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# Effect of the board of directors and the audit committee on firm performance: a panel data analysis

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**Abstract** This research examines the relationship between independent directors, the audit committee (AC), and firm performance, taking into account the impact of the chief executive officer's powers and block shareholders. We use the maximum likelihood estimator, based on agency theory assumptions and cylindered panel data, to examine three models of firm performance. The results show that the independence of the board is reflected clearly by increased economic and equity performance of the firm. However, an AC that is fully independent or meets frequently is associated with lower firm performance. Unlike pension funds, institutional shareholders can be considered an effective control mechanism in the context of France. Our results development includes advanced explanations for market liquidity and shareholders' portfolios. The study period ends before the European regulation on ACs came into effect in 2008. This allows for an appreciation of soft law in French corporate governance. It also lets us compare the data with the way firms operate their boards one decade later. The evidence provides useful guidelines on the supremacy of soft law in corporate governance and suggests that the composition and functioning of the board of directors should be moderated based on the firms' context. The specificity of the cylindered panel data helps to better examine the impact of the board and AC's independence and functioning in French corporate governance structure.

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## 1 Introduction

The board of directors (BoD) are the first line of defence against the misbehaviours of chief executive officers (CEOs). This plays a significant role in firm performance. In corporate governance, the institutional framework gives importance to BoD structure and, specifically, to the appointment of independent directors. BoD composition is problematic when conducting empirical research. Previous research has mainly tested the effects of the presence of independent directors; the board's size and, more recently, diversity; and the directors' competence regarding firm performance (Agrawal and Knoeber 1996; Klein 2002; Walls et al. 2012).

Since the research of Berle and Means (1932), the appointment of independent directors to the BoD of firms with diffuse ownership structures has been marked. An independent director is one who has no relationship of any kind with the firm, its group, or its management, which could compromise his or her freedom when expressing his or her judgment. Thus, an independent director is not only a non-executive director (i.e. one not performing management duties in the company or its group) but also devoid of special interest links (e.g. with a significant shareholder or employee); (Afep-Medef 2015, p. 11).

The agency theory (Jensen and Meckling 1976) emphasises the issues of separating ownership and power in the firm. To overcome the imbalance between ownership (shareholders) and power (top management), independent directors should be elected by the shareholders to monitor managers and increase and protect shareholder value. Therefore, an independent director must protect small shareholders from CEOs' opportunism. The primary role of these directors is to appoint, monitor, fix the remuneration of, and dismiss the CEO. However, there are significant differences between countries with dissimilar levels of investor protection and effectiveness of independent directors (García-Sánchez et al. 2015).

Moreover, managerial corporate governance is aligned more with firms in North America than those in Europe, where firms have a concentrated ownership structure. For example, listed French firms are characterised by less diffuse ownership structure, with the presence of both a majority shareholder and CEO leadership. Large listed firms generally adopt similar corporate governance recommendations concerning the quotas of independent directors on the board and, in particular, within the audit committee (AC).

This research examines the link between independent BoDs and the performance of major firms listed on the Paris Stock Exchange. We consider the role of the board as a control mechanism in large listed French companies. The objective is to examine the impact of BoD and AC independence on firm performance, taking into consideration the effect of block shareholders and the CEO's powers.

In the next section, we present the conceptual framework. Then, we describe the methodology and present the data. Subsequently, we report the results. We then summarise key results and provide a conclusion.

## 2 Conceptual framework and hypotheses development

We apply the agency and resource theories to develop our hypothesis. Most previous studies that examined the presence of independent directors in a BoD have referenced these theories (Cai et al. 2015; Chen et al. 2016). This conceptual framework allows us to study the composition and functioning of the board while focussing on its dual dimensions: mandatory (agency theory) and cognitive (resource theory).

### 2.1 Independent directors

#### *2.1.1 Independent directors at the board level*

According to the agency theory, independent directors are the supervisors of the management team. They assure fairness in the financial information divulged by firms. According to Fama and Jensen (1983), these directors are more independent and thus more able to control the management. However, they argue that the presence of internal directors, top managers, or general managers could be useful in ensuring the optimal use of internal information. These directors would be more attentive in monitoring the implementation of firm strategies. Therefore, the success of a management team would be due to the involvement of all the firms' actors in achieving its objectives. Moreover, the results of previous empirical research are not always consistent regarding the effect of independent directors on firm performance. Hermalin and Weisbach (2003) did not observe significant effects of the presence of independent directors for improving firm performance. Chen et al. (2006) find a negative relationship between the presence of outside directors on the board and the commission of fraud. In contrast, Krivogorsky (2006) does not invalidate the predictions of agency theory in the context of continental Europe; the author finds a positive relationship between the proportion of independent directors on the board and firm profitability.

Listed firms tend to align their corporate governance practices with international financial market requirements, particularly concerning the quota of independent directors on the BoD. To better assess the impact of the presence of independent directors on firm performance, we examine their majority presence instead of their percentage on the board. We present the following hypothesis:

**$H_{1a}$**: An independent board has a positive impact on firm performance.

#### *2.1.2 Independent directors at the AC level*

The BoD may have several committees to carry out its assignments. Three committees are usually recommended: the AC, the nomination committee, and the remuneration committee.

In France, the board committees have no legal power. They constitute working groups that assist the board in carrying out its duties. However, French regulations have awarded some importance to the AC. In 2010, the French Financial Market

Authority (FMA) listed the AC's responsibilities. The FMA recommends that the AC should not be composed of members holding management positions within the firm and have at least one independent director.

The AC plays a key role in controlling the financial accounting process; it ensures that shareholders have sincere, credible, and relevant information (Karamanou and Vafeas 2005; Sun et al. 2014; Vafeas 2005). Most of the previous research has highlighted the positive effects of the independence of AC members. Anderson et al. (2004) confirm the conclusions of Carcello and Neal (2000). They find that the cost of debt is relatively lower when the AC is totally independent. Kamarudin et al. (2012) find that an independent AC is more effective in monitoring the quality of financial statements in Malaysian firms.

In China, it is not compulsory to form an AC, and the ownership structure of Chinese firms is characterised by the presence of a controlling shareholder. Cai et al. (2015) test the relevance of the AC in the Chinese context; they argue that ACs lead firms to improve their relationship with the controlling shareholder.

ACs have become compulsory for listed firms in France since 2008 (Article L823-19 of the Commercial Code). Similar to Cai et al. (2015), who studied firms where ACs were voluntary, we examine ACs of listed French firms for the study period of 2002–2006 using the following hypothesis:

**$H_{1b}$**: A fully independent AC has a positive impact on firm performance.

### 2.2 Board and AC diligence

Previous research generally assessed the diligence of BoDs by their annual meetings (Agrawal and Chadha 2005; Karamanou and Vafeas 2005; Masulis et al. 2012). Board meetings are the main source of information, such as firms' business conditions or strategic developments, for independent directors (Hahn and Lasfer 2015). Meetings are also a way for them to discern effective corporate governance. Moreover, institutional investors tend to refer to board meetings to evaluate the diligence and commitment of directors. Those who attend the meetings least frequently are described as 'inefficient' and generally receive significantly fewer votes in elections to the BoD (Cai et al. 2009). Brick and Chidambaran (2010) find a positive relationship between board meetings and firm value. The authors argue that a high frequency of BoD meetings increases the supervisory role of the BoD.

Thus, we advance the following hypothesis:

**$H_{2a}$**: High frequency of board meetings positively influences firm performance.

The main tasks of the AC are as follows: assisting the BoD in the selection and appointment of an external auditor, checking the financial process and internal audits, and eventually interacting with corporate financial executives to master the financial and accounting information within the firm. In Australia, Bryce et al. (2015) find a negative and significant relationship between AC meetings and the level of discretionary accruals. We examine listed French firms based on the following hypothesis:

**$H_{2b}$**: The frequency of AC meetings impacts firm performance.

### 2.3 CEO power

To study the impact of CEOs on BoD and firm performance, we mobilize two theories: the agency theory and the resources theory. Using the agency theory, we study CEO duality, which means that the CEO is also the chairperson of the BoD. Using the resources theory, we consider CEO seniority, which provides information on the CEO's tenure and mastery of the business firm.

The CEO plays an important role in the composition and functioning of BoDs (Hou et al. 2013). Considering the assumptions of the agency theory, both the discretion and entrenchment of CEOs are higher when they also chair the BoD (Jensen and Meckling 1976). Kamarudin et al. (2012) claim that CEO duality gives them excessive control over BoD decisions and impacts the effectiveness of the independent AC. Similarly, Duru et al. (2016) find a negative relationship between CEO duality and firm performance in US firms. They advance that this relationship is mitigated when the presence of independent directors increases in the BoD. Conversely, other researchers claim that CEO duality could be beneficial in terms of making optimal decisions and reducing effective monitoring by the BoD (Ya'acoba 2016; Yang and Zhao 2014).

In reference to agency theory assumptions, we advance the following hypothesis:

**$H_{3a}$**: CEO duality has a negative impact on firm performance.

Independent directors are elected to protect shareholders' interests, particularly those of small shareholders. CEOs with greater seniority should prefer fewer independent directors on the BoD (Hermalin and Weisbach 1998). However, older CEOs generally hold more shares in firm equity (Agrawal and Knoeber 1996). Godard and Schatt (2005) find that CEOs in France hold more shares in the equity than other board members. So, over time, the interests of CEOs and large shareholders may converge. The stewardship theory considers a more virtuous development (Davis et al. 1997). According to this theory, a CEO who holds the position for a short period does not necessarily have the means to successfully contribute to firm performance. In fact, the CEO would spend the first mandated period acquiring crucial industry information to be able to identify interesting strategic opportunities.

In consideration of the French context and the resource theory expectations, we hypothesise the following:

**$H_{3b}$**: CEO seniority has a positive impact on firm performance.

### 2.4 External shareholders

Ownership is a mechanism of internal corporate governance. It can substitute as a control mechanism in case of an ineffective BoD or weak legal system of minority shareholders' rights (Black and Kim 2012; Choi et al. 2007; Dahya and McConnell 2005). The agency theory focuses on two criteria: ownership concentration and shareholder category. These two criteria can strongly influence the power balance between shareholders and top managers. They also provide the shareholders

incentives to become involved in the management control. Some researchers (Agrawal and Knoeber 1996; Demsetz and Lehn 1985) make a clear distinction between internal and external shareholders. They argue that the units of shares held by internal stakeholders, managers, employees etc. are units traded within the firm and not hand-selected independently by each stakeholder. Therefore, these shares reflect all the associated costs and benefits. On the other hand, in the case of a capital takeover by outside shareholders, the costs and benefits associated with not only the buyer but also other shareholders must be considered.

In this research, we distinguish three categories of external shareholders: institutional shareholders, foreign shareholders, and pension funds.

The presence of institutional shareholders in firm ownership may impact corporate governance and performance (Cornett et al. 2007; Feldmann and Schwarzkopf 2003). These shareholders have stronger incentives than directors to control managers when their ownership is important as well as when the firm's shares are illiquid. In fact, it is more difficult to withdraw from the ownership if CEO performance is poor.

Thus, we test the following hypothesis:

**$H_{4a}$**: The presence of institutional investors in firm ownership has a positive impact on firm performance.

Furthermore, compared to domestic shareholders, foreign shareholders can demonstrate different behaviours. The presence of foreign shareholders would help in gauging the firm's ability to develop a universal model of corporate governance, especially concerning BoD composition. Miletkov et al. (2014) find that, in US firms, BoD independence is associated with the presence of foreign investors in the ownership.

**$H_{4b}$**: The presence of foreign investors in firm ownership has a positive impact on firm performance.

Unlike other institutional investors, pension funds require specific investment strategies (Faccio and Lasfer 2000). Since the early 1990s, the activation of pension funds is important in defining corporate governance, mainly through shareholder proposals. Nevertheless, the equity portfolio of pension funds generally guides the investment strategies; the important criteria include the relative firm performance compared to the performance of its whole portfolio. Currently, individuals who control pension funds do not wish to sit on boards or receive internal firm information; therefore, they can withdraw from ownership more easily if the performance is disappointing (Short and Keasey 1997).

**$H_{4c}$**: The presence of pension funds in firm ownership has an impact on firm performance.

## 3 Research design

First, we describe the sample selection procedure and the specificity of our panel data. Second, we explain the regression model and the measures of the variables.

### 3.1 Sample selection procedure

Our sample consists of large listed companies indexed in the Société des Bourses Françaises 250 Index (SBF 250). We identify the companies that were on the SBF 250 from 2002 to 2006. To eliminate the effect of the financial crisis of 2007–2008 on firm performance, the study period ends in 2006. This allows us to follow the same companies during the study period and observe the evolution of their governance practices. The study period is earlier than the European regulation on ACs (2008). This lets us appreciate the soft law flap over the hard law in French corporate governance. Moreover, it allows us to compare the results of other research, one decade later, concerning the behaviour of French firms in the operation of boards.

The SBF 250 incorporates both large and small caps (Cotation Assistée en Continu [CAC] 40 and CAC Small 90). Given the index's heterogeneity, a subsample of large cap is set up. Firms generally adhere to corporate governance practices based on their listing market and the importance of their market capitalisation, which influences their choices such as regarding the size, structure, or composition of boards. After dismissing the financial companies, our final sample is composed of 43 companies (215 observations) (Table 1).

### 3.2 Regression model and variables measurements

The regression model is used to define firm performance as the dependent variable. It is explained by both control variables and the following four groups of variables: (1) CEO's powers, (2) external shareholders, (3) independent directors, (4) and BoD and AC diligence.

The regression model is as follows:

$$\begin{aligned} Performance_{it} = \alpha_{it} &+ \beta_1 \sum_{k=1}^{2} \gamma_k CEO\_power + \beta_2 \sum_{k=1}^{4} \alpha_k external\_shareholders_{i,t} \\ &+ \beta_3 \sum_{k=1}^{2} \gamma_k independent\_directors \\ &+ \beta_4 \sum_{k=1}^{m} \delta_k BoD\_audit\_diligence_{i,t} + \sum_{j=1}^{n} \beta_j control\_variables_{i,t} \\ &+ \varepsilon_{it}, \end{aligned}$$

where $i$ denotes the firm, $t$ indexes the year, and $\varepsilon_{it}$ is the error term. This model is based on *panel data* collected by observing *43 firms* over a *five-year* period (2002–2006).

Corporate governance researchers use different measures to address firm performance. Some of them focus on stock market indicators such as stock profitability or assets' market value (e.g. Brickley et al. 1994; Cotter et al. 1997; Thomsen et al. 2006). Other researchers (Hutchinson and Gul 2004; Park and Shin 2003; Singh and Davidson 2003) use only accounting and financial indicators, such as economic profitability (return on assets [ROA]) or return on equity (ROE). The most recent researchers advance environmental firm performance (e.g. Villiers et al.

**Table 1** Selection procedure of the final sample (SBF 250)

| Initial sample | 250 |
|---|---|
| Financial companies and companies no present in the index over the five years[a] | −141 |
| Medium and small capitalisations | −76 |
| Final sample: large caps | 43 |
| Period: 2002–2006 | 5 ans |
| Number of observations | 215 |

Large caps: companies whose average annual capitalization greater than € 3 billion

[a] Banks, Insurance, Life Insurance, firms with other financial activities

2011). In this research, firm performance is determined by examining both economic profitability (ROA) and capital profitability (ROE). Hutchinson and Gul (2004) argue that use of accounting and financial ratios are preferable to stock market ratios to investigate the relationship between performance and corporate governance; these measures best reflect management's deviant behaviour.

Shareholders can judge the importance of their management control cost through two parameters: their part-ownership and the degree of dispersion of the equity ownership (Morck et al. 1988). Regarding the ownership structure of our sample, the median of each shareholder category is often zero. We opt for binary variables in order to distinguish the weak or strong presence of each shareholder category. Previous empirical studies conducted across the Atlantic consider that a 5 % stake defines majority presence in the ownership; when the ownership structure is less diffuse, LaPorta et al. (1999) allow a 10 % threshold. Taking into account the distribution of our variables, we select a threshold of 15 % to define the presence of institutional or foreign investors and a threshold of 1 % (3rd quartile) to define pension funds in the equity ownership.

## 4 Results

The results are presented in two stages. First, we explain and comment on our descriptive statistics; then, we discuss the results of the regression model.

### 4.1 Descriptive analysis

The descriptive analysis (Table 2) shows that 95 % of the BoDs have a nomination committee and/or a remuneration committee. The average board size is 14 members, 46 % of whom are independent directors. The average size of an AC is 3 members, 66 % of whom are independent. These statistics are in line with the recommendations of the French corporate governance code (Afep-Medef 2002). The report recommends that at least two-thirds of the AC's members should be independent and not corporate officers. Furthermore, the BoD is mainly independent for 46 % of the firms, and the AC is fully independent for 75 % of the firms. This proves the importance of the presence of independent directors on ACs, especially

**Table 2** BoD and audit committee structure

| | BoD | Audit committee |
|---|---|---|
| % of independents | 46 % | 66.12 % |
| Mainly independent | 45.79 % | 72.42 % |
| Fully independent | 0 | 75 % |
| Board size | 14 | 3.65 |
| Annual meeting | 7 | 4.61 |
| Taux de présence aux réunions | 86.42 % | 91 % |
| Directorships | 5.35 | 6 |

as the main function of this committee is to approve the quality of financial and accounting information.

The AC is a part of the BoD; the characteristics and composition of the board should reflect those of the AC and vice versa (Goh 2009). It is, therefore, expected that an AC composed entirely of independent directors is associated with a high presence of independent directors in the BoD. The results (Table 3) show that a fully independent AC is associated with a mainly independent BoD, which corroborates the results obtained by Klein (2002) in the North American context.

In the same context, the results regarding BoD attendance are close to those of Broye and Moulin (2012) for SBF 120 companies. We find that BoDs meet seven times a year with an average attendance rate of 86 %. AC meetings are limited to five per year with a higher attendance rate of 91 %. The directorships of both the BoDs and ACs tend to six. The directorships could master one another's competencies during these meetings; the possibility of sharing experiences has already been observed in other BoD meetings, such as those regarding mergers and acquisitions or new international strategies by the CEO.

We analyse the share of intra-individual variance of each variable. Both dependent variables (ROA and ROE) have significant intra-individual variance at 35 and 60 %, respectively. In contrast, a number of explanatory variables exhibit very low intra-individual variance. For example, for BoD size, the intra-individual variance is approximately 10 %. These variables are associated with the structural characteristics of firms.

Most BoD and AC variables have structural variance (Column 2 of Table 3), except the annual meetings of the AC. Following the financial crisis of the early 2000 s, the institutional framework has become increasingly burdensome for ACs. ACs have to meet more frequently in order to show diligence in financial audits and focus on the overall risk-control of the company.

In 56 % of the cases, the board's chair is the CEO of the firm. The CEO's tenure is approximately nine years with low intra-individual variance. The CEO's position is based more on corporate governance specifications than in compliance with governance recommendations.

The correlation matrix (Table 3) shows that firm size is positively related to board size, independent directors, and annual meetings of the board and the AC. Large companies have greater financial ability to appoint independent directors than small companies. Moreover, they can conduct an extensive range of activities,

**Table 3** Pearson correlation matrix: performances and corporate governance mechanism

| Variable | Mean | Part-var | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. ROA | 0.04 | 35.3 | | | | | | | | |
| 2. ROE | 0.06 | 59.7 | 0.39*** | | | | | | | |
| 3. INDEPFIN | 0.35 | 11.2 | 0.48*** | 0.26*** | | | | | | |
| 4. TASSET (ln) | 9.51 | 4.5 | −0.2*** | | −0.38*** | | | | | |
| 5. FIRMAGE (ln) | 3.68 | 7.8 | | 0.16** | | | | | | |
| 6. BOSIZE (ln) | 2.52 | 9.2 | | | | 0.40*** | | | | |
| 7. BOINDEP (d) | 0.46 | 30.1 | | | | 0.13* | | | | |
| 8. BOMEET (ln) | 1.86 | 32.6 | −0.2** | −0.17** | −0.16** | 0.21*** | −0.14* | 0.28*** | | |
| 9. DUALITY(d) | 0.56 | 17.4 | | | | 0.14** | 0.14** | 0.19*** | | |
| 10. CEOTENURE (ln) | 1.81 | 21.5 | 0.12* | 0.15** | 0.23*** | −0.12* | 0.17** | | | −0.25*** |
| 11. ACFULIND | 0.24 | 31.8 | | −0.12* | | | | −0.13* | 0.33*** | |
| 12. ACMEET (ln) | 1.44 | 38.0 | | | | 0.33*** | −0.13* | 0.37*** | | 0.34*** |
| 13. INSTOWN (d) | 0.5 | 27.1 | | | | −0.30*** | | −0.24*** | | −0.17** |
| 14. STRANGOWN (d) | 0.26 | 11.7 | | | | | 0.12* | 0.15** | | |
| 15. PFUNOWN (d) | 0.24 | 13.0 | −0.1* | | | 0.12* | 0.22*** | | 0.13* | |

| Variable | Mean | Part-var | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|
| 1. ROA | 0.04 | 35.3 | | | | | | | |
| 2. ROE | 0.06 | 59.7 | | | | | | | |
| 3. INDEPFIN | 0.35 | 11.2 | | | | | | | |
| 4. TASSET (ln) | 9.51 | 4.5 | | | | | | | |
| 5. FIRMAGE (ln) | 3.68 | 7.8 | | | | | | | |
| 6. BOSIZE (ln) | 2.52 | 9.2 | | | | | | | |
| 7. BOINDEP (d) | 0.46 | 30.1 | | | | | | | |
| 8. BOMEET (ln) | 1.86 | 32.6 | | | | | | | |

**Table 3** continued

| Variable | Mean | Part-var | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|
| 9. DUALITY(d) | 0.56 | 17.4 | | | | | | | |
| 10. CEOTENURE (ln) | 1.81 | 21.5 | 0.29*** | | | | | | |
| 11. ACFULIND | 0.24 | 31.8 | | 0.23*** | | | | | |
| 12. ACMEET (ln) | 1.44 | 38.0 | −0.19*** | | 0.19*** | | | | |
| 13. INSTOWN (d) | 0.5 | 27.1 | | | | | −0.13* | | |
| 14. STRANGOWN (d) | 0.26 | 11.7 | 0.14* | −0.25*** | | −0.16** | −0.21*** | 0.17** | |
| 15. PFUNOWN (d) | 0.24 | 13.0 | 0.19*** | 0.21*** | | 0.16** | | | |

We present only significant values in the correlation matrix

Part var: share of intra-firm variance % * $p < 0.1$. ** $p < 0.05$. *** $p < 0.01$

*(ln)* natural log; *(d)* dummy variable; *ROA* Return on Assets; *ROE* Return on Equity; *INDEPFIN* Long-term financial independence of the firm; *TASSET* total assets of the balance sheet; *FIRMAGE* firm age; *BOSIZE* natural log of Board size; *BOINDEP* 1 if the board is mostly independent and 0 elsewhere; *BOMEET* annual board meeting; *DUALITY* 1 if the Chairman of the board is the Chief Executive Officer and 0ailleurs; *CEOTENURE* number of years in the post; *ACFULIND* 1 if the committee is fully independent and 0 elsewhere; *ACMEET* audit committee annual meetings; *PFUNOWN* 1 if the shareholding of pension funds exceeds 1 % and 0 elsewhere; *INSTOWN* 1 if the shareholding institutions exceeds 15 % and 0 otherwise. *STRANGOWN*; 1 if the strangers ownership exceeds 15 % and 0 elsewhere

which require greater number of directors and meetings in order to monitor and validate the management's strategic choices (Masulis et al. 2012). The results can also be explained by higher remuneration for directors in these companies, which leads to higher attendance rate of meetings (the attendance fees are higher). Furthermore, we find that the number of meetings is negatively associated with the firm's age (−0.14 and −0.13**). The oldest companies may have required a certain maturity in corporate governance, which manifests more obviously in their board functioning.

We find a positive association between a majority presence of independent directors and the number of BoD meetings (0.28***) and AC meetings (0.37***). However, a majority of independent directors on the board is negatively associated with a fully independent AC. Companies that do not have a majority of independent directors on the board would seek to remedy this by developing a fully independent committee. Similarly, we find that companies that have lower return on capital are characterised by a fully independent AC. This may be related to the difficulties facing these companies; companies would need to appoint more independent members in their committee to not only comfort financial markets in accordance with corporate governance recommendations but also strengthen internal corporate audits and risk analyses (Cavaco et al. 2012; Fama 1980, as cited in Walters et al. 2007).

### 4.2 Multivariate analysis

Multivariate analysis is used in this study upon considering the structure of our data. In the first part, the regression results are obtained from data on intra-firm variability, and in the second part, from data on inter-firm variability. Inter-firm variability results from firms' heterogeneity should be neutralised because it can lead to erroneous findings. For example, firms from different sectors should be characterised by specific corporate governance.

Two specifications are generally used to identify inter-firm heterogeneity. First, we can use the assumption of fixed effects, which means introducing individual constants (for each firm) in the regression model. Thus, all inter-firm variability of the data will be neutralised. However, the assumption of fixed effects is an extreme measure as it leads to imprecise estimates of the coefficients of the firm's structural variables that vary weakly with time (e.g. BoD size). Second, we can use the assumption of random effects, which means decomposing the error term into individual random effect and residual random effect. This is a parsimonious specification of inter-firm heterogeneity. In this research, we explore this assumption by using the maximum likelihood estimator. Indeed, the ordinary least squares estimator is not the most efficient estimator that can be used. The test results[1] validate the assumption of random effects with the exception of the first model (ROA).

[1] We use the Breusch-Pagan Lagrange multiplier (LM) to test the hypothesis of random effects for our models and the Hausman specification test (1978) to differentiate between the assumptions of fixed effects and random effects.

For both performance variables (ROA and ROE), we always consider three models: a simple model in which we derive the control variables (model 1), a model in which we add variables related to the BoD (model 2), and a comprehensive model with AC variables (model 3). We select a set of observations so that the three models for each dependent variable (ROA and ROE) are estimated on the same observations. Our data do not have information on all the companies and for all the years. Some optional information, such as regarding annual meetings, is not regularly indicated in the annual reports; this may or may not vary the number of observations based on explanatory variables introduced in the model. Therefore, careful selection of observations allows for better comparison of the three models.

CEO duality or CEO seniority were subjects of previous research on corporate governance and corporate strategies (e.g. Anderson et al. 2004; Duru et al. 2016; Kamarudin et al. 2012). Regarding economic profitability (ROA), the coefficients in the three models for the two variables are negative (Table 4); however, they are not significantly different from zero. Concerning capital efficiency (ROE), the coefficients are positive but, again, not significantly different from zero. The results do not confirm $H_{3a}$ or $H_{3b}$.

Table 4 shows that a significant presence of institutional shareholders has a positive effect on economic profitability but a negative effect on capital profitability. These effects are reflected in the three models. Economic profitability is usually correlated to firms' long-term profitability. Therefore, a significant presence of institutional shareholders in the ownership would lead to better long-term performance of the firm. Institutional shareholders will perform more actions to influence management decisions. Sustaining long-term, high profitability by supporting higher agency costs outweighs the need for the liquidity of assets and short-term profit (Gillan and Starks 2007; Hartzell and Starks 2003).

We find a significant negative association between the presence of pension funds in the ownership and the firm's economic performance (ROA). There are two possible explanations for this. First, these pension funds do not aim to maximise the value of the fund (Murphy and Van Nuys 1994, as cited in Faccio and Lasfer 2000). Second, they cannot be removed easily from the ownership other than by accepting significant losses (Coffee 1991).

The presence of foreign investors has a significant negative effect on ROE, which may be due to information asymmetry and market illiquidity. Generally, foreign investors are less informed than domestic investors and less able to become involved in corporate governance. Furthermore, an illiquid market, such as the French market, does not allow them to be easily removed from the ownership.

A mainly independent BoD would lead to significantly higher performance (both economic and equity performances). This effect is robust; it is not affected by the introduction of AC variables (models 2 and 3). The regression model highlights the positive contribution of independent directors in improving the firm's performance. Reverse causality is not excluded: the most profitable firms would be able to hire the best performing independent directors. This association is much stronger for equity performance (0.270*** or 0.269***) than for economic performance (0.028** or 0.030**).

**Table 4** Impact of BoD structure and audit committee on firm's performances

| Variable | Sign provided | ROA | | | ROE | | |
|---|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (1) | (2) | (3) |
| INDEPFIN | + | 0.323*** | 0.327*** | 0.331*** | 1.854*** | 1.733*** | 1.762*** |
| | | (0.00 %) | (0.00 %) | (0.00 %) | (0.00 %) | (0.00 %) | (0.00 %) |
| TASSET | + | 0.003 | −0.002 | −0.004 | 0.098 | 0.067 | 0.082 |
| | | (71.40 %) | (77.70 %) | (59.70 %) | 18.30 % | 38.50 % | 29.00 % |
| AGE | + | 0.012* | 0.013* | 0.012* | 0.073 | 0.086 | 0.068 |
| | | (9.60 %) | (8.90 %) | (8.80 %) | (25.40 %) | (18.20 %) | (28.60 %) |
| BOSIZE | +/− | | 0.049* | 0.037 | | 0.281 | 0.335 |
| | | | (8.20 %) | (18.50 %) | | (21.70 %) | (13.80 %) |
| BOINDEP | +/− | | 0.028** | 0.030** | | 0.270*** | 0.269*** |
| | | | (3.60 %) | (2.30%) | | (0.60 %) | (0.60 %) |
| BOMEET | ? | | −0.012 | −0.013 | | −0.332*** | −0.256** |
| | | | (48.40 %) | (45.80 %) | | (0.80 %) | (4.20 %) |
| DUALITY | +/− | −0.007 | −0.006 | −0.002 | 0.032 | 0.051 | 0.09 |
| | | (66.70 %) | (67.90 %) | (89.70 %) | (77.90 %) | (64.90 %) | (42.40 %) |
| CEOTENURE | +/− | −0.006 | −0.01 | −0.008 | 0.101 | 0.072 | 0.09 |
| | | (44.90 %) | (24.00 %) | (31.60 %) | (11.30 %) | (25.20 %) | (15.20 %) |
| ACFULIND | + | | | −0.030* | | | −0.217* |
| | | | | (6.30 %) | | | (6.40 %) |
| ACMEET | +/− | | | 0.024* | | | −0.179* |
| | | | | (9.30 %) | | | (5.70 %) |
| INSTOWN | + | 0.025* | 0.029** | 0.028* | −0.175 | −0.194* | −0.190* |
| | | (8.00 %) | (4.40 %) | (5.40 %) | (10.70 %) | (6.90 %) | (6.90 %) |
| STRANGOWN | ? | 0.001 | −0.002 | 0.001 | −0.334** | −0.353** | −0.300** |
| | | (97.80 %) | (92.40 %) | (95.00 %) | (2.60 %) | 1.60 % | 4.00 % |
| PFUNOWN | ? | −0.036* | −0.038* | −0.034* | −0.114 | −0.158 | −0.061 |
| | | (7.20 %) | (6.30 %) | (8.80 %) | (52.90 %) | (38.30 %) | (63.70 %) |
| Constant | | −0.132 | −0.196* | −0.178* | −1.838** | −1.703* | −1.855** |
| | | (14.10 %) | (6.70 %) | (8.80 %) | (2.70 %) | (6.50 %) | (4.30 %) |
| Observations | | 189 | 189 | 189 | 186 | 186 | 186 |
| Number of id | | 42 | 42 | 42 | 42 | 42 | 42 |
| R-squar | | 0.48 | 0.47 | 0.52 | 0.18 | 0.18 | 0.21 |
| Sig-glob | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

The numbers in parentheses below the estimated coefficients refer to the *p*-value of the t-Student in %

R-squar: expresses the R between

*** $p < 0.01$. ** $p < 0.05$. * $p < 0.1$

However, we find a negative association between the independence of the AC and the firm's performance. Again, the association is more pronounced for equity performance (–0.217*) than for economic performance (–0.030*). Full independence of the AC can be achieved when firms have difficulties. Introducing

independent members based on corporate governance recommendations can be a positive signal to comfort the markets and/or strengthen the firm's internal financial audit and risk analysis (Fama 1980, as cited in Walters et al. 2007; Komarev and Prat Dit Hauret, 2011). Khondkar et al. (2015) argue that the monitoring efforts of the AC are weak in an environment with weak governance.

Concerning BoD and AC diligence, we find that high frequency of board meetings is associated with lower firm performance (Table 3 and models 2 and 3). We advance an explanation in terms of reverse causality: in case of problems (economic or financial difficulties, internal tensions, etc.), the board needs to meet more frequently. The results are less clear for the AC; larger number of AC meetings has a positive effect on economic returns and a negative effect on equity performance. To assess the robustness of the results, we construct a binary variable that distinguishes between the boards' gatherings (Anderson et al. 2004). We select the median number of both the board and AC meetings (6.5 and 4, respectively) to set the threshold. The estimated coefficients are not significant and retain a negative sign. Thus, there is a negative association between BoD and AC diligence, and firm performance is consistent. Instead, the results show that BoD and AC diligence are related to the restatement of firms' earnings.

In sum, the independence of BoD significantly and positively impacts firm performance. This effect is greater on equity performance than on economic performance. However, this effect is not found for the AC. Therefore, diversifying AC composition using different directors' profiles could be more advantageous for firm performance. Thus, we confirm hypothesis $H_{1a}$ and reverse hypothesis $H_{1b}$. On the other hand, we find that high frequency of BoD or/and AC meetings is associated with low firm performance. Therefore, we reverse hypotheses $H_{2a}$ and $H_{2b}$. Concerning, CEO duality or CEO seniority, the results do not confirm hypotheses $H_{3a}$ or $H_{3b}$. Moreover, we find that the presence of foreign investors or pension funds in the ownership has a significant negative effect on firm performance (confirming hypotheses $H_{4b}$ and $H_{4c}$). For institutional shareholders, the association is not constant; we find a positive effect on economic profitability but a negative effect on capital profitability ($H_{4a}$).

## 5 Conclusion

This research studies the effect of the presence of independent directors on the boards of large listed firms in France as part of a comprehensive governance model. The importance of external shareholders and CEO's powers are taken into account. In France, the AC was made compulsory for some listed firms in regulated markets since December 2008. Nevertheless, the monitoring and control form is frequently present in our sample as the study period is 2002–2006. However, we find that all the firms in our sample have an AC and that most ACs are fully independent. This can be explained by the supremacy of soft law over hard law as a regulatory source of corporate governance (Ben Barka 2012). In fact, French corporate governance reports emphasise the presence of ACs in firms since the late 1990 s (Afep-Medef, Bouton 2002; Viénot 1995, 1999).

The research results show that the independence of BoDs is reflected clearly on high firm performance. Additionally, results show that shareholders—whether they are institutional investors, foreign investors, or pension funds—have an impact on firm performance. This corroborates agency theory assumptions. Both corporate governance mechanisms (ownership and BoD) coexist in the context of France. The hypotheses of substitutability do not outstrip the hypotheses of complementarity between them. However, an AC that is fully independent or meets frequently is associated with lower performance. Expanding AC composition by integrating other directors' profiles could be useful. In recent years, institutions and regulators emphasise the importance of integrating directors with financial and accounting expertise and new directors who are "Fresh thinkers" in the AC (Afep-Medef 2015; KPMG 2015).

The contributions of this research are twofold: First, the research findings allow an appreciation of the impact of soft law in French corporate governance and regulations. Second, it allows us to compare, one decade later, the behaviour of firms operating a BoD. This comparison is made using the results of others' research on French firms and a recent survey on corporate governance.

Regarding the practical implications of the research, we notice that in their annual reports, French firms did not disclose some information about BoD functioning and composition. French corporate governance regulators should require the presentation of the attendance rate of each director at meetings and the relative remuneration of an independent director. This helps better assess the independence of directors and their diligence.

The research has some limits. It is limited to only two accounting performance indicators. In future research, it would be interesting to consider (1) social performance as a firm's performance indicator and (2) CEOs' presence in the compensation and/or appointment committees to better measure their powers and implications on BoD.

## References

AFEP-CNPF, Viénot corporate governance report. (1995). http://www.ecgi.org/codes/documents/vienot1_fr.pdf.

AFEPMEDEF. (2015). http://www.afep.com/uploads/medias/documents/Code_de_gouvernement_entreprise_revise_novembre_2015.pdf.

AFEP-Medef. (2002). Bouton corporate governance report, http://www.paris-europlace.net/files/a_09-23-02_rapport-bouton.pdf.

AFEPMEDEF, Viénot corporate governance report. (1999).http://www.ecgi.org/codes/documents/vienot2_fr.pdf.

Agrawal, A., & Chadha, S. (2005). Corporate governance and accounting scandals. *Journal of Law and Economics, 48*, 371–406.

Agrawal, A., & Knoeber, C. R. (1996). Firm performance and mechanisms to control agency problems between managers and shareholders. *Journal of Financial & Quantitative Analysis, 3*, 377–397.

Anderson, R. C., Mansi, S. A., & Reeb, D. M. (2004). Board characteristics accounting report integrity, and the cost of debt. *Journal of Accounting and Economics, 37*, 315–342.

Ben Barka, H. (2012). L'indépendance des administrateurs les risques du métier face à la mondialisation de la finance. *Revue Française de Comptabilité, 451*, 36–39.

Berle, A. A., & Means, G. C. (1932). *The modern corporation and private proprety*. London: The MacMillan corporation.
Black, B., & Kim, W. (2012). The effect of board structure on firm value: A multiple identification strategies approach using Korean data. *Journal of Financial Economics, 104*, 203–226.
Brick, I. E., & Chidambaran, N. K. (2010). Board meetings, committee structure, and firm value. *Journal of Corporate Finance, 16*, 533–553.
Brickley, J., Coles, J., & Terry, R. (1994). Outside directors and the adoption of poison pills. *Journal of Financial Economics, 35*, 371–390.
Broye, G., & Moulin, Y. (2012). Les déterminants de la rémunération des administrateurs externes dans les sociétés françaises du SBF 120. *Finance Contrôle Stratégie, 15*, 53–78.
Bryce, M., Ali, M. J., & Mather, P. R. (2015). Accounting quality in the pre-/post-IFRS adoption periods and the impact on audit committee effectiveness—Evidence from Australia. *Pacific Basin Finance Journal, 35*, 163–181.
Cai, J., Garner, J. L., & Walkling, R. A. (2009). Electing directors. *Journal of Finance, 64*, 2389–2421.
Cai, C. X., Hillier, D., Tian, G., & Wu, Q. (2015). Do audit committees reduce the agency costs of ownership structure. *Pacific Basin Finance Journal, 35*, 225–249.
Carcello, J., & Neal, T. L. (2000). Audit committee composition and auditor reporting. *The Accounting Review, 75*, 453–468.
Cavaco, S., Challe, E., Crifo, P., & Reberioux, A. (2012). Conseils d'administration et performance des sociétés cotées, Report for CDC Research Institute, http://www.tresor.economie.gouv.fr/File/381034.
Chen, G., Firth, M., Gao, D. N., & Rui, O. M. (2006). Ownership structure, corporate governance, and fraud: Evidence from China. *Journal of Corporate Finance, 12*, 424–448.
Chen, H. L., Hsu, W. T. & Chan, C. Y. (2016). Independent directors' human and social capital, firm internationalization and performance implications: An integrated agency-resource dependence view. *International Business Review, 25*(4), 1265–1278.
Choi, J. J., Park, S. W., & Yoo, S. S. (2007). The value of outside directors: Evidence from corporate governance reform from Korea. *Journal of Financial and Quantitative Analysis, 42*, 941–962.
Coffee, J. (1991). Liquidity versus control: The institutional investor as corporate monitor. *Columbia Law Review, 91*, 1277–1368.
Cornett, M. M., Marcus, A. J., Saunders, A., & Tehranian, H. (2007). The impact of institutional ownership on corporate operating performance. *Journal of Banking & Finance, 31*, 1771–1794.
Cotter, J. F., Shivdasani, A., & Zenner, M. (1997). Do independent directors enhance target shareholders wealth during tender offers? *Journal of Financial Economics, 43*, 195–218.
Dahya, J., & McConnell, J. (2005). Outside directors and corporate board decisions. *Journal of Corporate Finance, 11*, 37–60.
Davis, J. H., Schoorman, F. D., & Donaldson, L. (1997). Toward a stewardship theory of management. *Academy Management Review, 22*(1), 20–47.
Demsetz, H., & Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. *Journal of Political Economy, 93*(6), 1155–1177.
Duru, A., Iyengar, R. J., & Zampelli, E. M. (2016). The dynamic relationship between CEO duality and firm performance: The moderating role of board independence. *Journal of Business Research,*. doi:10.1016/j.jbusres.2016.04.001.
Faccio, M., & Lasfer, M. A. (2000). Do occupational pension funds monitor companies in which they hold larges takes? *Journal of Corporate Finance, 6*, 71–110.
Fama, E. F. (1980). Agency problems and the theory of the firm. *Journal of Public Economics*, *88*(2), 288–307.
Fama, E. F., & Jensen, M. C. (1983). The separation of ownership and control. *Journal of Law and Economics, 26*, 327–349.
Feldmann, D. A., & Schwarzkopf, D. L. (2003). The effect of institutional ownership on board and AC composition. *Review of Accounting & Finance, 2*(4), 87–109.
García-Sánchez, I. M., Frías Aceituno, J. V., & Domínguez, L. R. (2015). The ethical commitment of independent directors in different contexts of investor protection. *Business Research Quarterly, 18*, 81–94.
Gillan, S. L., & Starks, L. T. (2007). The evolution of shareholder activism in the United States. *Journal of Applied Corporate Finance, 19*, 55–73.
Godard, L., & Schatt, A. (2005). Faut-il limiter le DUALITY des fonctions dans les conseils d'administration? Le cas français. *Revue des sciences de gestion, 213*, 61–72.

Goh, B. W. (2009). ACs, Boards of Directors, & Remediation of Material Weaknesses. *Contemporary Accounting Research, 26*(2), 549–557.
Hahn, P. D., & Lasfer, M. (2015). Impact of foreign directors on board meeting frequency. *International Review of Financial Analysis,*. doi:10.1016/j.irfa.2015.11.004.
Hartzell, J., & Starks, L. (2003). Institutional investors and executive compensation. *Journal of Finance, 58*, 2351–2374.
Hermalin, B. E., & Weisbach, M. S. (1998). Endogenously chosen boards of directors and their monitoring of the CEO. *American Economic Review*, *88*(1), 96–118.
Hermalin, B. E., & Weisbach, M. S. (2003). Boards of directors as an endogenously determined institution : A survey of the economic literature. *Federal Reserve Bank of New York Economic Policy Review, 9*(1), 7–26.
Hou, W., Li, S., & Priem, R. L. (2013). How do CEOs matter? The moderating effects of CEO compensation and tenure on equity ownership in international joint ventures. *Journal of International Management, 19*, 138–151.
Hutchinson, M., & Gul, F. A. (2004). Investment opportunity set, corporate governance practices and firm performance. *Journal of Corporate Finance, 10*, 595–614.
Jensen, M. C., & Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360.
Kamarudin, K. A., Ismail, W. A. W., & Samsuddin, M. E. (2012). The influence of CEO duality on the relationship between audit committee independence and earnings quality. *Procedia-Social and Behavior Science, 65*, 919–924.
Karamanou, I., & Vafeas, N. (2005). The association between Corporate Boards, audit committees and management earnings forecasts: An empirical analysis. *Journal of Accounting Research, 43*(3), 453–486.
Khondkar, K., Ashok, R., & Sanghyun, S. (2015). Board structure & AC monitoring: Effects of AC monitoring incentives & board entrenchment on audit fees. *Journal of Accounting, Auditing & Finance*, *31*(2), 17–31.
Klein, A. (2002). Economic determinants of AC independence. *The Accounting Review, 77*(2), 435–452.
Komarev, I., C. & Prat Dit Hauret, C. (2011). Le comité d'audit dans la gouvernance des sociétés cotées, Revue Française de Comptabilité, no 441.
KPMG, Practice audit committees, in France and in the world. (2015). http://www.kpmg.com/fr/fr/issuesandinsights/articlespublications/pages/pratique-des-comites-audit-2015.aspx.
Krivogorsky, V. (2006). Ownership, board structure, and performance in continental Europe. *The International Journal of Accounting, 41*, 176–197.
LaPorta, R., Lopez-de-Silanes, F., & Shleifer, A. (1999). Corporate ownership around the world. *Journal of Finance, 54*(2), 471–517.
Masulis, R. W., Wang, C., & Xie, F. (2012). Globalizing the boardroom—The effects of foreign directors on corporate governance and firm performance. *Journal of Accounting and Economics, 53*, 191–213.
Miletkov, M. K., Poulsen, A. B., & BabajideWintoki, M. (2014). The role of corporate board structure in attracting foreign investors. *Journal of Corporate Finance, 29*, 143–157.
Morck, R., Shleifer, A., & Vishny, R. W. (1988). Managerial ownership and market valuation: An empirical analysis. *Journal of Financial Economics, 20*, 293–315.
Murphy, K. J., & Van Nuys, K. (1994). *Governance, Behavior, and Performance of State and Corporate Pension Funds.* Working Paper: Harvard University.
Park, Y. W., & Shin, H. H. (2003). Board composition and earning management in Canada. *Journal of Corporate Finance, 185*, 1–27.
Short, H., & Keasey, K. (1997). Institutional shareholders and corporate goverance in the United Kingdom. In K. S. Keasey, S. Thompson & M. Wright (Eds.), *Corporate Goverance: Economic, Management, Financial Issues* (pp. 18-53). Oxford: Oxford University Press.
Singh, M., & Davidson III, W. N. (2003). Agency costs, ownership structure and corporate governance mechanisms. *Journal of Banking and Finance*, *27*, 793–816.
Sun, J., Lan, G., & Liu, G. (2014). Independent audit committee characteristics and real earnings management. *Managerial Auditing Journal, 29*(2), 153–172.
Thomsen, S., Pedersena, T., & Kvist, H. K. (2006). Blockholder ownership: Effects on firm value in market and control based governance systems. *Journal of Corporate Finance, 12*(2), 246–269.
Vafeas, N. (2005). ACs, boards, and the quality of reported earnings. *Contemporary Accounting Research, 22*(4), 1093–1122.

Villiers, C., Naiker, V., & Van Staden, C. J. (2011). The effect of board characteristics on firm environmental performance. *Journal of Management, 37*(6), 1636–1663.
Walls, J. L., Berrone, P., & Phan, P. H. (2012). Corporate governance and environmental performance: Is there really a link? *Strategic Management Journal, 33*, 885–913.
Walters, B. A., Kroll, M. J., & Wright, P. (2007). CEO tenure, boards of directors, and acquisition performance. *Journal of Business Research, 60*, 331–338.
Ya'acob, N. S. (2016). CEO duality and compensation in the market for corporate control: Evidence from Malaysia. *Procedia Economics and Finance, 35*, 309–318.
Yang, T., & Zhao, S. (2014). CEO duality and firm performance: Evidence from an exogenous shock to the competitive environment. *Journal of Banking & Finance, 49*, 534–552.

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