CEO/CM duality	ROI, Stock return, Cumulative abnormal return	661 US firms in the 1989 Forbes compensation	1989	Firm with separate leadership do not perform better. Duality firms associated with better accounting performance
84.	Bhatt et al. 2018	2018	CEO/CM duality	ROI, ROE, RCI	Malaysian listed companies	2008-2013	Positive relationship (CEO duality calculated within a CG index)
85.	Cannella and Lubatkin	1993	CEO/CM duality	ROE	472 succession events	1971-1985	Weak positive relation of duality with ROE
86.	Chaganti et al.	1985	CEO/CM duality	No firm performance	Banking industry – comparing 21 bankrupts firms with 21 surviving firms	1987-1990	No relationship
87.	Daily	1995	CEO/CM duality	Outcomes of bankruptcy: successful reorganization (good), liquidation (bad)	70 publicly traded firms filing for bankruptcy protection	1980-1986	No effect on firm performance
88.	Daily and Dalton	1992	CEO/CM duality	ROA, ROE, Price-Earnings ratio	100 fastest-growing small publicly held US firms	1990	No relationship
89.	Daily and Dalton	1994a	CEO/CM duality	bankruptcy	114 publicly traded US manufacturing, retail, and transportation firms	1972-1982	Negative effect on performance
90.	Daily and Dalton	1994b	CEO/CM duality	bankruptcy	100 publicly traded US manufacturing, retail, and transportation firms	1990	No main effect on firm performance, but strengthened the positive effect

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91.	Dalton and Kesner	1993, 1987	CEO/CM duality	ROA, ROE, Price-Earnings ratio	186 small publicly traded US firm. Randomly selected of 50 large Japanese, United Kingdom and United States industrial corporations for a total sample of 150	1990,1986	CEO/CM duality n performance negative relationship ¹) In Japan, it is evidently unusual for the same individual to serve as CEO and chairperson of the board. 2) This is much more frequent in United Kingdom
92.	Dalton et al.	1998	CEO/CM duality	Market and accounting performance indicators	Meta-analysis of 31 studies US companies (69 samples, N= 12,915)	1987	NO overall relationship with firm performance
93.	Davidson et al.	2001	CEO/CM duality	Cumulative abnormal return	421 CEO succession event at 332 <i>Businessweek</i> 1000 firms	1992	CEO-board chair consolidation has negative effect only if heir apparent is no present
94.	Dey et al.	2011	CEO/CM duality	ROA	760 companies from Compustat and ExecuComp databases	2001-2009	Positive relationship
95.	Donaldson and Davis	1991	CEO/CM duality	ROE, stock return	329 and 321 US companies	1988	Positive relationship
96.	Duru et al.	2016	CEO/CM duality	ROA, ROE, ROS	17,282 US Companies	1997–2011	Negative relationship
97.	Elsayed	2007	CEO/CM duality	Tobin's Q	92 firms from Egyptian Capital Market Agency	2000-2004	No significant relationship
98.	Faleye	2007	CEO/CM duality	Tobin's Q	3,823 US firms	1995	Dual leadership increases Tobin's q

1							only in complex firms	
2							This association changes with circumstances-with a vigilant board considering duality to be less desirable when firm performance is good and the CEO possesses substantial information power.	
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4	99.	Finkelstein and D'Aveni	1994	CEO/CM duality and board vigilance	ROA	Fortune 200 companies	1984 and 1986	
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16	100.	He and Wang	2009	CEO/CM duality	Market to book ratio	215 large US manufacturing firms	1996-1999	Strengthened positive effect of innovative knowledge assets on firm performance
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22	101.	Kao et al.	2018	CEO/CM duality	ROA, ROE, Tobin's Q, Market-to-book value of equity	151 Taiwanese Listed companies	1997-2015	Negative relationship
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26	102.	Krause and Semadeni	2013	CEO/CM duality	Stock return, mean analyst rating	1,053 SandP 1500 and Fortune 1000 firms	2002-2006	CEO-board chair separation has positive effect following negative weak performance; nut negative effect following strong performance
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33	103.	Lam and Lee	2008	CEO/CM duality	ROA; ROE; return on capital employed, market-to-book value of equity	Hong Kong listed companies	2003/2004	Positive relationship in non-family companies. No significant relationship in family companies
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39	104.	Mallette and Fowler	1992	CEO/CM duality	ROE	673 publicly traded U.S. industrial manufacturing firms	1985 and 1988	Weak positive relationship of duality with roe
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105.	Mueller and Barker III	1997	CEO/CM duality	ROA	US manufacturing listed firms	1977–1993	Positive relationship
106.	Palmon and Wald	2002	CEO/CM duality announcements	abnormal returns	304 companies from COMPUSTAT	1986-1999	Small firms = negative abnormal returns when changing from dual to separate leadership. Large firms=positive abnormal returns
107.	Peel and O'Donnell	1995	CEO/CM duality	Ownership of equity and participation in share	132 UK industrial firms	1992	Negative relationship
108.	Petrou and Procopiou	2016	CEO/CM duality	Earnings management (discretionary accruals)	US public firms	1993-2010	Positive relationship
109.	Pi and Timme	1993	CEO/CM duality	ROA	112 US bank	1987-1990	Positive relationship – Superior performance for firm Split CEO-chair position
110.	Quigley and Hambrick	2012	CEO/CM duality	ROA, stock return	181 CEO succession events at publicly traded US high-technology firms	1994-2006	Former CEO staying on as board chair reduced performance change following a CEO succession
111.	Rodriguez-Fernandez et al.	2014	CEO/CM duality	ROA, ROE, Tobin's Q	121 companies from Madrid Stock Exchange	2009	Insignificant relationship
112.	Rechner and Dalton	1989	CEO/CM duality	Shareholder return	141 Fortune 500 firms	1978-1983	No relationship
113.	Rechner and Dalton	1991	CEO/CM duality	ROE, ROI, profit margin	141 Fortune 500 firms	1978-1983	CEO/CM duality and performance negative relationship
114.	Rhoades et al.	2001	CEO/CM duality	various	Meta-analysis of following database: Business,	Business (1971-1996), Psychology (1974-1996),	Positive relationship

					Psychology, Economics and Public Affairs	Economics (1966- 1996) and Public Affairs (1972- 1996)	
115.	Worrell et al.	1997	CEO/CM duality	Cumulative abnormal return	522 CEO plurality- creating events at 438 <i>Businessweek</i> 1000 firms	1972-1980	Consolidation of CEO and board chair roles had negative effect
116.	Yang and Zhao	2013	CEO/CM duality	Tobin's Q, ROE, ROA, EBIT	Canada-United States Free Trade Agreement (1989)	1988-1998	Duality firms outperform non- duality ones no relationship (ROE, ROA)
117.	Yasser and Al Mamun	2015	CEO/CM duality	ROA, ROE	Australian, Malaysian and Pakistani	2011-2013	No relationship
118.	Yermack	1996	CEO/CM duality	Tobin's Q, ROA, ROS	US Large companies	1984-1991	Positive relationship

Corporate Governance

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Table 4 The Chronological Evolution of corporate governance in Italy

Year	Name of the Legislation	Issuing Body	Description
1995	'The project of Corporate Governance for Italy'	A scientific committee in collaboration with PriceWaterhouseCoopers	It identifies the key elements for good practice of corporate governance, such as roles, responsibilities of stakeholders. It aligns with the CoSo Report
1997	CONSOB Communication No. DAC/RM/97001574	CONSOB ³ (National Commission for Companies and Stock Exchange)	It becomes compulsory for boards of directors of listed companies to monitor internal corporate governance and the roles assigned to executives
1998	The Draghi Law (Legislative Decree No. 58/1998 - Consolidated law on financial intermediation)	The Government – the Parliament	It tackles some corporate governance key issues, i.e. investors' protection, securities offering, takeover bids, disclosure obligations and audit firms.
1999	The Preda Code	Committee for the Corporate Governance of Listed Companies, Italian Stock Exchange	It is a voluntary code of best practice and completes the Draghi Law by providing recommendations on the board of statutory auditors and on boards of directors' roles, composition and methods of appointment.
2001	Legislative Decree No 231 'Criminal liability of legal entities'	The Government – the Parliament	It provides for a direct liability of legal entities, companies and associations for certain crimes committed by their representatives/directors and introduces corporate compliance programmes which are mandatory only for companies listed on the STAR segment in the Milan Stock exchange.
2002	Update of the Preda Code	Committee for the Corporate Governance of Listed Companies, Italian Stock Exchange	It introduces rules on transactions with related parties
2003	The Viotti Reform or The Corporate Law Reform	The Government – the Parliament	It introduces, among the other, the possibility for companies to adopt not only the traditional corporate governance model but also dualistic and monistic models in line with the European practice.
2005	The Savings Law. Law no 262/2005	The Parliament	It improves the role and capabilities of Supervisory Authorities; transparency; consumer protection. It enhances the minority shareholders' rights, by introducing the compulsory mechanism called the slate voting ('voto di lista') where at least 1/5 of the members shall be elected from a slate presented by one or more minority stakeholders.
2006	Update of the Preda Code - now Corporate Governance Code	Committee for the Corporate Governance of Listed Companies, Italian Stock Exchange	It provides substantial changes on corporate governance. Particularly, every article is divided into three sections: principles, criteria and comments. Additionally, other changes on shareholders and annual general meetings and transparent disclosures have been made on the light of the recent Corporate Law Reform (2003) and Savings Law (2005)
2010-2011	Update of Corporate Governance Code	Committee for the Corporate Governance of Listed Companies, Italian Stock Exchange	It is now aligned with the EU recommendation (No. (n. 2009/385) on directors' remuneration. In particular, it distinguishes between executives and non-executives' remuneration; stock options, golden parachute and indemnity in event of dismissal or resignation from office The role of board is strengthened and the roles of the different internal committees (nomination, remuneration and audit) are better clarified.
2014	Update of Corporate Governance Code	Committee for the Corporate Governance of Listed Companies, Italian Stock Exchange	It aligns to the EU recommendation (no. 2014/208) on the 'comply or explain' approach and to the CONSOB recommendations on withdrawal and liquidation value of listed joint stock companies' shares.

³ CONSOB is the public authority responsible for regulating the Italian securities market.

2015	Update of Corporate Governance Code	Committee for the Corporate Governance of Listed Companies, Italian Stock Exchange	It includes provisions on corporate social responsibility and whistleblowing (by strengthening the internal control and risk management systems).
2015	ISA Italia 260 (International Standard on Auditing)	International Federation of Accountants in collaboration with the Italian Chartered Accountants Institute, the Italian Internal Auditors Institute and CONSOB.	It requires listed companies to submit to the audit committee an annual report on the significant findings from the audit, particularly on material weaknesses in internal control in relation to the financial reporting process. It also requires the listed companies to provide annually of the auditor's independence to the audit committee.

Corporate Governance

Table 5 *Variables Definition and Source*

Variable	Definition	Source
ROA	Operating income before depreciation divided by fiscal year-end total assets	Datastream
Board size	Sum of independent, executive and non-executive directors	Hand collection from companies' corporate governance reports/ CONSOB database/
Independent directors	The percentage of Independent directors on the board	Hand collection from companies' corporate governance reports/ CONSOB database
CEO/CM duality	Dummy variable. 1 = CEO/CM duality; 0 = CEO/CM non-duality	Hand collection from companies' corporate governance reports/ CONSOB database
Firm size	Natural log of total asset	Datastream
Pretax income	Company's revenues minus all operating expenses, including interest and depreciation, before income taxes	Datastream
Debt	It is the sum of long and short term debt.	Datastream
Market to book value	Market value of equity divided by the book value of equity	Datastream
Minority Directors	The number of directors appointed by the minority shareholders	Hand collection from companies' corporate governance reports/ CONSOB database
Firm Age	The numbers of years since the foundation of the company	Hand collection from companies' corporate governance reports/ CONSOB database
Pre crisis	Dummy variable. 1 = before 2008; 0 = after 2008	Authors' calculation
Ownership Composition	Institutional Investors, Board ownership, Management, Government, Own shares, Bank	Hand collection from companies' corporate governance reports/ CONSOB database
CEO_shareholder_dummy	A binary variable that takes a value of one if the CEO is also a shareholder, otherwise zero	Hand collection from companies' corporate governance reports/ CONSOB database
Shareholder Agreements	Percentage of shareholder agreements over the total firms' property	Hand collection from companies' corporate governance reports/ CONSOB database
Ownership Concentration	The percentage of shares held by the largest shareholder of the company	Authors' calculation
Industry Dummy	Companies' industries	Authors' calculation
Year Dummy	Year of analysis	Authors' calculation

Table 6 Descriptive statistics and correlation matrix

Variables	Mean	Std dev	Variables tested in the regressions	Ln ROA	Board Size	% Independent Directors	CEO duality	% Minority Directors	Ownership Concentration	Firm Size	Firm Age	Total Debt/Total Asset	Market value to Book
ROA	0.03	0.09	Ln ROA	1									
Board Size	9.02	2.49	Board Size	0.15	1								
Independent Directors	3.28	1.42	% Independent Directors	0.16	0.60	1							
CEO duality	0.47	0.5	CEO duality	-0.00	-0.33	-0.31	1						
Number of Minority Directors	0.23	0.57	% Minority Directors	0.05	0.01	0.08	-0.08	1					
Ownership Concentration	51.47	14.62	Ownership Concentration	0.13	0.09	0.04	-0.01	-0.13	1				
Firm Size	12.45	1.07	Firm Size	0.08	0.37	0.07	-0.23	0.09	0.02	1			
Firm Age	26.14	15.99	Firm Age	0.02	0.25	0.05	0.08	-0.02	-0.01	0.30	1		
Total Debt/Total Asset	0.11	0.10	Total Debt/Total Asset	-0.14	0.14	0.19	-0.05	-0.24	0.17	0.16	0.13	1	
Market value to Book	1.78	1.49	Market value to Book	0.18	0.02	0.07	-0.12	-0.01	0.13	0.01	-0.08	-0.05	1

Table 7 Results – ROA

SPECIFICATION	(1)	(2)	(3) ⁴	(4)	(5) ⁵	(6)
Firm Performance (n-1)	-.01607 (0.1193228)	-0.1050098 (0.18237)	0.0051496 (0.1717228)	-0.1411585 (0.1524197)	0.0120786 (0.1551123)	-(0.0415583) 0.1886145)
Firm Performance (n-2)	-.1086387 (0.0703233)	-0.0962165 (0.075988)	-.0956285 (0.0792399)	-0.1260516 (0.0739482)	-0.1351289 (0.0607511)**	-0.0415583 (0.1886145)
Ln Board size	3.9097 (1.782917)***		27.13073 (10.45227)***	2.829737 (1.501662)**	4.19646 (1.821449)**	
Ln Board size Square	-0.0193418 (0.0080746)***		-5.946351 (2.379324)**			
Ln Board size X Precrisis	-.1837703 (0.473105)		-.6151641 (0.8786975)	-0.9524983 (3.295189)		
Independent Directors		0.7719282 (0.3808044)**	17.41513 (9.52874)*	2.524542 (1.024469)**		0.4613478 (0.1845606)***
Independent Directors Square		-0.0592602 (0.0322)**	-3.815486 (2.15411)*			
Independent Directors X Precrisis		-0.1670275 (0.0820328)	-.2671626 (0.8060701)	-1.244972 (2.111927)		-.2073972 37
Ln Board size X Independent Directors				-0.9596062 (0.3819124)***		
Board Size Dummy_7						3.043671 (1.697062)**
Board Size Dummy_7 x Independent Directors						-0.4509612 (0.18288)**
CeoDualityDummy					0.393199 (0.5382032)	
CeoDualityDummy X Precrisis					-0.1945666 (0.5579649)	
ExecutiveDualityDummy					0.4679921 (0.4102953)	
Nofdirectorsfromtheminority	-.1392218 (0.8709821)	-0.1540367 (0.1732819)	-0.0009733 (0.1816084)	-0.2633479 (0.2446985)	0.1208805 (0.2254194)	0.1756375 (0.2279296)
totBoard_Roles	-0.0020557* (0.0059638)	-.0116145* (0.0076441)	-0.0036276* (0.0057696)	-0.0059731* (0.0126863)	-0.0022102* (0.0071454)	-0.0007687* (0.0053219)
OwnershipConcen	0.0108519 (0.0240295)	0.0109884 (0.0178817)	0.0072185 (0.0206225)	0.0159633 (0.0183714)	0.0055859 (0.0189748)	0.005174 (0.0214331)

⁴ As independent directors are part of the board of directors, we moderate the ‘independent directors’ variable with ‘the board size minus independent directors’

⁵ To validate our results, we also run other regressions where apart from ‘CEO duality dummy’, ‘Independent directors’ was an additional independent variable. The results remained unchanged. We also tested if the results change whether an executive director (other than a CEO) acts as a Chairman. We confirm that our results do not change.

Firm Size	9.4208 (4.4607)	-3.5607 (3.1517)	-3.3708 (3.4707)	-2.3108 (6.0807)	-1.3507 (4.6607)	1.2206 (1.5706)
Firm Age	-0.0249731 (0.0280177)	-0.0630786 (0.0294103)*	-0.0072836 (0.0349479)	-0.0661081 (0.029042)*	-0.0322096 (0.0268913)	-0.8813485 (0.5502741)
Debt/Total asset	-0.4452699 (0.2089969)**	-0.1354625 (0.1410807)	-0.3522775 (0.2682131)	-0.0542359 (0.1763937)	-0.4646542 (0.2265709)**	-0.3113145 (0.2748784)
Mrktvaluetobook	0.0746367 (0.1591701)	0.64501 (1.55942)	-5.0707 (4.6407)	0.3212916 (1.6251)	0.582631 (0.0620492)	0.152579 (0.0839277)*
Pretax Income	0.0081 (0.11116)	0.0000138 (7.3106)*	6.2306 (3.2206)*	0.0000106 (5.3906)	0.0000107 (3.7006)*	3.9406 (4.7206)
Precrisis	0.5440332 (1.042869)	0.5216106 (0.2792668)*	1.79384 (1.180139)	2.9032 (7.438385)	0.5534479 (1.206321)	-0.0716416 (0.1911915)
Arellano-Bond test for AR(2) in first differences:	z = -0.64 Pr > z = 0.522	z = -1.19 Pr > z = 0.232	z = -0.88 Pr > z = 0.380	z = -1.24 Pr > z = 0.214	z = -0.95 Pr > z = 0.340	z = -0.39 Pr > z = 0.696
Sargan test	chi2(81) = 67.66 Prob > chi2 = 0.855	chi2(66) = 40.08 Prob > chi2 = 0.995	chi2(51) = 39.61 Prob > chi2 = 0.877	chi2(47) = 31.49 Prob > chi2 = 0.960	chi2(70) = 61.26 Prob > chi2 = 0.763	chi2(43) = 32.31 Prob > chi2 = 0.883
Hansen test	chi2(81) = 50.65 Prob > chi2 = 0.997	chi2(66) = 40.18 Prob > chi2 = 0.995	chi2(51) = 41.21 Prob > chi2 = 0.834	chi2(47) = 40.71 Prob > chi2 = 0.729	chi2(70) = 48.64 Prob > chi2 = 0.976	chi2(43) = 40.48 Prob > chi2 = 0.581

Robust Standard Errors are in brackets. Statistically significant at 1 % (***), 5 % (**) and 10 % (*)

Table 8 Results – ROA

SPECIFICATION	(7)	(8)	(9) ⁶	(10)	(11) ⁷	(12)
Firm Performance (n-1)	-0.0301376 (0.194025)	-0.1867143 (0.2322545)	-0.0445312 (0.1244416)	-0.092996 (0.20814)	-0.0857698 (0.1501715)	0.0214374 (0.155115)
Firm Performance (n-2)	-0.1355133 (0.0873335)	-0.1497559 (0.1236723)	-0.1278727 (0.1009106)	-0.130842 (0.0867758)	-0.1115762 (0.0991319)	-0.1329054 (0.1166331)
Ln Board size	3.572404 (1.724217)**		16.96988 (9.285854)*	2.81923 (1.673141)*		
Ln Board size Square	-0.0196698 (0.0083322)**		-4.294744 (2.155327)*			
Ln Board size X Precrisis	-0.1345328 (0.6889805)		1.245163 (1.266716)	1.246532 (2.744172)		
Independent Directors		2.002898 (0.9686215)**	1.8672 (0.9841582)**	2.234491 (1.231841)**		0.6949402 (0.3119171)**
Independent Directors Square		-0.2157448 (0.1124796)*	-0.0175605 (0.020933)*			
Independent Directors X Precrisis		0.0143483 (0.1664235)	-1.107353 (1.211925)	0.0120824 (1.659644)		0.3169844 (1.111121)
Ln Board size X Independent Directors				-0.8552983 (0.4350785)*		
Board Size Dummy_7						3.301081 (1.999605)*
Board Size Dummy_7 x Independent Directors						-0.6942081 (0.3127884)*
CeoDualityDummy					-0.0347312 (0.3217766)	
CeoDualityDummy X Precrisis					0.3438253 (0.5343608)	
ExecutiveDualityDummy					0.1519822 (0.416792)	
Nofdirectorsfromtheminority	-0.8703359 (1.286095)	-0.2161647 (0.3068097)	0.1901996 (0.8655774)	-0.2187942 (0.3936274)	-0.1506238 (0.3991665)	-0.1213981 (0.2984759)

⁶ As independent directors are part of the board of directors, we moderate the 'independent directors' variable with 'the board size minus independent directors'

⁷ To validate our results, we also run other regressions where apart from 'CEO duality dummy', 'Independent directors' was an additional independent variable. The results remained unchanged. We also tested if the results change whether an executive director (other than a CEO) acts as a Chairman. We confirm that our results do not change

1							
2							
3	totBoard_Roles	0.004374	0.0033663	0.0167218	0.0005261	-0.0134624	0.0009093
4		(0.007057)	(0.0124272)	(0.0119817)	(0.0104105)	(0.0148003)	(0.0066116)
5	Firm Size	-1.3807 (6.1207)	1.9708 (1.6206)	5.2108 (1.1506)	-5.2707 (8.0807)	5.7807 (7.3307)	-6.2307 (1.6706)
6							
7	Firm Age	0.0035623	-0.0079549	-0.046446	-0.0397938	-0.0292396	-0.0269289
8		(0.0458066)	(0.0646467)	(0.0613351)	(0.0334547)	(0.0339849)	(0.7636791)
9	Debt/Total asset	-0.4161632	0.0414144	0.058637	-0.2929735	-0.2815191	-0.1679431
10		(0.2632791)	(0.3734673)	(0.2294721)	(0.366169)	(0.1903763)	(0.2367262)
11	Mrktvaluetobook	0.0005929	-0.018459	1.1507	0.0183003	0.016645	0.0184064
12		(0.0003164)*	(0.198030)	(6.4807)	0.0670669	(0.0628959)	(0.1043745)
13	Pretax Income	0.000011	4.7806	0.0000148	7.3706	0.8106	5.7606
14		(0.0000128)	(6.0906)	(6.8106)*	(6.3106)	(4.5406)*	(2.3906)
15	Precrisis	0.4954817	-0.0666788	-1.578461	-2.036364	-0.1266884	0.0900385
16		(1.5258)	(0.659233)	(2.176168)	(5.313169)	(0.2839448)	(0.2393535)
17	NationalInstitSIC	0.0700717	0.0290798	0.0145254	0.0195339	-0.0044268	0.0168117
18		(0.0471207)	(0.0410274)	(0.0378687)	(0.03625)	(0.0310747)	(0.0322703)
19	Board ownership	-0.4080161	0.3628237	-0.2036537	-0.161082	-0.0221198	-0.0238353
20		(0.4795034)	(0.6153434)	(0.3783377)	(0.3203551)	(0.320741)	(0.5242992)
21	Management	-0.2695966	-0.208428	-0.0482317	-0.0329484	-0.2138566	0.383423
22		(0.4904016)	(1.276554)	(0.139834)	(0.4738833)	(0.4164797)	(0.8187439)
23	Government	0.1627905	-0.2097303	-1.117262	0.3185523	-0.5363476	-0.1953897
24		(0.5578397)	(0.5421578)	(0.6374076)	(0.7847626)	(0.9820756)	(0.7482084)
25	Own shares	-0.0270338	-0.0608917	0.0349344	-0.0933413	-0.0322801	-0.0209437
26		(0.0468216)	(0.0985488)	(0.0843273)	(0.0916564)	(0.0701314)	(0.0800984)
27	Bank	0.0132498	0.363809	0.001306	-0.0104784	-0.0143376	-0.0107848
28		(0.0259759)	(0.0755319)	(0.0232477)	(0.0230708)	(0.0175079)	(0.0260919)
29	CEO_Shareholder_Dummy	1.026274	-1.230251	1.275862	-0.3294365	-0.0047646	-0.7597851
30		(1.040444)	(1.710311)	(1.943851)	(1.284339)	(0.0100114)	(2.381604)
31	% shareholder agreement	0.0002188	-0.0157949	-0.0060388	-0.0037324	0.1939985	-0.0062136
32		(.0060121)	(0.0153933)	(0.0102518)	(0.0106854)	(1.053172)	(0.0106117)
33	Arellano-Bond test for AR(2)	z = -0.48 Pr > z	z = -0.84 Pr > z	z = -0.46 Pr > z	z = -1.10 Pr > z	z = -0.99 Pr > z	z = -0.44 Pr > z
34	in first differences:	= 0.631	= 0.400	= 0.643	= 0.272	= 0.321	= 0.659
35	Sargan test	chi2(54) =	chi2(28) =	chi2(89) =	chi2(50) =	chi2(70) =	chi2(55) = 41.29
36		43.53 Prob > chi2	22.64 Prob > chi2	56.42 Prob > chi2	35.95 Prob > chi2	52.66 Prob > chi2	Prob > chi2 =
37		= 0.845	= 0.751	= 0.997	= 0.933	= 0.939	0.915
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Hansen test	chi2(54) = 39.29 Prob > chi2 = 0.934	chi2(28) = 23.93 Prob > chi2 = 0.685	chi2(89) = 31.76 Prob > chi2 = 1.000	chi2(50) = 33.56 Prob > chi2 = 0.964	chi2(70) = 45.86 Prob > chi2 = 0.989	chi2(55) = 37.81 Prob > chi2 = 0.963
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Robust Standard Errors are in brackets. Statistically significant at 1 % (***) , 5 % (**) and 10 % (*)

Corporate Governance

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Figure 1. U-shaped relationship between Board of Directors and independent directors

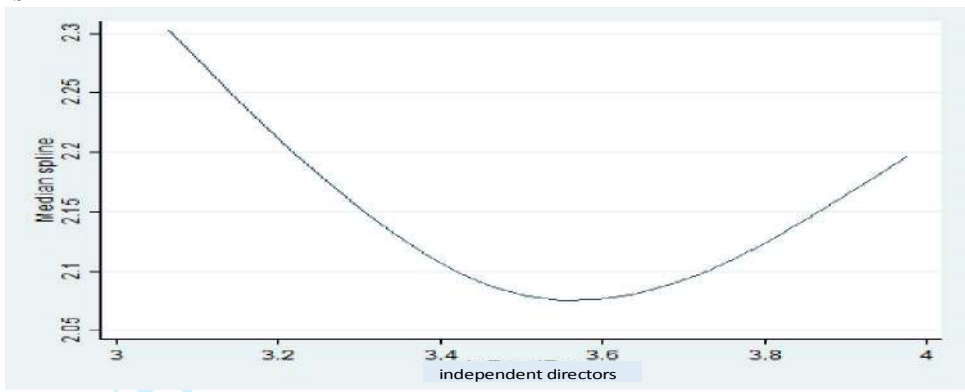


Figure 2. Inverted-U shape relationship between the interaction board size-independent directors and firm performance

