

Corporate Governance and Corporate Social Responsibility

Aymeric Guidoux

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Thèse de doctorat

Corporate Governance and Corporate Social Responsibility

Thèse de doctorat de l'Université Paris-Saclay
préparée à l'Ecole Polytechnique

Ecole doctorale n°578 Sciences de l'Homme et de la Société (SHS)
Spécialité de doctorat: économie

Thèse présentée et soutenue à Paris, le 20 décembre 2018, par

AYMERIC GUIDOUX

Composition du Jury :

Antoine Rebérioux Professeur, Université Paris 7 Diderot	Président
Catherine Casamatta Professeure, Université Toulouse 1 Capitole	Rapporteur
Patricia Charléty Professeure, ESSEC Business School	Rapporteur
Edouard Challe Directeur de Recherche CNRS, CREST, Ecole Polytechnique	Examinateur
Patricia Crifo Professeure, Université Paris Ouest Nanterre La Défense, Ecole Polytechnique et CIRANO	Directeur de thèse

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List of Abbreviations

ANR: Agence Nationale de Recherche

CEO : Chief Executive Officer

CSR: Corporate Social Responsibility

ESG: Environment, Social and Governance

OECD: Organisation for Economic Co-operation and Development

ROA: Return on Assets

ROE: Return on Equity

RSE: Responsabilité Sociale et Environnementale

SBVR: Single Biggest Voting Right

Introduction

Governance as a mediating factor between CSR and performance

From Corporate Social Responsibility to Corporate Social Performance

Corporate Social Responsibility (CSR) is the answer provided by companies to the growing pressure coming from employees, shareholders, local communities, environmental NGOs, and legislators to take into account the environmental and social impacts of their actions. Far from being greenwashing, the goal is to define the place and the role of companies in building a sustainable society, meeting the concerns of the 21st century (Crifo and Sinclair-Desgagné, 2014). In France, the PACTE law, promulgated on the first reading on October 9, 2018, will incorporate the concept of social utility in the definition of a firm in the civil law. Nevertheless, the concept of "societal responsibility" of firms first appeared in the '60s, well before the definition of sustainable development (Brundtland, 1987) it echoes. In his publication Business and Society (1963), McGuire writes "The idea of social responsibilities supposes that the corporation has not only economic and legal obligations but also certain responsibilities to society which extend beyond these obligations". Thus, even if this process has been supported for numerous years by government through the development of regulations, it finds its dynamic in the will of companies to take more and more into account the externalities they create.

Firms have come a long way these past few years to integrate the concept of the Corporate Social Responsibility, following the path taken by economists in defining the concept. Far from being plain philanthropy unrelated to the firm's strategy, CSR can be better understood in the light of the stakeholder theory (Freeman, 1984). The theory considers the interactions between the company and the various interested parties evolving in its immediate environment such as its employees, shareholders, clients, suppliers, etc. This theory suggests that the pressures of environmental and social issues are carried by stakeholders from civil society such as NGOs, local communities

and government. Therefore, the literature on CSR describes a firm as having implicit and explicit contracts with all the stakeholders (Cornell and Shapiro, 1987). Failure to respect its obligations could consequently generate a financial or/ and reputational loss. On the other hand, building strong and sustainable relations with all stakeholders is an integral part of risk management and could guarantee the optimization of "shareholder value" (Jensen, 2001).

Simultaneously with the development of this theoretical vision of CSR, firms have been led to evaluate their environmental and social externalities. Thus, methodologies have been implemented to quantify environmental impacts, relations with clients, employee fulfilment, or supplier's quality control. Eager to show improvements, firms have used these assessments as a base to build a true culture of extra-financial performance. Investor interest in CSR commitment has also increased and rating agencies specialized in the environment, social and governance criteria (ESG) have emerged. To be more precise on the "Social" criteria, these agencies now favor an assessment based on stakeholder categories (see Vigeo, Datastream). "Employees", the most direct stakeholder category, measures the quality of the working environment (conditions, management, salary package) and individual fulfilment (training, career development). Towards their "clients", firms are assessed on their capacity to spread responsible information and fight anti-competitive practices. Towards their "suppliers", firms differ in setting environmental and social requirements in their purchasing strategy and in fighting corruption. Indirectly, "Human Rights" and "Community Involvement" categories measure societal commitment to the respect of individual liberties and the promotion of local social and economic development. The "Environment" category determines the firm's commitment to the preservation of biodiversity and natural resources, the fight against pollution and climate change, and also for taking the environment into consideration in its product development projects (design, production, usage). Finally,

firms are assessed on their "Governance", their capacity to shape an efficient board able to perform its monitoring and advice duties and realize internal audits, and fix rules for manager salary packages.

The development of quantitative and qualitative assessments of the extra-financial performance is a major historic development. It has changed the paradigm of economic literature on CSR allowing the rise of a financial and empirical literature. In addition to stakes particular to CSR, the majority of the scientific questioning developed around financial performance have been transposed to extra-financial performance. One of the questions most discussed by economists relates to the contribution of extra-financial performance to financial performance. For the classical literature, summarized by Friedman in a 1970 paper entitled "The Social Responsibility of Business is to Make Profit", the statement is clear: CSR is not aligned with making profit as wished by the shareholders, and it also goes against the interests of consumers and employees. The voluntary commitment of a firm in favor of CSR may also weaken this same firm compared to its competitors. Ultimately, this firm could more easily disappear therefore the benefits for the society may be negative (Shaw, 1988). In this context, reducing market externalities is a government responsibility, not firms'.

On the other hand, there is little theoretical evidence suggesting than CSR creates value (Margolis and Walsh, 2003; Griffin and Mahon, 1997). The reputation gain of implementing CSR can also be profitable by attracting additional customers and suppliers (Klein and Leffler, 1981). Moreover, CSR could also be a way to increase employee satisfaction and productivity (Edmans, 2011), lower the cost of capital or foster innovation (Crifo and Sinclair-Desgagné, 2014).

Beyond these theoretical divergences, the empirical literature has been very productive without reaching a consensus. Some points show negative or positive correlation

while others show no significant link between the financial and the extra-financial performance (Surroca et al., 2010; Griffin and Mahon, 1997). New CSR studies underline the paradox of studying CSR as a whole and denying the specific contribution of each domain. For example, Cavaco and Crifo (2014) show the complementarity of certain dimensions while others appear substitutable.

Governance: the mediating factor between CSR and financial performance?

Recent studies highlight the lack of consideration of governance factors. Indeed, governance can be considered by its outputs through qualitative or countable indicators (e.g. the level of compensation, the percentage of women on the board) but in the economic literature, corporate governance refers to the set of formal and informal rules that shape the decision-making process. Corporate governance literature raises the following two fundamental questions: what interests should the company serve, and how are top executives monitored? (Crifo and Rebérioux, 2016). Reconciling studies on governance and CSR means focusing on how the CSR strategy is made, and by whom. To date, few empirical studies have demonstrated a positive and significant relation between governance and CSR (Jo and Harjoto, 2012).

Fisman et al. (2005) and Baron et al. (2011) show that CSR intensity and the impact of CSR on firm value depend on the nature of the firm's business environment. Crifo et al. (2016) also show that the intensity of CSR engagement relies on governance factors at three different levels: the structure of equity ownership (identity of shareholders), the composition and structure of the board of directors, and the regulatory framework of corporate governance and CSR, as defined by corporate law and stock market regulations. At the capital structure level, there is some evidence that ownership concentration negatively impacts CSR performance (Crifo et al., 2016; Gomes

and Novaes, 2001).

At the board level, Ferreira (2015) suggests that minority directors may serve interests other than those of shareholders. Harjoto et al. (2015) present their study as the first to link CSR performance and board diversity with a global definition of diversity. They found that overall board diversity is positively associated with community, environment, product and corporate governance but not with the employee and human rights areas. Finally, Bear et al. (2010) find that board gender diversity is positively associated with CSR strengths, measuring positive actions toward various groups of stakeholders.

Over the last three decades, two alternative models, providing different answers to these questions, have been developed: the shareholder and the stakeholder model of governance, opposed by the fact that in the former case the firm should primarily respect the interests of its shareholders, whereas in the latter model, the firm also represents broader social interests that must be taken into account as much as those of capital providers (Charreaux and Desbrieres, 2001). This dissertation refers to both models which are presented in detail in Chapter 2.

Dissertation objectives and contribution to the literature

This dissertation provides empirical and theoretical evidence of the determining factors involved at the top level of firm governance, from the board of directors to the CEO. After an introductory chapter, chapter 1 investigates the link between board composition and integrated CSR strategies. Using the renewal of directors that followed the French quota law for gender equality, we show that the first consequences of the gender quota is to increase gender diversity but also diversity of age, nationality and educational background. However, we do not find evidence that this diversity is

correlated to financial or extra-financial performance. For this chapter, we use a panel composed of French listed companies (SBF120 index) over the 2009-2015 period.

Because they cannot directly run the firm, the shareholders delegate the strategy and management of the firm to a CEO. Using variable pay, with part of the compensation determined by performance objectives, the board aligns the CEO's interests with the shareholders' own interests. Chapter 2 shows evidence of the effectiveness of part CSR based compensation, labeled "CSR contracting". We show that the impact of such compensation depends on the governance structure. For firms who focus on shareholders, CSR contracting is more likely to have a negative impact on financial performance and no impact on extra-financial performance. On the other hand, for firms with a stakeholder model of governance, we show that CSR contracting is effective and has a positive impact on environmental and social performance without impacting the financial results. This empirical work is conducted on a worldwide dataset with 3500 firms over the 2006-2015 period.

Chapter 3 provides a theoretical framework to understand the role of governance factor on the efficiency of incentives. We develop a model based on Che and Yoo (2001) model to study the influence of compensation among a team of two managers who have to work on a CSR task. We determine the optimal compensation between three compensation mixes: both agents receive monetary compensations, both agents receive external rewards from their environment, one agent receives monetary compensation and the other receives an external reward. We show that the choice of the optimal compensation scheme depends on the environment outside the firm, i.e. the level of the exogenous reward, and the environment inside the firm through the level of the interdependence between the managers' decisions which corresponds to the capacity of the firm to create cooperation between the agents. Then, using evidence from

executive compensation, we apply this model to the relationship between the CEO and the board of directors. We show that this decisional interdependence has two opposite effects on the determination of the optimal compensation design. We find that the adoption of monetary incentives for CSR tasks is more suitable for firms with a high decisional interdependence than for firms with a lower interdependence.

This dissertation sheds light on the close tie between governance, CSR and firm performance. Governance has two faces. One is static and corresponds to a picture of all the bad or good practices, policies, parameters at a given moment. It is the governance we can easily describe or assess with scores and study as a part of the extra-financial performance of firms. There is also dynamic governance, the balance of power within the framework in which the strategies are voted, the decisions are made, and the performance objectives achieved. Then the contribution of the dissertation to the economic literature is twofold:

First, we show the performance is not always impacted by the variations on one governance factor. In chapter 1, we show that gender quota induces several changes within the board composition that do not lead to significant variations in terms of performance. On the other hand, in chapter 2, we show that the compensation structure has a significant influence on the firm financial and extra-financial performance. We also show that the overall governance structure has an impact on the performance. In chapter 3, we highlight the importance of the nature of the incentives and of the decisional interdependence between agents. These findings show that, in order to develop an holistic approach of the link between governance and performance, we need to capture the impact of each governance factors one at a time.

Second, this dissertation offers new insights on dynamic governance. Governance is an equilibrium, a result of all the interactions between the listed governance factors.

It has a balance; the modification of one small interaction can have significant impact on all the decision-making processes and so on the firm CSR and performance. For example, chapter 1 shows that gender quota not just brings women to the board, but renews the overall board composition (gender, age, educational and professional background) while chapter 2 shows that a change in a relatively small part of the compensation scheme can have a significant impact on the overall strategy of the firm. This implies that on one hand, controlling for some governance factors in regressions may not be sufficient while, on the other hand, it would make no sense to include them through an exhaustive list. In consequence, this dissertation shows the importance of two complementary trends. First, the development of studies at the director level rather than at the board level will help us understand the mechanism behind the aptly named "diversity". Second, we see the importance of governance frameworks such as the stakeholder or the shareholder framework, which allow us to control for multiple interactions at once. This point is illustrated by the results of chapter 2, which demonstrate than the impact of CSR contracting differs according to the governance model.

Each chapter will be briefly summarized, presenting the positions in the literature and the main findings.

The effect of gender quota in the boardroom

In 2018, France reached gender parity in corporate boardrooms for its biggest publicly-listed capitalizations. This success was made possible by adopting a law in 2011 compelling firms to have boards composed of at least 40% of women by 2017. Dealing with quota-induced diversity, this article analyzes the relationship between board composition and corporate strategy and sustainability.

The adoption of gender quota appears to come as a political response to social pressures for a better gender equality in our modern society. Consequently, a growing literature is trying to measure the financial impact of quota-induced gender diversity. Nevertheless, the mixed results do not lead to an academic consensus. Some point out that the share of women directors is positively associated with financial performance ratios (Erhardt et al., 2003; Carter et al., 2003; Campbell and Mínguez-Vera, 2007). On the other hand, Adams and Ferreira (2008); Matsa and Miller (2013); Ahern and Dittmar (2012) find that the introduction of board gender quotas impact firm performances negatively. Ahern and Dittmar (2012) explain this negative impact by the lack of experience of younger female directors, while Matsa and Miller (2013) argue that the difference is due to a female style of leadership.

Finally, a large number of studies conclude that the presence of women doesn't influence financial performance (Chapple and Humphrey, 2014; Eckbo et al., 2016; Farrell and Hersch, 2005; Francoeur et al., 2008). Studying French CAC40 firms, Sabatier (2015) also find a positive correlation between the share of women and firm financial performance. In contrast to firm financial performance, the impact of board gender diversity on Corporate Social Responsibility remains unexplored.

In a review of literature entitled "Board Diversity: Should We Trust Research to Inform Policy?", Ferreira (2015) lists several methodology biases common in empirical studies on quota. In this chapter, we use the Rebérioux and Roudaut (2017) database to examine the impact of gender diversity on French companies listed on the SBF120 (the 120 largest capitalizations on EuroNext-Paris) between 2008 and 2015. Thus, we contribute to the literature at three different levels. First, we participate in the ongoing debate on the impact of quota-induced diversity on the financial performance of firms. Due to the mixed results, more investigations need to be conducted to understand the

mechanisms behind it. Second, we reveal the impact of quota in the specific case of France, using a larger dataset to challenge the contribution and results of Sabatier (2015). We believe the results of empirical studies on quota are correlated to the macro-economic context of the country. Exploring new samples is a key to drawing a pattern in the results. Finally, we describe the impact of quota-induced diversity on Corporate Social Responsibility. While CSR is becoming more and more integrated into core strategies of firms, we still need to understand the determining factors of the success of such strategies.

First, we show that the French law was anticipated by most firms and quantitative targets of the law were successfully achieved on time. Moreover, gender diversity was associated with age diversity because female newcomers were more likely to be younger than prior male directors.

Secondly, we find that the entrance of women is positively correlated with some financial performance indicators such as the Market-To-Book value (Tobin's Q). We also show that the quota had a neutral impact on all the dimensions of CSR: governance, human resources, respect of customers, environment, and community involvement. These results invalidate the idea of a female style of leadership where women use of their different experience to develop more complete strategies integrating financial and Corporate Social Responsibility. These results instead support the idea that gender quotas are needed to break the glass ceiling that has prevented talented women being appointed as directors.

The role of executive compensation programs (joint work with Sandra Cavaco and Patricia Crifo)

This chapter examines the relationship between corporate governance and corporate sustainability by focusing on an essential component of companies' governance structure: executive compensation programs. More precisely, we investigate whether corporate sustainability, measured by environmental, social and governance (ESG) performance, is influenced by CSR contracting, new types of executive compensation programs based on extra-financial (ESG) factors.

Counterbalancing the classic theory of moral hazard, which recommends sufficient rewards for "success" or "good performance", a large literature recognizes that high-powered incentives can distort managerial effort or encourage various unproductive activities to improve indicators of performance and lead to excessive short-termism (e.g., Holmstrom and Milgrom, 1991; Baker et al., 1994; Dixit, 1997; Oyer, 1998). A crucial reason for the development of CSR contracting is to encourage executives to sacrifice short-term pay-offs for long-term gains and stakeholder engagement (Flammer et al., 2017).

In this chapter, we examine how the adoption of CSR contracting affects firm-level outcomes. Our study uses a comprehensive dataset on the adoption timing of such programs. Descriptive statistics highlight the increasing prevalence of CSR contracting as a new phenomenon in corporate governance. We exploit the timing of executive program adoption and employ a difference-in-difference approach to help isolate causal impacts. Our results indicate that the adoption of CSR contracting leads to (i) a decrease in firm value (measured by ROA, ROE and price-to-book ratio) but (ii) an increase in CSR performance, especially responsible behaviors towards customers and suppliers and community involvement. Moreover, we explore the moderating role of

the corporate governance model and find that once we take into account whether the company has a governance model oriented toward its shareholders or its stakeholders, the results revert. In particular, for companies with a stakeholder governance model, the impact of CSR contracting becomes non-significant on financial performance, and positive on all environmental and social performance indicators. We conduct a number of additional analyses to check the robustness of our results.

This chapter makes two main contributions to the literature. First, it documents the development of CSR contracting over the past decade in a large set of OECD countries and characterizes the type of companies that are adopting such types of executive compensation programs. Second, it identifies the mediating factor between the adoption of CSR contracting and firm performance, and highlights a causal mechanism from CSR contracting to financial and extra financial performance, through the corporate governance model of the company and its orientation toward shareholders or more distant stakeholders.

Team work and heterogeneous incentives: Application to the Board-CEO relationship (joint work with Patricia Crifo)

The chapter 3 examines the influence of the nature of the motivations to execute CSR tasks when an agent can receive an exogenous reward (intrinsic motivation) or a monetary compensation (extrinsic motivation) for his work. We study and compare three possible compensation schemes considering that the CSR strategy is managed by a team of two agents: both agents are extrinsically motivated, both agents are intrinsically motivated, one agent receives a monetary compensation and the other is intrinsically motivated. We show that the choice of the optimal compensation scheme depends on the environment outside the firm, i.e. the level of the exogenous reward,

and the environment inside the firm through the level of the interdependence between the managers decisions.

The decisional interdependence corresponds to the capacity of the firm to create cooperation between the agents. We show that this decisional interdependence has two opposite effects on the determination of the optimal compensation design. In a second party, we use the specific case of the relation between the CEO, the board of directors and the shareholders to determine the relative strength of these two effects. Using executive compensation data, we show that the adoption of monetary incentives for CSR tasks is more suitable for firms with an important decisional interdependence than for firms with a lower interdependence. These results echo the findings of the chapter 2 where we find that the efficiency of CSR contracting depend on the overall governance structure. Here we show a more precise outlook of the governance factors and process involved.

This chapter contributes to the literature in several ways. First, these findings contribute directly to support the theory that governance factors have a significant impact on the efficiency of CSR strategies, of compensation policies, and in particular of compensation policies design to improve CSR performance. Second, this chapter highlights the importance of the interdependence between the decisions of the agents and in particular, between the decisions of the CEO and board of directors. While there is a subordination relation of the CEO to the board, we show that their relationship has some characteristics of an agent-agent relationship and that the level of proximity and balance of power influence the firm performance.

Chapter 1

The effect of gender quota in the boardroom

Acknowledgments: *I would like to thank Ethics&Boards and Thomson Reuters for the access to their data and most importantly Gwenael Roudaut and Antoine Reberioux for the help in building the database. This project was supported by the LABEX ECODEC (ANR-11-IDEX-0003 / Labex Ecodec / ANR-11-LABX-0047, Area 3 "Decision-making and market regulation"). I am also very thankful to Patricia Crifo, and all the participants of the Oikos Finance Academy 2016 for their helpful comments. Of course the usual disclaimer applies.*

Abstract: *Following the path of many OECD countries, France adopted the Zimmerman-Cope law in 2011 to dictate a minimum of 20% women on corporate boards by 2014 and raising it to 40% by 2017. The literature presumes a difference of state of mind between men and women, which is the reason why gender diversity seems to be promoted as a good governance practice. However, many studies have been done on board quotas to measure the impact of gender diversity on corporate performance and the mixed results do not lead to an academic consensus. The purpose of this chapter is to analyze the French experiment and determine how French companies are affected by the implementation of the quota, both their financial and extra-financial performances. Our dataset covers the SBF120 (120 biggest capitalizations on EuroNext-Paris) between 2008 and 2015, making our study the first one to include the post-quota period. Statistical analysis shows that the French law was anticipated by most firms and quantitative targets of the law were successfully achieved in time. Moreover, gender diversity was associated with age diversity because women newcomers were more likely to be younger than prior directors. To overcome the endogeneity problem, we use the pre-quota level of women representation as an instrument of the shortfall of women. We find that the reduction of the women shortfall is not correlated with financial performance indicators. We show that the quota also has a neutral impact on all the dimension of CSR: governance, human resources, respect of customers, environment, and community involvement. These results invalidate the idea of a female-style of leadership where women use their different experience to develop more holistic strategies integrating financial elements and Corporate Social Responsibility. These results instead support the idea that gender quotas are needed to break the glass ceiling that has prevented talented women being appointed as directors.*

Keywords: *corporate governance, corporate social responsibility, gender equity, board quota, environmental, social, and governance (ESG) criteria.*

JEL Classification*: M14; G30 ; C23*

1.1 Introduction

In 2018, France reached gender parity in corporate boardrooms for its biggest publicly-listed capitalizations. This success was made possible by the adoption of a law in 2011 compelling firm boards to be composed of at least 40% of women by 2017. Dealing with quota-induced diversity, this article analyzes the relationship between board composition and corporate strategy and sustainability. More specifically, we contribute to the understanding of the impact of board gender quotas on firm's overall performances. We study the impacts on financial results first and then on environmental, social and governance (ESG) performance.

Because of its strategic role in firm governance, the board has been the subject of a considerable part of the governance literature in order to highlight the relation between its composition and firm performance. More precisely, the debate focuses on the balance between independent directors and insider directors, though more research needs to be conducted to analyze the board sensibility to other characteristics such as age, gender, nationality, professional networks, and furthermore considering the multidimensionality of board diversity (Adams et al., 2010; Carter et al., 2003).

Unfortunately, for decades there was no expression of gender diversity in corporate governance. Differences between men and women valorization in top management seems to be too strongly established to only change through organic processes (Kogut et al., 2014). That is why 14 countries have adopted board gender quotas by law while another 16 have adopted corporate governance "codes" (Adams et al., 2015). The minimal threshold dictated by these quotas range from 35% to 50% (Terjesen et al., 2014). By adopting a law in 2007, Norway was the first country in the world to introduce a female quota for listed companies' boardrooms. This case has been very

well documented and is a reference across gender quota studies (Ahern and Dittmar, 2012; Matsa and Miller, 2013; Bøhren and Staubo, 2013; Bertrand, 2014; Eckbo et al., 2016).

While gender quotas appear to come as a political response to social pressures for a better gender equality in our modern society, its consequences on firms are not so straightforward to understand. Certainly, the adoption of board gender quotas is an external cause of variations that force firms to appoint directors with different characteristics than in the past. However, from an economic perspective, the spillovers on firm strategy and performance remain an open question.

Consequently, a growing literature is trying to measure the impact of gender diversity, quota-induced or not, on firm financial performance. Nevertheless, the mixed results do not lead to an academic consensus. Some point out that the proportion of women directors is positively associated with financial performance ratios such as Return On Investment (ROI) and Return On Assets (ROA) (Erhardt et al., 2003) or Tobin's Q when at least two women are on the board (Carter et al., 2003; Campbell and Mínguez-Vera, 2007). More recently, Sabatier (2015) also find a positive correlation between the proportion of women and the firm financial performance studying French CAC40 firms.

On the other hand, Adams and Ferreira (2008) find a negative association with Tobin's Q and ROA on US firms. In the Norwegian case, both Ahern and Dittmar (2012) and Matsa and Miller (2013) find that the introduction of board gender quotas impacts firm performances negatively. Ahern and Dittmar (2012) explain this negative impact by the lack of experience of younger female directors, while Matsa and Miller (2013) argue that the difference is due to a female style of leadership.

Finally, a large number of studies conclude that the presence of women doesn't

influence financial performance (Chapple and Humphrey, 2014; Eckbo et al., 2016; Farrell and Hersch, 2005; Francoeur et al., 2008). Rose (2007) reports no relation between Tobin's Q and gender diversity on Danish boards and speculates that women directors are so few and the culture so closed at the top that there is an assimilation of the attitudes and behaviors of existing male directors leading to a negation of the diversity advantages of women.

By contrast to firm financial performance, the impact of board gender diversity on Corporate Social Responsibility remains unexplored. Harjoto et al. (2015) were the first notable contribution, studying the link between extra-financial performance and board diversity with a global definition of diversity. They found that overall board diversity is positively associated with community, environment, product quality and corporate governance criteria, but not with human resources and human rights indicators. In particular, they find that gender diversity is positively associated with overall CSR performance by increasing CSR strengths and reducing CSR concerns. Zhang et al. (2012) also show significant evidence that a greater presence of independent female directors on corporate boards is related to a better extra-financial performance. Finally, Bear et al. (2010) find that board gender diversity is positively associated with CSR strengths, measuring positive actions towards various groups of stakeholders.

In a review of literature entitled "Board Diversity: Should We Trust Research to Inform Policy?", Ferreira (2015) lists several methodology biases common in empirical studies on quotas. One of these concerns is about the timing of the "natural experiment", meaning the starting date of the shock induced by the quota. For example, in Norwegian studies, Ahern and Dittmar (2012) choose 2003 as their event date while Matsa and Miller (2013) choose 2006. This issue was explored in detail by Eckbo et al. (2016) who compare several time periods without finding evidence of a correlation

between quota-induced diversity and firm performance in Norway. A second methodology issue is the lack of post-quota data. If recent studies of the Norway case claim to have sufficient post-quota data, it can be more problematic for other European countries that adopted board quota later. This issue probably explains why so few studies have been conducted in countries other than Norway. Nevertheless, with its intermediate threshold (20% of women by 2014) the French situation appears to be an exception. Despite the absence of post-final threshold data, we can now observe in the French data the diversity impact induced by the intermediary threshold.

For this study, we use the Rebérioux and Roudaut (2017) database to examine the impact of gender diversity on French companies listed on the SBF120 (the 120 largest capitalizations on EuroNext-Paris) between 2008 and 2015. Thus, we contribute to the literature at three different levels. First, we participate in the ongoing debate on the impact of quota-induced diversity on the financial performance of firms. Due to the mixed results, more investigations need to be conducted to understand the mechanisms behind it. Second, we reveal the impact of quotas in the specific case of France, using a larger dataset to challenge the contribution and results of Sabatier (2015). In order to measure the impact of the macro-economic context, exploring new national samples and validating the results is a preamble to cross-countries study. Finally, we describe the impact of quota-induced diversity on Corporate Social Responsibility. While CSR is becoming more a central part of strategies of firms, we still need to understand the determining factors of the success of such strategies.

First, we show that the French law was anticipated by most firms and quantitative targets of the law were successfully achieved on time. Moreover, gender diversity was associated with age diversity because female newcomers were more likely to be younger than previous male directors.

Secondly, we find that the entrance of women is positively correlated with some financial performance indicators such as the Market-To-Book value (Tobin's Q). We show that the quota also has a neutral impact on all the dimensions of CSR: governance, human resources, respect of the customers, environment, and community involvement. These results invalidate the idea of a female-style of leadership where women use their different experience to develop more holistic strategies integrating financial and Corporate Social Responsibility. These results support the idea that gender quotas are needed to break the glass ceiling that has prevented the appointment of talented women as directors.

1.2 Theoretical framework

1.2.1 Pool of talents and selection

Are female directors different from male directors? If this question appears to be fundamental to understanding the shortfall of women on boards, it supposes firstly that individual differences can affect board functioning and decision making-processes. It draws a parallel between the human capital theory at the individual level and the resource dependence theory at the firm level. The human capital theory suggests that each individual possesses stocks of education, skills, experience and networks that will grow over time (Becker, 2009). According to the resource dependence theory, directors not only monitor the firm but also provide these resources to the firm (Ferreira, 2010; Hillman and Dalziel, 2003).

The combination of both theories suggests the existence of a pool of potential directors with the right qualifications to be appointed to a board. By design, gender

board quotas coerce firms into hiring female directors from the current pool of businesswomen. We can distinguish three scenarios on a comparative base between the pool of women used to comply with the quota and the previous pool of male directors: less qualified, better qualified or just as qualified.

Precisely, the first argument used by gender quota opponents is based on the lower quality of the women talent pool. The classic economic literature arguing that if no women were hired, it was because of their lower qualification (Altonji and Blank, 1999). Furthermore, recruiting under this constraint could cause reverse discrimination towards high qualified men (Charness and Kuhn, 2010). To support this argument, empirical studies find that new female directors are younger and have a lower business expertise and CEO experience than their male counterparts (Rebérioux and Roudaut, 2017; Singh et al., 2008; Terjesen et al., 2009; Vinnicombe, 2009). Ahern and Dittmar (2012), conclude that this lack of human capital is responsible for the negative impact on firm performance that they find. Another argument pulled from psychology literature suggests that women are not the best match for director positions because they are more risk-averse (Eckel and Grossman, 2002; Sapienza et al., 2009).

On the other hand, psychology and experimental economic literature have demonstrated the existence of selection biases based on gender stereotypes (Bagues and Esteve-Volart, 2010). On the demand side, studies show that recruiters can have subconscious stereotypes about female personality traits. They are also more disposed to hire someone in their male network (De Paola and Scoppa, 2015). If those arguments suggest the existence of a glass ceiling, preventing women from accessing directors' position, it also rejects the idea that the historical situation was the optimal situation for firms. For example, Adams and Funk (2011) report that Harriet Harman, the British Labour party number 2, blamed the male domination in banks for the

2008 financial crisis. Actually, national statistics show that to date in the majority of OECD countries, women are more educated than men (see e.g. OECD 2013). Furthermore, compared to their male counterparts, new female directors are significantly more likely to have MBA degrees, international experience or experience as board directors in smaller firms (Bertrand, 2014; Rebérioux and Roudaut, 2017; Singh et al., 2008). Instead of reducing firm performance, the adoption of a gender quota prevents gender selection bias and promotes better qualified directors.

In the end, if stereotypes and selection bias lead both to an overestimation of the male pool and an under appreciation of the female pool of talents, differences between both could be insignificant. Concerning parallels between psychology and corporate governance literature, Ferreira (2015) argues that boards are highly non-representative and that "there is no reason to believe that female board members have the same personality traits as those observed in the general population". Despite the lack of empirical evidence due to the low number of top executive women, Adams and Funk (2011) also draw several hypotheses to support the idea that gender differences are expected to vanish beyond the glass ceiling. Indeed, studying Norwegian directors through a comprehensive survey, they find that female directors were significantly more risk-loving that the male directors interviewed, contrasting with the literature on non-executive people.

Thus, we state the following hypothesis:

Hypothesis H1: The adoption of the gender quota has a negative impact on firm financial and extra-financial performance because it constrains firms to appoint directors that are less experienced or more risk-averse.

Hypothesis H2: The adoption of the gender quota has a positive impact on firm financial and extra-financial performance because it eradicates the gen-

der selection bias that prevented better qualified women being appointed.

Hypothesis H3: The adoption of the gender quota has a neutral effect because under the glass ceiling women directors were as qualified as men directors.

1.2.2 Agency theory and the decision-making processes

Most governance studies on the monitoring role of boards are based on the agency theory described by Jensen and Meckling in 1976. It distinguishes the shareholders, owning the capital, from the manager, running the firms. Between them, the board of directors is a body composed of insiders or independent directors who represent the shareholders in the discussions with the manager. Protecting the interests of the shareholders, the board monitors and advises the manager. However each firm belongs to a complex environment composed of multiple stakeholders. The stakeholder theory argues that firms have explicit and implicit contracts with all the groups and subgroups interacting in their environment (see e.g. Freeman, 1984). They could suffer both monetary and reputational losses from not fulfilling these contracts, so they need to build strong relationships with various stakeholders in order to maximize shareholder value (Jensen, 2001; Cornell and Shapiro, 1987).

A key concept of the agency theory is the existence of agency costs, additional costs needed to align managers' interests with shareholders' interests. These costs refer to different realities like information costs spent to gather more data on what the manager is doing. The managerial power theory argues that managers have better strategic information than the board. This asymmetry can encourage them to act and bargain in favor of themselves rather than protect the interests of the shareholders

(Anderson et al., 2011). Because of the complexity of the relation between managers and directors, some studies point out that diversity on the board could increase the agency cost and even make it inefficient at controlling powerful managers (Hermalin and Weisbach, 2003). Moreover, most of the time directors are appointed on a proposal from the CEO. It is easy to believe that a CEO would prefer a friendly director over a more challenging one.

On the other hand, most empirical studies on quota-induced diversity find that female newcomers are more likely to be appointed as independent directors, to sit on monitoring committees and to force a CEO's departure after poor stock price performances (Cavaco et al., 2017; Adams and Ferreira, 2008; Bøhren and Staubo, 2016; Fondas and Sassalos, 2000). Corporate governance literature commonly argues that a higher share of independent directors is correlated to more monitoring of executives and in consequence to better firm performance (Kramarz and Thesmar, 2013). Furthermore, there is evidence that gender diversity increases board attendance, the tenure of directors and CEO turnover (Adams and Ferreira, 2008; Bøhren and Staubo, 2016). According to Forbes and Milliken (1999), the presence of women improves and reduces board effectiveness at the same time, making decisions more cohesive. Matsa and Miller (2013) also conclude in that sense. Some also point out that one of the consequences of quotas is to professionalize the hiring of directors (Ferreira et al., 2017). All this evidence suggests than rather than being a source of conflict, gender diversity improves the quality of the decision-making process.

Finally, it is natural to ask if the decisions themselves are likely to be affected by quota-induced diversity. Inputs from sociology tend to state that gender diversity increases the collection of information and brings varied perspectives and non-traditional approaches that could challenge the conventional wisdom of a majority of

directors (Westphal and Milton, 2000; Campbell and Mínguez-Vera, 2007). Wang and Coffey (1992), for example, find that the proportion of female and ethnic minority board members is positively associated with charitable contributions.Williams (2003) documents a similar finding: a higher proportion of female directors increases the firm charitable contributions. They are also more likely to adopt long-term strategies (Byrnes et al., 1999; Eckel and Grossman, 2002) and embrace stakeholders' interests (Matsa and Miller, 2013; Adams and Funk, 2011).

Thus, we state the following hypotheses:

Hypothesis H4: Increasing the agency cost, the adoption of the gender quota has a negative impact on firm financial and extra-financial performance.

Hypothesis H5: Improving the decision-making process, the adoption of the gender quota is positively correlated to firm financial and extra-financial performance.

Hypothesis H6: The adoption of the gender quota has a positive impact specifically on firm CSR performance because it enhances creativity, diversifies strategies and provides better relationships with stakeholders.

1.3 Methodology

1.3.1 Firm performance data

The French law introducing gender quotas on corporate boards was adopted in 2011. It applies to all companies listed on the stock market, companies with more than 500 employees or companies with sale revenues over 50 million €. Each gender should represent at least 40% of directors by 2017 with an intermediate threshold of 20% by 2014.

Our objective is to study the impact of this law on firm performance, both financial and extra-financial. To have publicly observable share prices and extra-financial information, we create a panel composed of French firms listed on the SBF120[1] during the 2008 to 2015 period. The Factset database provides accounting and market data.

After the implementation of the Norwegian law, Ahern and Dittmar observed that some firms moved from public limited to private limited structures to get around the law. During the 2008 to 2015 period, there were some departures and entrances at the bottom of the SBF120 index but none of these moves can be related to the quota law. To focus our attention on the effect of this law, we restrict our panel to firms that were listed continuously prior to and after the promulgation of the law. Finally, the sample consists of firm-year observations over the 2008 to 2015 period for 117 French firms.

Table 1.1 shows that studied firms did not go through big changes from 2008 to 2015. Several characteristics such as the number of employees, the sales or the leverage are relatively constant despite the global economic context. For the Market-to-Book

[1] The 120 first listed firms in 2011 by market capitalization and trading volume on Euronext NYSE-Paris.

value, a proxy of Tobin's Q, we can note low values at 1.46 in 2011 and 1.63 in 2012, due to the global recession. But from 2013, mean values are superior to the 2010 value indicating a return to normal. With a mean of 1.75, these values are comparable to the average Tobin's Q of US firms of 1.79 (Coles et al. 2008).

Finally, the Asset4 database provides CSR data through more than 200 quantitative performance indicators used by Thomson Reuters to assess firm ESG performances. The main indicators of the Asset4 database that we consider for our study are presented in appendix A. Summary statistics are presented in table 1.2.

Table 1.1: Firm summary statistics by year

	2008	2009	2010	2011	2012	2013	2014	2015	Std. Dev.	Min	Max	Obs.
MTBV (Tobin's Q)	1.53	1.77	1.76	1.46	1.63	2.00	1.82	2.00	1.54	-5.54	11.44	868
Log(Employees)	9.84	9.82	9.84	9.92	9.94	9.96	9.93	9.94	1.74	4.04	13.11	857
ROA	3.48	2.22	4.12	3.72	3.18	2.80	2.53	2.81	5.21	-49.70	32.63	877
ROE	8.25	3.69	11.10	7.87	7.87	6.53	4.72	7.75	20.16	-209.9	101.97	859
Log(Sales)	8.87	8.76	8.80	8.89	8.89	8.94	8.94	8.88	1.50	4.91	12.37	875
Log(Leverage)	3.02	3.01	2.91	2.91	2.89	2.94	2.98	2.96	1.06	-2.64	5.47	875
Volatility	0.93	1.06	0.86	0.96	0.94	0.90	0.90	0.83	0.42	-0.42	3.13	917
SBVR	7.3%	7.0%	6.0%	5.9%	6.1%	6.0%	6.0%	5.5%	6.43	0%	92.6%	901

Note: MTBV is the Market to book ratio (=Market Price per Share / Book Value per Share); Log(Employees) is the logarithm of the number of employees; ROA is the Return On Assets ($= \frac{netprofits+interestexpense}{totalasset}$); ROE is the Return On Equity (= net profits/ shareholder's equity); Log(Sales) is the logarithm of sales; Log(Leverage) is the logarithm of total debt over total equity; Volatility is the Beta stock risk value; SBVR is the percentage of vote concentrated in the hands of the single biggest owner.

Table 1.2: Firm CSR scores by year

	2008	2009	2010	2011	2012	2013	2014	2015	Std. Dev.	Min	Max	Obs
CGBF	48.34	57.90	60.52	63.54	64.32	63.03	63.68	67.85	23.76	2.84	94.13	732
CGBS	32.52	35.96	41.22	41.13	39.92	40.15	42.19	42.33	21.02	2.94	90.96	732
CGCP	66.98	65.10	66.92	62.18	63.39	53.38	59.56	56.46	21.38	4.24	90.09	732
CGSR	33.89	55.39	55.36	58.90	56.29	56.96	58.18	58.68	33.37	0.49	98.98	732
CGVS	68.31	72.64	73.41	76.13	78.49	80.88	80.59	84.86	23.53	8.75	94.94	732
ECCL	61.36	62.99	65.46	64.79	62.96	64.87	65.16	73.09	27.67	1.46	98.28	732
ECPE	63.75	62.20	67.96	63.36	72.14	68.53	66.07	73.14	24.06	4.1	97.94	732
ECSL	56.62	59.10	63.02	66.21	66.48	63.52	62.46	72.16	28.21	1.47	96.95	732
ENER	74.12	74.32	75.28	75.64	77.84	78.60	79.56	83.28	21.56	10.6	95.71	732
ENPI	71.33	75.58	74.66	75.85	75.24	75.71	75.90	79.03	27.65	14.03	97.69	732
ENRR	75.54	76.66	76.93	79.23	80.81	80.88	81.19	85.05	18.64	9.53	94.25	732
SOCO	58.03	59.76	59.27	64.29	64.88	67.44	66.97	73.31	28.22	3.49	96.89	732
SODO	70.04	75.19	78.35	80.64	81.04	81.85	82.27	85.41	21.79	8.13	95.71	732
SOHR	67.57	68.70	69.08	70.66	71.52	73.18	74.51	78.17	28.57	15.39	97.85	732
SOHS	70.68	71.53	74.55	74.44	72.34	76.19	72.83	79.13	25.34	8.88	97.95	732
SOPR	65.09	64.99	64.20	66.82	66.09	66.39	68.28	74.39	27.85	2.57	97.88	732
SOTD	79.19	80.89	81.69	82.04	80.73	82.12	82.52	85.54	15.79	5.41	95.05	732

Note: See Appendix A for the definition of Asset 4 scores.

1.3.2 Board members and governance characteristics

For directors, we use the Rebérioux and Roudaut (2017) database, which is based on information collected from firms' annual reports over the 2008-2014 period. We collect the information for the year 2015 to have a additional year. For each board member and CEO, we hold information about his name, gender, nationality, age, board title, education, prior experience as a CEO, and year he was first elected to the board. In total, this represents more than 13,000 director-firm-year observations. Then data are aggregated to the firm level to calculate the number of board members, the percentage of female board members, the percentage of insiders, the average age and board tenure, the percentage of members with a post baccalaureate degree, and prior CEO experience.

Table 1.3 shows cross-sectional mean values of directors' characteristics from 2008 to 2015.

First, the proportion of female board members increases dramatically in our sampled firms, with sizable increases after 2009 at a rate of nearly 5% per year from 2009 to 2013. Considering that the quota law was adopted at the beginning of 2011, it appears that most firms had anticipated the law, knowing that a few other EU countries had already implemented it. By 2014, the intermediate threshold of 20% was achieved by all but eight firms. Only two of them were far from the objective with less than 10% of female directors.

At the same time, the average size of the board remained roughly constant at about 12 members. The relatively constant size of boards is particularly interesting. It suggests that the firms replaced, rather than added, board members to comply with the new law. The dramatic change in board membership during this period is not

reflected in a change of percentage of board members retained from the prior year, meaning the law has not increased the turnover of directors either. Consequently, it is the gender balance of new appointees which has turned in favor of female directors. The same behavior was observed in the Norwegian case (Bøhren and Staubo, 2013).

Table 1.3: Board of directors' summary statistics by year

	2008	2009	2010	2011	2012	2013	2014	2015	Min	Max	Obs
Number of board members	12.0	12.0	12.3	12.4	12.5	12.3	12.4	12.2	3.0	21.0	916
Numbers of meeting	8.1	8.1	8.0	8.0	7.9	7.5	8.4	8.4	2.0	25.0	909
Female	8%	8%	12%	17%	22%	26%	30%	32%	0%	55%	916
Age	58.6	58.8	58.7	58.5	58.3	58.4	58.5	58.4	44.8	69.1	803
Tenure (Years)	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	1.0	21.6	803
Insider	10%	9%	9%	9%	9%	10%	9%	9%	0%	83%	803
New directors	13%	15%	15%	14%	14%	13%	12%	13%	0%	100%	803
Foreigner	20%	20%	22%	23%	25%	25%	26%	26%	0%	92%	803

Table 1.3 also shows that the proportion of directors from other nationalities increases from 20% to 25% while the age of an average board member, the tenure and the fraction of insiders are all constant in the total sample. The adoption of quotas seems to have no impact on the characteristics relative to the director's term.

We try next to figure out if some industries are more proactive than others using the French National Institute for Statistics and Economic Studies NAF industrial classification: Food, Energy, Manufacturing, Construction, Wholesale, Accommodation, Transportation, Real Estate, Other services, Healthcare, Education, Information and Administration. Following this classification, we also define that a director has a sectoral experience if he has past work eperiences in the industry. Table 1.4 presents the mean percentage of female directors in 2009, before the anticipation of the law, and in 2014, at the intermediate threshold. We notice a great disparity in the representation of each sector in our panel: The Accommodation and travel sector is represented by two firms whereas 27 firms belong to the Manufacturing sector. Considering we deal with companies listed on the stock market, it is not surprising there are no firms in the education or administrative sectors. This disparity also appears in the percentage of female directors in 2009, with values ranging from 2% for the Other services sector to 20% for the Accommodation sector. Consequently to the law, the results are more homogenous in 2014 with all sectors counting around 30% of women, except the Accommodation sector, which had already achieved the minimum of 40%.

Finally, we try to picture who are the new female directors. In the total period, strong differences appear between male and female director characteristics (Table 1.5). Women are significantly younger (approximately five years), have never held a president or CEO position, have less sector expertise and come more from university than

Table 1.4: Women directors by sector

Industry	Number of firms	Mean percentage of female directors 2009	2014
Food	3	14%	30%
Energy	14	8%	31%
Manufacturing	27	7%	28%
Construction	7	12%	28%
Wholesale	8	9%	33%
Accommodation	2	20%	40%
Transportation	4	7%	32%
Real Estate	18	10%	31%
Other services	5	2%	31%
Healthcare	5	10%	27%
Information	21	9%	30%

French "Grandes écoles"[2]. They are also less appointed as insider members, so we can suppose they are more independent.

To measure the impact of the quota, we study the mean characteristics between directors appointed before and after 2010 (Table 1.6). We observe that both new female and male directors are younger and come more from other nationalities than their previous peers. Differences between men and women remain but they are less significant after the quota law.

Table 1.6 also shows that female directors are significantly less appointed as insiders than their male counterparts. This difference remains after the law of quota (t-test with statistical significance at the 1% level). This result is consistent with Adams and Ferreira's findings (2008).

[2]"Grandes écoles" refers to engineering school (X, Mines, AgroParisTech, etc.), business school (HEC, etc.) and political sciences school (IEP, ENA, etc.) delivering a master degree equivalent.

Table 1.5: Men and women directors characteristics

	Men	Women	Difference	
Mean Age	59.54	53.91	5.63	***
Directors with sectoral experience	58%	50%	8%	***
Foreigner	22%	25%	-3%	*
President	5%	1%	4%	***
CEO	5%	0%	5%	***
"Grandes écoles" diploma	46%	37%	9%	**

Note: The significance of the difference is calculated from a t-test between the pool of male and female for each year and on the total time sample.
Significance level: * p<0.05, ** p<0.01, *** p<0.001

Table 1.6: Directors' characteristics before and after the law

	Female directors before 2010	Female newcomers after 2010	Male directors before 2010	Male newcomers after 2010
Mean Age	55.32	52.28	60.03	54.35
Directors with sectoral experience	48%	41%	57%	60%
Foreigner	15%	37%	21%	34%
"Grandes ecoles" diploma	40%	33%	47%	34%
Insider	2%	1%	11%	9%

1.3.3 Econometric model

The main empirical limits in boards studies is endogeneity and reverse causality. To avoid this endogeneity, we use an instrumental variable approach based on Stevenson (2010) and similar to the work of Ahern and Dittmar and Eckbo et al. on Norway. Stevenson studies the effect of Title IX gender parity quotas for high school sports on girls' higher education and labor outcomes in the US. The particularity that matches with our situation is that states have some freedom over the timing of compliance. Stevenson uses the prelaw variation in boys' athletic participation across states as an instrument for changes in girls' athletic participation due to the law.

We follow her approach and use prequota board characteristics across firms as an instrument to capture exogenous variation in mandated changes in the proportion of female board members over time. Because all firms had to meet the same 40% quota, firms that had more women when the quota was passed were required to make a smaller change to their boards to comply with the law compared to firms that had fewer women. We define the shortfall of women as the difference between the percentage of women and the threshold of 40%. If the firm already has a percentage of women above 40%, this variable takes the value 0.

Because of the anticipation, we use the firm's shortfall of female directors in 2008 as an instrument for women shortfall (interacted with years dummies). We also include several control variables: the logarithm of the sales, the logarithm of the leverage ratio, the stock volatility, the SBVR, the board size, the share of independent directors, the share of young directors, the share of directors with foreign nationality, the average tenure, and a dummy describing if the CEO is also the president of the board. We use firm fixed effects control for any observed or unobserved firm characteristics that are

constant over time that may affect a firm performance indicator Y. The year effects to control for any aggregate fluctuations of Y, such as recessions or expansions. Thus, we estimate the following model:

$$Y_{it} = \alpha + \beta womenshortfall_{it} + \gamma X_{it} + \theta_i + \tau_t + \epsilon_{it} \tag{1.1}$$

where i indexes firms and t indexes time, $womenshortfall_{it}$ is the shortfall percentage of female board members for firm i in year t, X_{it} is a vector composed of control variables, θ_i are firm fixed effects, and τ_t are time fixed effects for years 2009 to 2015.

1.4 Results

1.4.1 Impact on firm value and financial performance

First, we investigate whether the gender quota has a causal consequence on firm value, measured by the Tobin's Q value and other financial performance ratio. Results are presented in Table 1.7.

Results show no correlation between the shortfall variation and the Tobin's Q. Unlike Sabatier (2015) who studies a smaller sample of firms, we find that the quota seems to have a neutral impact on firm value for French firms. Consistent with these results, we do not find any positive or negative impact on other financial ratios such as the ROA and the ROE.

To go further, we investigate the financial and investment policy strategies. If the new board lacks the expertise or has more experience than the prequota board, the management may make fundamentally different strategic decisions. Table 1.8 presents the results for the three Asset 4 main economic scores, capturing the most important decisions faced by a firm.

Consistent with the previous results, we find no significant correlation between women's representation and the performance indicators. The results in this section indicate that French firms did not suffer from substantial and additional costs imposed by the gender quota, but were not stimulated by an increase of board diversity either. These results are consistent with recent studies like Eckbo et al. (2016), invalidate H1 and H2 and confirm our hypothesis H3. The adoption of the board quota, and so the rise of board diversity, has a neutral effect on firm performance.

Table 1.7: Effects of board member gender quotas on firm value and financial performance

	(1) Tobin's Q	(2) ROA	(3) ROE
Shortfall women (%)	-0.52	2.71	-11.22
	(2.08)	(8.83)	(37.18)
Log(Sales)	1.11***	5.55***	27.09***
	(0.39)	(1.38)	(9.27)
Log(Leverage)	-0.11	-1.13**	-3.95*
	(0.08)	(0.45)	(2.04)
Volatility	-0.05	-0.54	1.07
	(0.10)	(0.61)	(2.51)
SBVR	0.01**	0.02	0.37**
	(0.01)	(0.02)	(0.18)
Board Size	-0.04	-0.40	-1.00
	(0.03)	(0.36)	(1.20)
CEO-President	0.26	-0.13	2.16
	(0.19)	(0.45)	(2.75)
Independant (%)	-0.51	-2.28	-10.84
	(0.61)	(2.26)	(15.17)
Young directors (%)	-0.14	2.08	4.16
	(0.57)	(1.93)	(8.67)
Average tenure	-0.02	0.08	0.32
	(0.04)	(0.12)	(0.60)
Foreigner (%)	0.81	8.08	47.10
	(1.18)	(5.96)	(29.12)
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
No. of firms	114	114	112
F-statistic	8.65	5.13	2.60

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

Table 1.8: Effects of board gender quota on financial and investment policies

	(1) Revenue/ Client Loyalty	(2) Margins/ Performance	(3) Profitability/ Shareholder Loyalty
Shortfall women (%)	61.79	-62.64	-1.31
	(57.73)	(51.09)	(54.68)
Log(Sales)	0.92	4.99	2.86
	(7.08)	(4.94)	(7.46)
Log(Leverage)	0.06	-3.84*	-4.22*
	(2.15)	(2.15)	(2.30)
Volatility	5.40*	1.67	-0.32
	(3.15)	(3.68)	(3.64)
SBVR	-0.35***	0.09	0.19
	(0.11)	(0.09)	(0.14)
Board Size	-1.15	0.06	0.03
	(0.85)	(0.74)	(1.28)
CEO-President	-5.07	0.09	-0.88
	(3.35)	(3.42)	(3.92)
Independant (%)	2.98	-18.47	-1.15
	(17.38)	(15.97)	(15.69)
Young directors (%)	11.57	9.70	42.25***
	(13.07)	(13.40)	(11.43)
Average tenure	-1.44*	0.10	1.71*
	(0.83)	(0.84)	(1.00)
Foreigner (%)	26.86*	-21.45	19.14
	(14.90)	(17.51)	(16.82)
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
No. of firms	95	95	95
F-statistic	5.32	6.64	6.16

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

1.4.2 Impact on board characteristics

As seen in the description of the data, female directors seem to be younger and more likely to be from another nationality. We use the same approach next to provide causal evidence of how the quota impacted the characteristics of French boards, in particular age and nationality. Results are presented in Table 1.9a.

Here, we see that the shortfall of female directors is negatively correlated with the percentage of foreigners, at a 10% level of significance. As board size is unaffected, we can think that female newcomers are more likely hired outside the national pool. On the other hand, results of the regression do not show a correlation with the mean age as suggested by the first analysis. Those changes are consistent with previous empirical studies results (Ahern and Dittmar, 2012; Eckbo et al., 2016).

In Table 1.9.b, we show that reducing the shortfall of women is not significantly associated with variations of any of Asset4 governance variables. The "Vision and Strategy" score reflects the company's capacity to integrate economic (financial), social and environmental dimensions into an overall strategy. Here, these results seems to invalidate our hypothesis H5 and H6 of a "female-style of leadership" which focuses on long-term and extra-financial strategies.

We don't find a significant relationship with the "Compensation policy" score. Bertrand (2014) show that the increasing presence of women on boards tends to reduce inequality in directors' earnings. On the contrary, Rebérioux and Roudaut (2017) find that inequalities in the compensation policies increased after the adoption of the quota. The influence of women on the level and composition of executive and director compensation has to be further analyzed.

Table 1.9: Effects of board gender quota on board characteristics
a. Results for board characteristics variables

	(1) Mean Age	(2) Foreigner (%)
Shortfall women (%)	-2.48	-0.36*
	(5.87)	(0.19)
Log(Sales)	1.33	0.04
	(0.87)	(0.04)
Log(Leverage)	0.03	0.00
	(0.26)	(0.01)
Volatility	-0.17	-0.01
	(0.28)	(0.01)
SBVR	0.00	0.00
	(0.01)	(0.00)
Board Size	0.10	0.01**
	(0.08)	(0.00)
CEO-President	-0.12	0.00
	(0.37)	(0.01)
Independant (%)	2.99*	0.02
	(1.78)	(0.06)
Average tenure	0.62***	-0.00
	(0.10)	(0.00)
Foreigner (%)	0.27	
	(2.18)	
Young directors (%)		0.00
		(0.05)
Firm FE	YES	YES
Year FE	YES	YES
No. of firms	112	112
F-statistic	5.75	1.65

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

b. Results for Asset4's governance proxies.

	(1) Board of Directors/ Board Structure	(2) Board of Directors/ Compensation Policy	(3) Shareholders/ Shareholder Rights	(4) Integration/ Vision and Strategy	(5) Board of Directors/ Board Functions
Shortfall women (%)	-20.82	48.37	20.48	-69.63	78.03
	(29.58)	(44.96)	(57.12)	(44.60)	(57.68)
Log(Sales)	2.14	-2.92	-14.20**	13.14***	-1.00
	(4.63)	(5.01)	(6.75)	(4.95)	(5.85)
Log(Leverage)	-2.25	0.07	-1.05	-1.92	0.18
	(1.70)	(1.99)	(2.19)	(1.69)	(1.98)
Volatility	-4.12*	-6.61**	-1.28	-2.94	0.22
	(2.29)	(3.13)	(2.94)	(2.05)	(2.94)
SBVR	-0.01	0.27**	-0.01	0.16**	-0.07
	(0.07)	(0.12)	(0.11)	(0.08)	(0.11)
Board Size	-1.53***	0.27	-0.80	-0.59	0.25
	(0.56)	(0.89)	(0.86)	(0.64)	(0.79)
CEO-President	5.65**	-0.83	-0.35	2.70	2.16
	(2.16)	(2.44)	(2.74)	(2.89)	(2.82)
Independant (%)	23.66**	19.87	10.84	-10.80	45.53***
	(11.21)	(13.60)	(16.70)	(13.75)	(16.23)
Young directors (%)	-3.85	24.51**	-3.78	-7.31	7.64
	(6.36)	(10.37)	(12.46)	(13.19)	(11.55)
Average tenure	0.99**	-0.00	-0.01	0.18	0.33
	(0.43)	(0.81)	(0.81)	(0.80)	(0.85)
Foreigner (%)	15.46	14.39	27.19**	7.53	15.36
	(9.91)	(14.83)	(13.04)	(12.25)	(16.14)
Firm FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
No. of firms	95	95	95	95	95
F-statistic	5.19	5.17	6.25	3.98	6.46

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

1.4.3 Impact on environmental, social and societal performance

Considering a "female-style of leadership", the literature describes some case of high women involvement in environmental strategy. To account for this, we use the three Asset4's main proxies for environmental performance: "Emission Reduction", "Resources reduction" and "Product Innovation". As shown in Table 1.10, we find no evidence that the shortfall of female directors is associated with the reduction of environmental impacts.

Finally, we run instrumental variable regressions on Asset4's proxies for the quality of human resources, the respect of human rights, local communities and customers. Results are reported in table 1.11. We show that the reduction of the shortfall of women is significantly associated with the increase of the score "Training and Development" at a 5% level and "Diversity and Opportunity" at a 10% level.

These results are not sufficient to talk about a "female-style of leadership". The finding invalidates H4 and H5 and confirms the hypothesis H3, which states a neutral effect of the adoption of the quota on both firm financial and extra-financial performance.

Table 1.10: Effects of board gender quota on environmental performance

	(1) Emission Reduction	(2) Resource Reduction	(3) Product Innovation
Shortfall women (%)	-67.73	-28.83	53.84
	(32.98)	(34.24)	(72.53)
Log(Sales)	12.12**	12.09**	0.58
	(5.61)	(5.27)	(5.06)
Log(Leverage)	-2.25*	-3.06*	-0.54
	(1.30)	(1.76)	(2.47)
Volatility	-1.07	-1.81	-4.60**
	(1.70)	(1.79)	(2.24)
SBVR	0.13**	0.10	-0.09
	(0.06)	(0.08)	(0.13)
Board Size	-0.43	0.02	0.89
	(0.51)	(0.61)	(0.54)
CEO-President	1.22	3.47*	1.42
	(1.48)	(2.01)	(2.25)
Independant (%)	0.67	-2.76	25.95
	(9.82)	(10.98)	(16.57)
Young directors (%)	-5.25	-1.23	2.96
	(6.46)	(9.15)	(15.28)
Average tenure	0.64	0.65	-0.03
	(0.68)	(0.73)	(0.88)
Foreigner (%)	4.94	1.13	-11.26
	(13.51)	(16.34)	(11.45)
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
No. of firms	95	95	95
F-statistic	4.98	3.03	2.20

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

Table 1.11: Effects of board gender quota on social and societal performance

	(1) Workforce/ Health & Safety	(2) Workforce/ Training and Development	(3) Workforce/ Diversity and Opportunity	(4) Society/ Human Rights	(5) Society/ Community	(6) Customer/ Product Responsibility
Shortfall women (%)	-78.38	-66.23**	-79.12*	87.13	0.79	-16.25
	(56.79)	(29.83)	(41.49)	(53.41)	(49.97)	(41.76)
Log(Sales)	-1.11	13.07***	7.39	1.43	0.44	5.30
	(6.87)	(4.42)	(5.63)	(6.03)	(6.23)	(5.30)
Log(Leverage)	-3.51*	-2.33	-1.37	-0.75	0.51	-3.45
	(2.04)	(1.42)	(1.75)	(2.28)	(1.66)	(2.80)
Volatility	-2.66	-1.15	-3.39	-3.69	-2.91	-4.02
	(2.71)	(1.85)	(2.22)	(2.66)	(3.13)	(2.58)
SBVR	0.24**	0.08	0.06	0.15	-0.31***	-0.02
	(0.11)	(0.08)	(0.08)	(0.11)	(0.09)	(0.10)
Board Size	-0.51	0.33	0.25	0.12	-0.36	-1.02
	(1.07)	(0.59)	(0.63)	(0.95)	(0.86)	(0.79)
CEO-President	1.77	0.27	0.37	6.14**	-0.61	2.06
	(3.16)	(1.94)	(2.00)	(2.89)	(3.94)	(2.77)
Independant (%)	25.34	-3.10	-1.35	38.56**	36.61**	17.35
	(21.22)	(8.11)	(13.09)	(14.77)	(16.59)	(18.09)
Young directors (%)	-4.20	-8.12	-18.51*	21.28*	28.24**	23.79**
	(13.44)	(6.14)	(9.90)	(10.79)	(13.78)	(11.95)
Average tenure	0.35	0.62	0.50	-0.93	-0.21	1.40*
	(0.95)	(0.79)	(0.84)	(0.90)	(0.83)	(0.78)
Foreigner (%)	15.88	1.03	19.94	12.93	37.73**	18.24
	(21.93)	(15.34)	(15.19)	(18.94)	(16.56)	(11.37)
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
No. of firms	95	95	95	95	95	95
F-statistic	2.85	2.18	5.46	4.29	4.91	2.85

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

1.5 Conclusion

Our study exploits the natural experiment of the board gender quota in France to identify the impact of corporate board diversity on financial and extra-financial performance. The goal is to understand why gender diversity is promoted as a good governance practice while there is no clear evidence of positive impact from the literature. First, statistical analyses show that the French law was anticipated by most firms and quantitative targets of the law were successfully achieved in time. Moreover, gender diversity was associated with age diversity because women newcomers were more likely to be younger than prior directors.

To highlight the effect of the quota on firm financial and extra-financial performance and avoid endogeneity issues, we use an instrumental variable strategy using the pre-quota level of women on boards as the instrument. We find that the quota-induced rise of the proportion of women is not correlated with financial performance indicators (Tobin's Q, ROA). These results are inconsistent with Sabatier (2015) results. With respect to Eckbo et al. (2016) findings, it reveals the importance of robustness checks for quota studies.

Next, we show that the quota also has a neutral impact on all the dimensions of CSR: governance, human resources, respect of the customers, environment, and community involvement. These results are consistent with the hypothesis that women directors are as qualified as men directors. On the other hand, these results invalidate the idea of a female style of leadership where women use of their different experience to develop strategies integrating financial and Corporate Social Responsibility.

From the political perspective, these results support the idea that gender quotas

are needed to break the glass ceiling that prevented talented women being appointed as directors. From an academic perspective, it also suggests than more research has to be conducted at the individual level to disentangle the effect of the joint variations of gender, age, nationality, educational background, etc.

1.6 Appendix A - Asset4 ESG indicators

Economic		**Definition**
ECCL	Revenue/Client Loyalty	The revenue/client loyalty category measures a company's management commitment and effectiveness towards generating sustainable and long-term revenue growth. It reflects a company's capacity to grow, while maintaining a loyal client base through satisfaction programs and avoiding anti-competitive behaviors and price fixing.
ECPE	Margins/ Performance	The margins/performance category measures a company's management commitment and effectiveness towards maintaining a stable cost base. It reflects a company's capacity to improve its margins by increasing its performance (production process innovations) or by maintaining a loyal and productive employee and supplier base.
ECSL	Profitability/ Shareholder Loyalty	The profitability/shareholders loyalty category measures a company's management commitment and effectiveness towards generating a high return on investments. It reflects a company's capacity to maintain a loyal shareholder base by generating sustainable returns through a focused and transparent long-term communications strategy with its shareholders.

Corporate Governance	**Definition**

CGBS	Board of Directors/Board Structure	The board of directors/board structure category measures a company's management commitment and effectiveness towards following best practice corporate governance principles related to a well-balanced membership of the board. It reflects a company's capacity to ensure a critical exchange of ideas and an independent decision-making process through an experienced, diverse and independent board.
CGCP	Board of Directors/ Compensation Policy	The board of directors/compensation policy category measures a company's management commitment and effectiveness towards following best practice corporate governance principles related to competitive and proportionate management compensation. It reflects a company's capacity to attract and retain executives and board members with the necessary skills by linking their compensation to individual or company-wide financial or extra-financial targets.
CGSR	Shareholders/ Shareholder Rights	The shareholders/shareholder rights category measures a company's management commitment and effectiveness towards following best practice corporate governance principles related to a shareholder policy and equal treatment of shareholders. It reflects a company's capacity to be attractive to minority shareholders by ensuring them equal rights and privileges and by limiting the use of anti-takeover devices.

CGVS	Integration/Vision and Strategy	The integration/vision and strategy category measures a company's management commitment and effectiveness towards the creation of an overarching vision and strategy integrating financial and extra-financial aspects. It reflects a company's capacity to convincingly show and communicate that it integrates the economic (financial), social and environmental dimensions into its day-to-day decision-making processes.
CGBF	Board of Directors/ Board Functions	The board of directors/board functions category measures a company's management commitment and effectiveness towards following best practice corporate governance principles related to board activities and functions. It reflects a company's capacity to have an effective board by setting up the essential board committees with allocated tasks and responsibilities.
Social		**Definition**
SOHS	Workforce/ Health & Safety	The workforce/health & safety category measures a company's management commitment and effectiveness towards providing a healthy and safe workplace. It reflects a company's capacity to increase its workforce loyalty and productivity by integrating into its day-to-day operations a concern for the physical and mental health, well-being and stress level of all employees

SOTD	Workforce/ Training and Development	The workforce/training and development category measures a company's management commitment and effectiveness towards providing training and development (education) for its workforce. It reflects a company's capacity to increase its intellectual capital, workforce loyalty and productivity by developing the workforce's skills, competences, employability and careers in an entrepreneurial environment.
SODO	Workforce/ Diversity and Opportunity	The workforce/diversity and opportunity category measures a company's management commitment and effectiveness towards maintaining diversity and equal opportunities in its workforce. It reflects a company's capacity to increase its workforce loyalty and productivity by promoting an effective life-work balance, a family friendly environment and equal opportunities regardless of gender, age, ethnicity, religion or sexual orientation.
SOHR	Society/ Human Rights	The society/human rights category measures a company's management commitment and effectiveness towards respecting the fundamental human rights conventions. It reflects a company's capacity to maintain its license to operate by guaranteeing the freedom of association and excluding child, forced or compulsory labor.

SOCO	Society/ Community	The society/community category measures a company's management commitment and effectiveness towards maintaining the company's reputation within the general community (local, national and global). It reflects a company's capacity to maintain its license to operate by being a good citizen (donations of cash, goods or staff time, etc.), protecting public health (avoidance of industrial accidents, etc.) and respecting business ethics (avoiding bribery and corruption, etc.).
SOPR	Customer/ Product Responsibility	The customer/product responsibility category measures a company's management commitment and effectiveness towards creating value-added products and services upholding the customer's security. It reflects a company's capacity to maintain its license to operate by producing quality goods and services integrating the customer's health and safety, and preserving its integrity and privacy also through accurate product information and labeling
Environment		**Definition**
ENER	Emission Reduction	The emission reduction category measures a company's management commitment and effectiveness towards reducing environmental emission in the production and operational processes. It reflects a company's capacity to reduce air emissions (greenhouse gases, F-gases, ozone-depleting substances, NOx and SOx, etc.), waste, hazardous waste, water discharges, spills or its impacts on biodiversity and to partner with environmental organizations to reduce the environmental impact of the company in the local or broader community.

ENRR	Resource Reduction	The resource reduction category measures a company's management commitment and effectiveness towards achieving an efficient use of natural resources in the production process. It reflects a company's capacity to reduce the use of materials, energy or water, and to find more eco-efficient solutions by improving supply chain management.
ENPI	Product Innovation	The product innovation category measures a company's management commitment and effectiveness towards supporting the research and development of eco-efficient products or services. It reflects a company's capacity to reduce the environmental costs and burdens for its customers, and thereby creating new market opportunities through new environmental technologies and processes or eco-designed, dematerialized products with extended durability.

Source: Asset4

1.7 Appendix B – First stage IV estimation

	(1) Shortfall women (%)	
D_2015Shortfall women_2008	-0.56***	(0.13)
D_2009Shortfall women_2008	-0.08	(0.06)
D_2010Shortfall women_2008	-0.14**	(0.06)
D_2011Shortfall women_2008	-0.33***	(0.09)
D_2012Shortfall women_2008	-0.44***	(0.11)
D_2013Shortfall women_2008	-0.55***	(0.11)
D_2014Shortfall women_2008	-0.51***	(0.13)
ROA	-0.00***	(0.00)
Tobin's Q	0.00	(0.00)
Log(Sales)	0.03**	(0.02)
Log(Leverage)	-0.01**	(0.00)
Volatility	0.00	(0.01)
SBVR	0.00***	(0.00)
Board Size	0.00	(0.00)
CEO-President	-0.00	(0.01)
Independant (%)	-0.13***	(0.04)
Young directors (%)	-0.11***	(0.03)
Average tenure	0.01***	(0.00)
Foreigner (%)	0.00	(0.05)
Firm FE	YES	
Year FE	YES	
No. of firms	112	
Adj. R-Squared	0.80	

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

Chapter 2

The role of executive compensation programs

Joint work with Sandra Cavaco (University Panthéon-Assas) and Patricia Crifo (University Paris Nanterre, Ecole Polytechnique and CIRANO)

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Abstract: *This chapter examines the relationship between corporate governance and corporate sustainability by focusing on an essential component of companies' governance structure: executive compensation programs. We propose an original empirical strategy based on a large set of the biggest capitalizations in OECD countries over the period 2000 to 2015, with explicit measures of how companies integrate into executive manager's remuneration precise criteria of corporate social responsibility. Our results show that proposing executive compensation programs including CSR criteria has a negative impact on financial performance, and a large positive impact on extra-financial performance based on the following criteria: relationship with customers and suppliers, and community involvement. Secondly, we explore the moderating role of the corporate governance model by distinguishing the impact between firms with a shareholder or stakeholder corporate governance model and reveal significant differences in the impact of CSR contracting. For firms with a stakeholder corporate governance model, CSR contracting is no longer associated with a fall of financial performance and has a large positive impact on human resources, environmental and human rights performance. On the other hand, CSR contracting has a negative impact on financial performance but no impact on extra-financial performance for firms with a shareholder corporate governance model.*

Keywords: *corporate governance, corporate social responsibility, executive compensation, environmental, social, and governance (ESG) criteria.*

JEL Classification*: M14; M12 ; G30 ; C23*

2.1 Introduction

In this chatper, we analyze the relationships between corporate governance and corporate sustainability, and examine in particular the role of an essential component of the companies' governance structure: executive compensation programs. More precisely, we investigate whether corporate sustainability, measured by environmental, social and governance (ESG) performance, is influenced by executive compensation programs based on extra-financial (ESG) factors.

While performance-based pay for CEOs has received considerable attention in the literature, the role of extra-financial (ESG) factors in executive compensation has been much less investigated. As CEOs are charged with the responsibility of formulating corporate strategy and in particular corporate sustainability (Waldman et al., 2006), managerial incentives could influence a CEO's decision on whether to allocate funds for corporate social responsibility (CSR).

A recent phenomenon in corporate governance is the inclusion of CSR criteria in executive compensation contracts (see Hong et al., 2016), a practice which is increasingly encouraged at the international level, in particular under the initiative of the United Nations (see PRI Principles for Responsible Investment., 2012). Such programs, labeled "CSR contracting", have become more prevalent in recent years in response to increased pressures on firms to behave in socially responsible ways, and on their boards of directors to take action beneficial to stakeholder engagement through executive pay (see Flammer et al., 2017).

Counterbalancing the classic theory of moral hazard, which recommends sufficient rewards for "success" or "good performance", a large literature recognizes that high-

powered incentives can distort managerial effort or encourage various unproductive activities to improve indicators of performance and lead to excessive short-termism (e.g., Holmstrom and Milgrom, 1991; Baker, 1992; Dixit, 1997; Baker et al., 1994; Oyer, 1998). A crucial reason for the development of CSR contracting hence is to encourage executives to sacrifice short-term pay-offs for long-term gains and stakeholder engagement (Flammer et al., 2017).

Whereas there is a large literature on executive financial compensation programs (traditional "pay for financial performance plans"), little is known and more research still needs to be conducted regarding the use and performance effects of CSR contracting ("pay for extra-financial performance plans"), especially at the empirical level (Maas, 2016). Empirical studies face at least two challenges. First, many of these executive compensation incentives for CSR are relatively new and data on CSR contracting are scarce. Second, empirical identification can be challenging. Firm-level outcomes (financial and/or extra-financial performance) may drive executive compensation program adoption, or significant unobservable variables may influence both program adoption and firm-level outcomes.

In this chapter, we examine how the adoption of CSR contracting affects firm-level outcomes. Our study uses a comprehensive dataset on the adoption timing of such programs. Descriptive statistics highlight the increasing prevalence of CSR contracting as a new phenomenon in corporate governance. We exploit the timing of executive program adoption and employ a difference-in-difference approach to help isolate causal impacts. Our results indicate that the adoption of CSR contracting leads to (i) a decrease in firm value (measured by ROA, ROE and price-to-book ratio) but (ii) an increase in CSR performance, especially responsible behaviors towards customers and suppliers and community involvement. Moreover, we explore the moderating role of

the corporate governance model and find that once we take into account whether the company has a governance model oriented toward its shareholders or its stakeholders, the results revert. In particular, for companies with a stakeholder governance model, the impact of CSR contracting becomes non-significant on financial performance, and positive on all environmental and social performance indicators. We conduct a number of additional analyses to check the robustness of our results.

This chapter makes two main contributions to the literature. First, it documents the development of CSR contracting over the past decade in a large set of OECD countries and characterizes the type of companies that are adopting such types of executive compensation programs. Second, it identifies the mediating factor between the adoption of CSR contracting and firm performance, and highlights a causal mechanism from CSR contracting to financial and extra financial performance, through the corporate governance model of the company and its orientation toward shareholders or more distant stakeholders.

The remainder of the chapter is organized as follows: section 2 defines the literature and hypotheses of our study; section 3 presents the data and our identification strategy; in section 4, we present our empirical results and the robustness checks, and section 5 discusses our results and then concludes.

2.2 Theoretical framework and hypothesis development

2.2.1 Corporate governance and corporate social responsibility

Research on corporate social responsibility (CSR) and the corresponding environmental, social and governance (ESG) factors has been very fruitful over the past decades. An important debate relates to the CSR-firm performance relationship. Numerous studies have been published on the issue, without reaching a clear consensus. Several papers tend to indicate that there is no direct relationship between CSR and firm performance (Surroca et al., 2010), and recent research indicates that an important factor might have been neglected so far in the understanding of the relationship between CSR and performance, namely corporate governance factors (Crifo et al., 2016).

In turn, a growing literature now points to governance factors as a key driver of CSR decisions (see e.g. Dam and Scholtens, 2013; Hong et al., 2016). Broadly defined, corporate governance refers to the set of formal and informal rules and structures that shape managerial decision and accountability, and raises the fundamental questions of what interests the company should serve, how top executives are monitored and incentivized and how aligned are their interests with those of shareholders. To answer these issues, over the past decades, two alternative basic models have been proposed: the shareholder model and the stakeholder model of governance (see e.g. Freeman and Reed, 1983).

In the shareholder model, the company should be run in the sole interests of its

shareholders (or owners). In this context, and given the separation between owners (of capital) and managers and the conflict of interest between them, corporate governance in this model relates to the rules allowing shareholders to be sure that the firms they invest in are managed in compliance with their own interests, based on the premise that management is hired as agents of shareholders and is morally and legally obligated to serve their interests. One important problem lies in the control of executives' decisions by shareholders (in particular minority shareholders). Historically, this model developed in countries with liquid stock markets, such as Anglo-Saxon countries, where capital needs are satisfied by dispersed (minority) shareholders, and management is disciplined by market-based (i.e. outside) forces (takeover bid threats and high-powered incentives like stock options). The control structure of managerial decisions hence is mainly based on external (stock market-based) pressures in this model, with boards of directors - a crucial institution of monitoring – dominated by independent directors, and managerial incentives based on short-term financial incentives (Easterbrook and Fischel, 1991).

By contrast, the stakeholder model relies on the idea that corporations represent broader social interests that must be taken into account, and managers should balance the interests of shareholders (minority and blockholders) together with the interests of workers and other stakeholders. For the proponents of the "stakeholder society", management and governance structures should internalize the externalities their decisions impose on various groups (Tirole, 2006). In such a model, the control of executives in turn is based on internal pressure. Historically, this model developed in countries, such as Continental Europe (northern and southern), with less developed financial markets where the capital needs are satisfied by concentrated shareholders and managers are disciplined by large blockholders as well as workforce representatives. The control structure of managerial decisions hence is mainly based on internal pressures in this

model, involving boards of directors possibly (and often) integrating workers' or other stakeholder representatives, and managerial incentives based on long-term financial incentives (Aglietta and Rebérioux, 2005).

2.2.2 Executive compensation: Financial versus extra-financial incentives

The previous discussion on the models of corporate governance within OECD countries suggests that in order to efficiently discipline CEOs, represent shareholders, and possibly represent other stakeholders, two main types of forces will matter for executive compensation: external as well as internal (Walsh and Seward, 1990; Weir et al., 2002). External mechanisms stem from three types of market forces (Dessain et al., 2008): the market for company executives (in particular, talent and financial compensation), the market for acquisitions (in particular takeover threats and bids), and the market for financial information (in particular investors' information and relations). Internal mechanisms include the board of directors, shareholder voting rights, managers' remuneration systems, trade unions and audits, etc. One particular structure among internal mechanisms is the design of executive pay and the relative importance of long-term incentives (objectives based on strategic management and CSR,Crifo and Rebérioux, 2016).

A considerable literature has examined the importance and problems of short-term financial incentives and bonuses as managerial disciplining devices. In the US for instance, CEO pay has exploded over the last three decades along with shareholder value, suggesting that compensation arrangements have helped to align managerial incentives with those of shareholders, and with executive wealth being highly sensi-

tive to firm financial performance (Frydman and Saks, 2010). Such a trend is not limited to the US and has affected other OECD countries over the period, though to a lesser extent. Excessive executive compensation practices have been an increasing concern for academics, investors, policy makers and the public in recent years. From an academic perspective, it has motivated considerable empirical and theoretical research, highlighting the hidden cost of financial incentives and the dangers of such pay structures and bonus culture (see e.g. Sliwka, 2007; Bénabou and Tirole, 2016). Stock-options and bonuses increase with volatility and push CEOs to take risks, rewarding them for luck without even be aligned to shareholders (long-term) interests (Bertrand and Mullainathan, 2001; Bebchuk et al., 2010; Edmans et al., 2017). In some countries, policy makers recently reacted by adopting laws requiring companies to hold Say-on-Pay votes, publish CEO-to-worker pay ratios or limit bonuses, and pension funds now increasingly use their ownership rights to voice discontent when executive compensation packages are deemed excessive.

Regarding extra-financial incentives, as shown in Holmström and Milgrom (1991), in a principal-agent model with multitasking, more intensive ('high powered') financial incentives should be designed on tasks whose performance is easily measured. In other words, the agency theory suggests that monetary incentives should be offered only on financially measurable performance. The corporate finance literature in turn considers that non-financial incentives are a way for managers to misappropriate some of the firm's surplus. As any type of private benefits, they would exemplify agency costs and inefficiencies (Hart, 2001). Incentives based on extra-financial performance and CSR might in fact be associated with entrenchment strategies, as managers may have a special motive for committing themselves to a socially responsible behavior that gains stakeholders' support, to protect themselves against managerial turnover decided by shareholders (Cespa and Cestone, 2007), suggesting that CSR contracting will have

detrimental effect on the firm's financial performance. However, considering intrinsic motivation within a multitask framework, Kosfeld and Von Siemens (2011) show that when agents differ in their social preferences rather than their productivity (some are self-interested while others are conditional cooperators), competition for talent leads to agents' sorting between "selfish jobs" with high (financial) bonuses but no cooperation (attracting selfish types) and "cooperative jobs" with muted incentives and cooperative behavior (attracting conditional cooperators). Also, an interesting result of this model is that positive benefits emerge in equilibrium. On the empirical side, a growing literature examines the relationship between executive compensation and CSR, with conflicting results. McGuire et al. (2003) report no significant relationship while Deckop et al. (2006), Mahoney and Thorne (2005), and Berrone and Gomez-Mejia (2009) find a positive relationship between CSR and managerial incentives. However, to the best of our knowledge, very few empirical papers provide evidence on the relationship between CSR-based executive compensation and CSR. Three notable contributions are Maas (2016), Hong et al. (2016) and Flammer et al. (2017). Maas (2016) shows that only the use of CSR targets in executive compensation is an effective way to improve CSR. Hong et al. (2016) similarly show that executive compensation for CSR does lead to more CSR activities. They also find that when managers have greater individual power within the firm and governance is less shareholder-friendly, they are less likely to have executive compensation contracts tied to CSR outcomes. Flammer et al. (2017) also show, on US data between 2004 and 2013, that CSR contracting has been more prevalent since the early 2000s, and that the adoption of such executive pay programs leads to an increase in firm long-term orientation and environmental and social performance, but also an increase in a firm's financial performance, which is in line with Kosfeld and Von Siemens (2011).

Applied to the different models of corporate governance developed above, this sug-

gests that in shareholder-oriented companies, managers are incentivized to improve the firm's financial (short-term) performance, and CSR contracting and CSR performance should be low, whereas in stakeholder-oriented companies, managers are incentivized to improve the firm's CSR (long-term) performance and CSR contracting, and CSR performance should be high.

Finally, when disaggregating corporate sustainability into various ESG factors, the new stakeholder view (Post et al., 002a,b) posits that the capacity of a firm to generate financial and extra-financial performance is determined by its relationship with critical stakeholders in relation to three strategic dimensions: resource–base (suppliers of capital, labor and customers), industry–market (supply chain associates, joint venture partners and alliances, regulatory authorities and unions) and the social–political arena (governments, communities and NGOs). While the first two categories refer to direct 'business' or 'voluntary' stakeholders, the third category refers to 'non-business' or 'involuntary' stakeholders (concerning community relations and environmental issues). In terms of governance, this implies that governance factors relying on synergies among voluntary stakeholders would have a positive impact on corporate sustainability, whereas governance factors exacerbating possible conflicts among voluntary and involuntary stakeholders would have a negative impact on corporate sustainability (Cavaco and Crifo, 2014).

In other words, by relying on synergies between managers and both voluntary and involuntary stakeholders, CSR contracting will have a positive impact both on CSR and on financial performance in firms characterized by a stakeholder governance model. However, by exacerbating potential conflicts between direct and distant stakeholders, CSR contracting will have an opposite impact on CSR and on financial performance in firms characterized by a shareholder governance model, that is: a negative impact

on financial performance and either a positive or neutral impact on CSR performance.

We thus state the following hypotheses:

Hypothesis 1: The adoption of CSR contracting has a positive impact on CSR performance and a positive or neutral impact on financial performance for firms with a stakeholder governance model due to synergies among stakeholders.

Hypothesis 2: The adoption of CSR contracting has a negative impact on financial performance and a positive or neutral impact on CSR performance for firms with a shareholder governance model due to possible conflicts among voluntary (direct) stakeholders and involuntary (distant) stakeholders.

2.3 Methodology

2.3.1 Data

Extra-financial data

To measure CSR, we rely on the Vigeo-Eiris database. Vigeo-Eiris is the leading European extra-financial rating agency. It evaluates CSR performance and risk factors on Environmental, Social and Governance (ESG) criteria of European firms listed on the DJSTOXX 600 and MSCI World indices. It supplies this information notably to investors and asset managers. This database has been used in previous studies — e.g., by Igalens and Gond (2005), Cavaco and Crifo (2014) and Girerd-Potin et al. (2014) — to examine issues related to sustainability. Vigeo-Eiris measures CSR on a positive screening basis (identifying companies that are the best performers on various indicators) on six broad dimensions: human rights, environment, human resources, business behavior towards customers and suppliers, corporate governance, and community involvement. For each dimension, there is a subset of criteria describing how the firm manages the particular aspect of CSR. However, Vigeo-Eiris investigates not all of the six domains for the whole sample because before companies are rated, an analysis is done to identify the key CSR issues within the business sector. This determines which criteria in each of the six areas will be activated. Vigeo-Eiris's analysis then focuses on how each company addresses each criterion in terms of Leadership, Implementation, and Results. The evaluation is realized by Vigeo-Eiris via a questionnaire, and not by the firms themselves. The ratings model is based on internationally recognized CSR standards. For each criterion, the questionnaire is based on three items and nine approaches. Each criterion is weighted depending on a sectoral analysis done by

Vigeo-Eiris and depending on three considerations: CSR criteria of a sensitive nature for the firm, CSR criteria of a fundamental nature for the firm, and CSR criteria of a vital nature for the firm. Definition of the CSR variables are reported in Table 2.1.

Table 2.1: Definition of Vigeo-Eiris CSR scores

Vigeo–Eiris Scores	Variable name	Definition
Human Resources	HR	This dimension measures the "integration of human resources issues into corporate strategy" and includes criteria on the improvement of labor relations, the career development and the quality of working conditions.
Environment	ENV	This dimension assesses the integration of environmental issues into corporate strategy (pollution prevention, protection of biodiversity, etc.) and into the manufacturing, distribution and use of products/services.
Customers and Suppliers	CS	This dimension concerns the sustainability of the relationships with customers and suppliers (product safety, information, etc.) and the business integrity (prevention of corruption and anti-competitive practices).
Community Involvement	CIN	This dimension corresponds to the impact on local communities and the contribution to general interest causes.
Human Rights	HR	This dimension includes the respect for human rights in the corporate strategy and in the workplace (non-discrimination, elimination of child and forced labor, etc.)
Corporate Governance	CG	This dimension assesses the firm commitment to organize the governance with appropriate board, internal and audit controls, and ensure fair executive compensation and fair treatment of shareholders.

Note: Definitions are based on the Vigeo-Eiris referential document.

Vigeo-Eiris provides two types of evaluation of CSR practices: continuous scores and ratings. Scores are established on a scale from 0 to 100 (a firm's absolute score), so that a score of 0 shows little evidence of commitment (poor to very poor guarantee of risk management), whereas a score of 100 shows an advanced commitment (social responsibility objectives actively promoted). Ratings are defined as a standard score (Z-score) and measure on how far scores deviate from the average in the sector. In each area the firm may be ranked as the least performing, below average performer, average performer, active performer, or leading performer in the sector. A firm is considered as a CSR leader (ESG sectoral leadership) when the firm adopts an overall CSR commitment. This implies not only good ESG performance but also the integration of ESG factors into corporate strategies.

The transformation of the score into a Z-score[1] or rating is very popular in the finance literature to obtain industry-adjusted measures. However, Gormley and Matsa (2014) show that the industry-adjusted estimator is not consistent when there is correlation between the control variable and the group average. In case of unobserved group-level heterogeneity as we have, it could lead to an omitted variable bias problem. To measure CSR performance, we thus rely on the continuous [0,100] global scores and use the Z-scores only as a robustness check. Descriptive statistics of the CSR variables are reported in Table 2.2.

[1] $Z-scores$ are standard scores, defined as follows: $Z-score_t = (Score_t - \mu_{sector.t})/\sigma_{sector.t}$,with $Score_t$ the score over $[0, 100]$ in year t, $\mu_{sector.t}$ the sectoral mean in year t and $\sigma_{sector.t}$ the sectoral standard deviation in year t.

Table 2.2: Descriptive statistics of Vigeo-Eiris CSR scores

Vigeo Scores	(1) Obs.	(2) Min-Max	(3) Mean	(4) Std. Dev.	(5) Below 50
Human Resources (HR)	17,752	1-81	26.97	14.68	91.54%
Environment (ENV)	17,229	1-87	30.34	16.17	87.13%
Customers & Suppliers (CS)	17,906	4-82	35.90	12.53	85.59%
Community Involvement	17,667	1-100	32.00	16.07	85.32%
Human Rights (HRts)	16,697	1-86	35.11	13.58	84.27%
Corporate Governance (CG)	17,901	1-100	44.37	17.76	58.34%

Note: For each dimension, we observe a large spread of the absolute score from one to more than 80/100 (2). Overall mean scores are below 50 (3). More than 80% of the firms have a score below 50/100 (5).

Economic and financial data

Regarding firm characteristics, we control for a company's sales (in log) to proxy firm size, return on assets (ROA), the leverage ratio (debt/equity), stock volatility (beta), ownership concentration (single biggest voting right), according to the previous literature on CSR performance (Waddock and Graves, 1997; Mc Williams and Siegel, 2000; Surroca et al., 2010; Cavaco and Crifo, 2014). We use different measures of firm performance: operating performance (ROA and ROE) and financial performance with the price-to-book ratio known as a proxy for the Tobin's Q. Definition and descriptive statistics of the economic and financial variables are reported in Table 2.3.

The characteristics of a firm's business sector have been considered a key influence on CSR (e.g. Mc Williams and Siegel, 2000). Here, to take into account the fact that CSR measures may vary considerably across industries, we codify firms according to the sectoral classification provided by INSEE (the French National Statistical Office), which is widely used for the national accounts. The classification will be used

for robustness check and includes accounts for the following seven industries: Construction, Energy, Finance, Health, Leisure Goods & Services, Manufacturing, Retail, Telecom & Media and Transport (see Table 2.4a). Table 2.4b presents the geographical distribution of our sample.

Table 2.3: Economic and financial descriptive statistics

		Obs.	Mean	Std. Dev.	Min	Max
ROA	Return on assets = net profits/total asset	17,919	4.682	5.807	-20.17	30.72
ROE	Return on equity = net profits/ shareholders' equity	17,619	12.86	18.47	-197.4	199.4
PB	Price-to-book ratio= Market Price per Share / Book Value per Share	17,728	2.743	23.89	-1,257	1,540
Log sales	Logarithm of sales	17,787	8.762	1.387	-0.0257	13.09
Log leverage	Logarithm of total debt over total equity	17,427	2.881	1.226	-8.527	5.418
Volatility	Stock risk (beta)	17,814	0.982	0.473	-3.522	5.046
SBVR	Percentage of voting of the single biggest owner	17,322	6.708	5.114	0.0005	90.76

Table 2.4: Industrial sector and geographical distribution

(a) Sector distribution

Industry	Description	Obs.	%
Construction	Building Materials, Heavy Construction	128	3.73
Energy	Energy, Mining & Metals, Oil Equipment & Services, Waste & Water Utilities	612	17.85
Finance	Banks, Business Support Services, Financial Services, Insurance, Retail & Specialized Banks	883	25.75
Health	Health Care Equipment & Services	84	2.45
Leisure Goods & Services	Hotel, Leisure Goods & Services	74	2.16
Manufacturing	Forest Products & Paper, Aerospace, Automobiles, Beverages, Chemicals, Food, Industrial Goods & Services, Luxury Goods & Cosmetics, Mechanical Components & Equipment, Pharmaceuticals & Biotechnology, Technology-Hardware, Tobacco	943	27.5
Retail	Specialized Retail, Supermarkets, Small & Mid Caps	223	6.5
Telecom & Media	Telecommunications, Broadcasting & Advertising, Publishing, Software & IT Services, Broadcasting and Advertising, Fixed Telecommunications	318	9.27
Transport	Transport & Logistics, Travel & Tourism, Railways, Air Transport	164	4.78

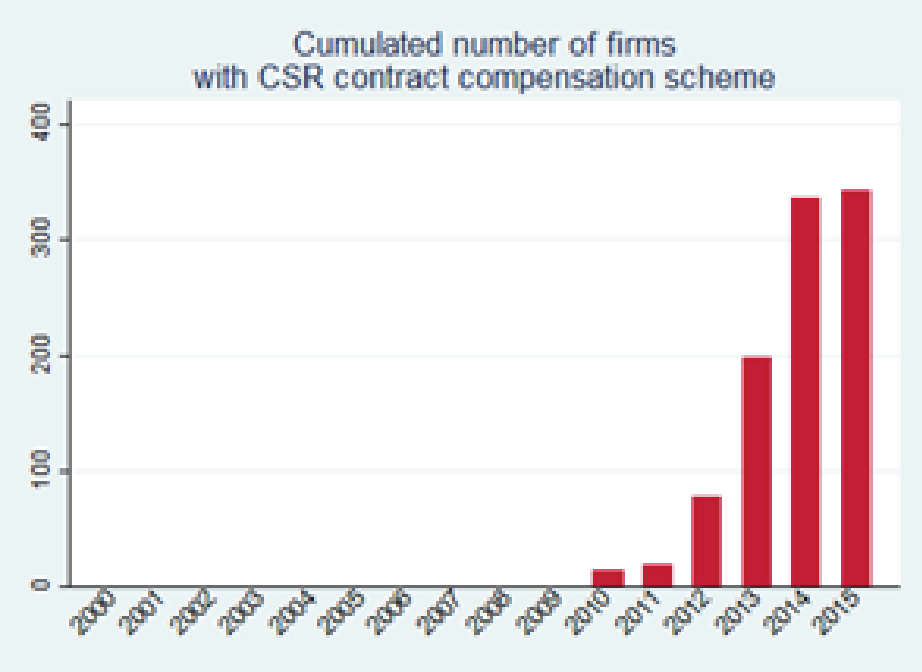
(b) Geographic distribution

Area	Obs.	%
Africa	48	1.40
Asia – Pacific	1072	31.26
Europe	1271	37.07
Middle East	40	1.17
North-America	846	24.67
South-America	152	4.43

Executive compensation data

Vigeo-Eiris collects data about executive compensation and rates the adoption of CSR contracting. This practice is relatively new and appears, for our sample, at the beginning of 2010. Between 2010 and 2015, 355 firms chose to implement CSR contracting for at least one year (see Figure 2.1), an increasing trend. This treated group represents 10% of our total panel. Figure 2.1 documents the increasing prevalence of CSR contracting as a new phenomenon in corporate governance, which echoes the observed trend on US data by Flammer et al. (2017).

Figure 2.1: Evolution of the numbers of firms with CSR compensation scheme



Note: On the right, the bars represent the cumulative number of firms with CSR-based compensation schemes. The collection of data ends in April 2015, which explains the partial number of firms for the year 2015.

The new concern for CSR contracting reveals a self-selection of firms adopting this practice, with more than 70% of those firms being in the top of their sector for all CSR domains (see Table 2.5). This self-selection bias is addressed by our econometric strategy. Tables 2.6a and 2.6b show that there are still large discrepancies between regions and sectors. National culture and regulatory frameworks exercise a key influence on the way firms communicate about executive compensation.

Table 2.5: CSR profile of firms with CSR contracting

	HR	ENV	CS	CIN	HRts	CG
Above the sector mean	68%	71%	76%	72%	71%	89%
Below the sector mean	32%	29%	24%	28%	29%	11%

Table 2.6: Geographic and industrial sector distribution of firms with CSR contracting

(a) Distribution of firms with CSR contracting across industries

	Share of firms with CSR contracting within the industry	Distribution of firms with CSR contracting across industries
Construction	21.33%	1.71%
Energy	3.80%	45.87%
Finance & Insurance	10.15%	24.79%
Health Care Equipment & Services	42.00%	0.57%
Hotel, Leisure Goods & Services	18.50%	1.14%
Manufacturing	17.79%	15.10%
Retail	55.75%	1.14%
Telecommunications and Media	17.67%	5.13%
Transport & Logistics	10.25%	4.56%

Note: The first column represents the share of treated firms within the industry and the second shows the distribution across industries.

(b) Geographic distribution of firms with CSR contracting

	Share of firms with CSR contracting within the country	Distribution of firms with CSR contracting across countries
Australia	44%	11.68%
Austria	9%	0.85%
Belgium	20%	1.99%
Brazil	3%	0.57%
Canada	29%	7.12%
China	2%	0.57%
Denmark	10%	0.85%
Finland	6%	0.57%
France	18%	8.83%
Germany	7%	3.13%
Hong Kong	1%	0.28%
Hungary	33%	0.28%
Italy	12%	3.13%
Japan	1%	0.57%
Luxembourg	14%	0.57%
New Zealand	17%	0.28%
Norway	19%	1.42%
Philippines	5%	0.28%
Portugal	20%	0.85%
Russia	4%	0.28%
Singapore	6%	0.57%
Spain	6%	1.42%
Sweden	2%	0.28%
Switzerland	6%	1.14%
The Netherlands	27%	5.41%
USA	13%	27.64%
United Kingdom	23%	19.37%

Note: The first column represents the share of treated firms within country and the second shows their distribution across the world.

Corporate governance model

The distinction between firms with shareholder or stakeholder models of governance is mainly based on country-level data following the pattern of stock market activity, ownership concentration and the identity of main owners as well as the shareholder rights protection indice established by Martynova and Renneboog (2013) in 2005. They completed a comprehensive comparative analysis of corporate governance regulatory systems and their evolution over the last 15 years in 30 European countries and the US (see Crifo and Rebérioux, 2016). Anglo-Saxon countries are characterized by vibrant financial markets and highly dispersed ownership, mainly held by institutional investors such as pension funds or mutual funds, and are therefore depicted as representative of the shareholder model of corporate governance. By contrast, Continental Europe (northern and southern), with rather narrow stock markets and concentrated ownership in the hand of non-financial companies, are described as representative of a stakeholder model. In addition, co-determination (that is the presence of worker representatives at the board level) is provided for by company law in a large number of northern and central European continental countries (Austria, Czech Republic, Denmark, Finland, Germany, Hungary, Luxembourg, the Netherlands, Romania, Slovakia (plus Slovenia, Sweden – and, since 2013, France), reinforcing the stakeholder orientation of the governance model.

To determine the model of governance of each firm, we thus first use Crifo and Rebérioux (2016) classification and attribute a model of governance to each country. Then we take into account the level of independent, executive and grey directors sitting in the boardroom of the firm to adjust the classification. Table 2.7a shows the distribution of firms according to their governance model. The two groups do not have an equivalent size but the share of CSR contracting firms remains about 10% for each

sub-group. Governance characteristics are reported in Table 2.7b.

The average performance of the shareholder versus stakeholder models of governance is summarized in Table 2.7c. Results show no significant differences in performance of the two groups.

Table 2.7: Differences between firms according to their governance model

(a) Distribution

	Overall sample		CSR contracting firms	
	Obs	%	Obs.	%
Shareholder-type of firms	2515	73%	282	80%
Stakeholder or hybrid-type of firms	914	27%	69	20%
Total	3429	100%	351	100%

(b) Firms' boards composition

	Shareholder-type of firms		Stakeholder or hybrid-type of firms	
	Mean	Std. Dev.	Mean	Std. Dev.
Share of strictly independents directors	43.25	20.23	27.55	16.01
Share of executive and grey directors	56.75	20.23	72.4	16.01

(c) Firms' performance

	Shareholder-type of firms				Stakeholder or hybrid-type of firms			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
ROA	7.090	6.227	-20.10	30.72	6.994	6.575	-20.17	30.66
Human Resources	24.91	13.53	1	81	32.32	16.13	1	80
Environment	29.45	15.93	1	87	32.67	16.56	1	86
Customers and Suppliers	35.44	12.14	6	82	37.12	13.43	4	82
Community Involvement	31.22	15.76	2	94	34.04	16.67	1	100
Human Rights	34.07	12.61	3	86	38.00	15.61	4	84
Corporate Governance	45.48	18.86	1	100	41.46	14.10	1	93

2.3.2 Econometric model

The main objective of the model is to assess the impact of the adoption of CSR contracting on several firm-level outcomes, testing hypotheses H1 and H2. Considering firms adopting such CSR contracting as the "treated" firms, we want to measure the average difference in performance level between those firms and the others, considered as the control group. As seen before, not all treated firms have adopted CSR contracting the same year and they may have particular CSR profiles due to self-selection.

These two problems can be addressed using a Difference-in-Difference (DiD) model with firm fixed effects and time fixed effects. The quasi-experiment allowed by the DiD model in outcomes across adopting and non-adopting firms should remove the effect of confounding factors and isolate the effects of executive compensation programs on firm-level outcomes. The DiD specification requires three terms : a dummy variable to indicate the time when the treatment started, a dummy variable to identify the group exposed to the treatment and a dummy variable equals to the interaction between both previous dummies. Here, the dummy variable identifying the treatment group is colinear to the firm fixed effect so it is not needed. Besides, our empirical strategy explicitly exploits differences in the timing of adoption. In consequences, the dummy variable indicating the starting time of the treatment is identical to the interaction dummy. We call this dummy $CSR_contract$.

In order to measure the global impact of CSR contracting, we first estimate the following model without separating the effects between firms with a stakeholder or a shareholder governance model:

$$Y_{i,t} = \alpha \ + \ \beta CSR_contract_{i,t} \ + \ \delta X_{i,t} + \ \theta_{i} + \ \tau_{t} \ + \ \varepsilon_{i,t} \tag{2.1}$$

Where $CSR_contract$ is the dummy variable equal to 1 for adopting firms the year for which CSR contracting is effective and 0 otherwise. β is the parameter of interest that measures the average effect of the adoption on the adopters. θ represents the firm fixed effect and τ the year fixed effects. The inclusion of firm fixed effects accounts for time-invariant firm characteristics that may affect both the adoption of CSR contracting and firm-level outcomes. The inclusion of year fixed effects accounts for macroeconomic shocks that could impact both CSR contracting and firm-level outcomes. $X_{i,t}$ is a vector of firms' financial and ownership control variables as reported in Table 2.

To test H1 and H2, we use additional dummies, *stakeholdermodel and shareholdermodel,* equal to 1 for firm with a stakeholder (resp. shareholder) governance model and to 0 otherwise. Then, we estimate the following model:

$$\begin{aligned} Y_{i,t} = \alpha \ + \ \beta_1 CSR_contract_{i,t} * stakeholdermodel \ _i \\ + \beta_2 CSR_contract_{i,t} * shareholdermodel \ _i + \\ \delta X_{i,t} + \theta_i + \ \tau_t \ + \ \varepsilon_{i,t} \end{aligned} \quad (2.2)$$

where β_1 captures the average effect of the adoption of CSR contracting on the firms with a stakeholder governance model and β_2 captures the average effect of the adoption of CSR contracting on the firms with a shareholder governance model[2].

[2] For each firm, there is no variation of the corporate governance model during the considered period. The specific impact of a shareholder or a stakeholder model is therefore captured by the firms' fixed effects.

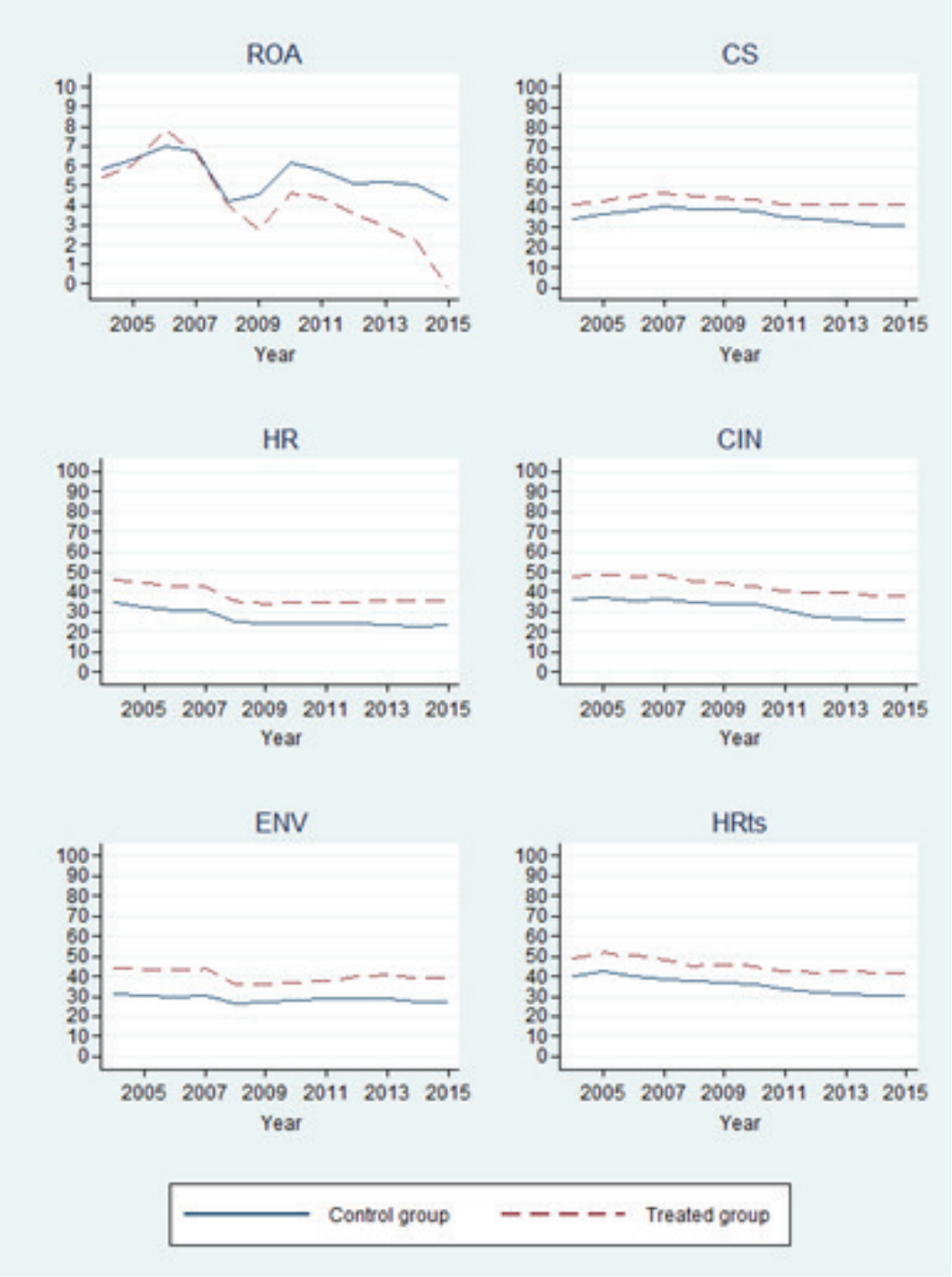
To validate the DiD model, non-adopters must have experienced the same trends in firm-level outcomes as adopters in the absence of treatment. This is the key identification assumption of DiD, known as the Common Trend Assumption (CTA). To validate this CTA assumption, we run placebo tests (see Bertrand et al., 2004) considering the adopting firms as if they implemented the CSR contracting practices the same year. Because the first real adoption of CSR contracting in our sample occurs in 2010, we run these placebo tests for all years between 2003 and 2009. As we can see in Figure 2.2, trends before 2009 are similar and regression results with placebo treatment show no significant difference between the treated and the non-treated firms (See Appendix 1). Most notably, for both firm and CSR performance, adopters and non-adopters experience comparable trends in the pre-treatment period but seem to have differential trends after 2010.

The DiD method also requires classics micro-econometrics assumptions such as the stability of the treatment value and the absence of treatment effect in the pre-treatment period on the treated group. We assume that the stability of the treatment value is valid because the CSR ratings remain independent across firms and independent of the implementation of CSR contracting for all CSR dimensions. The absence of pre-treatment hypothesis also holds because there is no expectation of the treatment by the firms[3].

Nevertheless, the OLS estimation could suffer from endogeneity issues. As seen in Table 3a, firm-level outcomes (firm and/or CSR performance) may drive executive compensation program adoption, or significant unobservable variables may influence both program adoption and firm-level outcomes (Flammer et al., 2017). In other words,

[3] Firms may adopt CSR contracting in anticipation of future changes in investments decisions or stricter environmental regulations but we think that such anticipations are not prevalent in the observed period of our sample.

Figure 2.2: Evolution of the performance ratio for treated and control groups



Note: The solid line represents the mean score of the control group. The broken line represents the mean score of the treated group. Control and treated groups have similar trends until 2010, the year of the first adoption of CSR contracting.

our treatment status may not be randomly assigned. To obtain an alternative robust specification of the impact of CSR contracting on the DiD estimator, and to take into account potential endogeneity problems, we use an instrumental variable (IV) method to first estimate the propensity to adopt CSR contracting. Because of the binary nature of our endogenous variables, we use a three-stage method developed by Adams et al. (2009) : (i) we first estimate a probit of $CSR_contracting$ on several instruments and some control variables; (ii) in a second stage we regress $CSR_contracting$ on the predicted values computed from the probit and all the control variables (equivalent to a first stage of 2SLS); (iii) and in the final stage we estimate β using our specification (2.1) with the predicted values of the second stage as instrument (equivalent to a second stage of 2SLS). We include time and firm fixed effect in all stages. To test for H1 and H2, we repeat the first two stages of this procedure and predict both $CSR_contracting*$ $stakeholdermodel$ and $CSR_contracting * shareholdermodel$. Then we estimate β_1 and β_2 using our second specification (2.2) with those fitted values as instruments. This method provides consistent estimators for binary endogenous variables where simple 2SLS imposes several conditions on the first stage ("Pseudo IV" procedure) and leads to biased estimators in finite samples.

The IV is chosen to be exogenous to the firms economic and CSR performance levels but highly correlated to the propensity to adopt CSR contracting. Here, we chose to exploit the legislation of the country. In practice, there is no law which constrains firms to adopt CSR contracting but some countries have ESG laws to regulate CSR practices. We think that the earlier the country adopts such laws, the more likely firms will be proactive regarding CSR issues and will adopt CSR contracting. To have a quantitative indicator of regional practices, we also use the number of ESG reporting instruments effective in each country. The adoption of ESG laws and instruments by government seems to be exogenous to the development of CSR contracting and so are

suitable candidates as instruments.

The specification of the set of instruments is then:

$$Instruments_{i,t} = \sum^{j} A_{jti}.YearJ_after_law_{jti} \; + \; B_i.ESG_instruments_i \qquad (2.3)$$

Where $YearJ_after_law_j$ is a dummy equal to 1 if the observation occurs the j^{th} year after the adoption of the major ESG law in the country of the firm i. For countries who have not adopted such a law, $YearJ_after_law_j$ is always equal to zero. $ESG_instruments$ is an integer variable equal to the number of ESG reporting instruments effective in the country of the firm i.

2.4 Results

First, we use the specification (2.1) to measure the general impact of CSR contracting on two different firm-level outcomes: firm performance and CSR scores. Secondly, we use the second specification to test H1 and H2 and detail the impact according to the governance model.

2.4.1 OLS estimates

Our results show that CSR contracting has a negative impact on financial performance measured by the ROA and the ROE at a 1% significance level but also on the price-to-book ratio (Tobin's Q) at a 10% significance level (Table 2.8). The amount of sales, leverage and volatility have a significant impact on the ROA and ROE, consistently with the literature. At a general level, CSR contracting seems to have a negative impact on operating and financial performance, unlike in Flammer et al. (2017), a result that we further investigate below.

Table 2.8: OLS results – Firm performance

	(1) ROA	(2) ROE	(3) Price-to-Book
CSR Contract	-0.99***	-3.19***	-1.18*
	(0.27)	(0.89)	(0.69)
Log(Sales)	0.15	0.74*	-0.60
	(0.13)	(0.43)	(0.46)
Log(Leverage)	-0.95***	-0.18	0.12
	(0.08)	(0.19)	(0.16)
Volatility	-0.56***	-2.12***	0.31
	(0.10)	(0.38)	(0.49)
SBVR	-0.03***	-0.06	-0.03
	(0.01)	(0.04)	(0.04)
Firm FE	YES	YES	YES
Year FE	YES	YES	YES
No. of firms	3105	3080	3104
Adj. R-Squared	0.14	0.07	0.00

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

In Table 2.9, we present the results with CSR scores. We show a positive impact on customers and suppliers, and community involvement criteria, but there is no impact on human resources, environmental and human rights performance. CSR contracting seems to be more sensitive and positively driven on specific CSR criteria (due to synergies between stakeholders).

Table 2.9: OLS results – CSR Scores

	(1) Human Resources	(2) Environment	(3) Customers and Suppliers	(4) Community Involvement	(5) Human Rights
CSR Contract	0.47	0.50	1.51***	2.35***	0.37
	(0.60)	(0.71)	(0.59)	(0.75)	(0.61)
ROA	0.02	-0.03	0.02	-0.09**	-0.02
	(0.04)	(0.04)	(0.03)	(0.05)	(0.03)
ROE	-0.00	0.01	-0.00	-0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Price-to-Book	0.00	-0.00	-0.00	-0.05**	-0.02**
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Log(Sales)	1.61***	2.13***	0.82*	2.97***	0.69
	(0.42)	(0.51)	(0.45)	(0.65)	(0.45)
Log(Leverage)	0.17	-0.07	0.02	-0.30	-0.01
	(0.21)	(0.23)	(0.19)	(0.25)	(0.19)
Volatility	0.04	-0.19	-0.25	0.49*	-0.38*
	(0.24)	(0.27)	(0.22)	(0.30)	(0.23)
SBVR	-0.01	0.05	0.00	0.05	0.05
	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)
Firm FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
No. of firms	3005	2907	3008	2983	3003
Adj. R-Squared	0.07	0.19	0.11	0.05	0.04

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

To further investigate the negative relationship between CSR contracting and financial performance, we now consider the mediating role of corporate governance. In fact, as formulated in H1 and H2, the corporate governance model could matter in the relationship between CSR contracting and firm-level outcomes. Table 2.10 shows the results of the specification (2.2), which captures the impact of CSR contracting depending on the governance model. We see that the impact of CSR contracting on ROA remains negative at a 1% significance level only for firms with a shareholder governance model. Regarding CSR scores, we see that the impact revealed by the previous regressions is not stable across firms and depends also on their governance model. For firms with a shareholder-oriented governance model, CSR contracting seems to have no large effect on any of the extra-financial factors except community involvement at a 5% level. On the contrary, for firms with a stakeholder-oriented governance model, CSR contracting seems to have a large positive impact on all dimensions of extra-financial performance. Coefficients are significant at a 10% level for environmental criteria, at a 5% level for human resources and human rights, and at a 1% level for customers and suppliers, and community involvement. These results validate both our hypotheses H1 and H2.

Table 2.10: CSR contracting impacts according to the governance model

	(1) ROA	(2) Human Resources	(3) Environment	(4) Customers and Suppliers	(5) Community Involvement	(6) Human Rights
CSR Contract & stakeholder model	0.31	2.32**	2.30*	3.43***	4.57***	2.52**
	(0.37)	(1.13)	(1.19)	(1.11)	(1.44)	(1.10)
CSR Contract & shareholder model	-1.31***	-0.04	0.00	0.99	1.75**	-0.21
	(0.31)	(0.69)	(0.83)	(0.67)	(0.85)	(0.70)
Log(Sales)	0.16	1.62***	2.13***	0.83*	2.97***	0.70
	(0.13)	(0.42)	(0.51)	(0.44)	(0.65)	(0.45)
Log(Leverage)	-0.95***	0.18	-0.06	0.03	-0.29	-0.00
	(0.08)	(0.21)	(0.22)	(0.19)	(0.25)	(0.19)
Volatility	-0.56***	0.04	-0.19	-0.25	0.49*	-0.38
	(0.10)	(0.24)	(0.27)	(0.22)	(0.30)	(0.23)
SBVR	-0.03***	-0.01	0.05	0.00	0.05	0.05
	(0.01)	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)
ROA		0.02	-0.03	0.02	-0.10**	-0.02
		(0.04)	(0.04)	(0.03)	(0.05)	(0.03)
ROE		-0.00	0.01	-0.00	-0.00	0.00
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Price-to-Book		0.00	-0.00	-0.00	-0.05**	-0.02**
		(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
No. of firms	3105	3005	2907	3008	2983	3003
Adj. R-Squared	0.14	0.07	0.19	0.11	0.05	0.04

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

2.4.2 IV estimates

To take into account the potential endogeneity issue of our main variable of interest "CSR contracting", we run an IV estimation with the number of years passed since the first ESG law adopted in the country and the number of ESG reporting tools as instruments. All preliminary stages are provided in Appendix 1. Results without and with governance model distinction are presented in Table 2.11 and Table 2.12.

First-stage results point to the relevance of the instrument. The propensity to adopt a CSR-based compensation scheme significantly increases if the firm is located in a country with mandatory ESG legislation, and as time goes by after the introduction of this law. CSR contracting is also positively correlated with the number of ESG reporting instruments. Those correlations hold for both firms with shareholder or stakeholder governance models.

IV estimations are similar to OLS results for both specification (1) and (2). The adoption of CSR contracting is negatively correlated to operating and financial performance and positively to customers and suppliers and community involvement scores but also to environmental criteria and the respect for human rights. The second IV estimation confirms that the negative impact on financial performance is specific to firms with a shareholder model of governance whereas the positive impacts on all CSR areas is higher for firms with a stakeholder governance model.

Table 2.11: CSR contracting general impacts with IV estimation

	(1) ROA	(2) Human Resources	(3) Environment	(4) Customers and Suppliers	(5) Community Involvement	(6) Human Rights
CSR Contract	-2.96***	1.79	3.90**	6.96***	8.99***	5.95***
	(0.77)	(1.46)	(1.60)	(1.56)	(2.02)	(1.63)
Log(Sales)	1.07***	0.84**	1.06**	0.77*	1.38**	-0.22
	(0.29)	(0.34)	(0.47)	(0.43)	(0.57)	(0.38)
Log(Leverage)	-1.23***	0.10	-0.12	-0.14	-0.22	-0.16
	(0.13)	(0.16)	(0.18)	(0.17)	(0.20)	(0.17)
Volatility	-0.73***	-0.10	-0.26	-0.06	0.25	0.12
	(0.15)	(0.17)	(0.23)	(0.19)	(0.24)	(0.20)
SBVR	-0.03*	-0.01	-0.01	-0.04	-0.01	-0.04
	(0.02)	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)
ROA		0.02	-0.01	-0.00	-0.04	0.04
		(0.03)	(0.04)	(0.03)	(0.04)	(0.03)
ROE		0.00	0.01	-0.01	0.00	-0.01
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Price-to-Book		-0.01	0.01	-0.00	-0.02	-0.02**
		(0.01)	(0.03)	(0.01)	(0.03)	(0.01)
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
No. of firms	2938	2859	2759	2860	2841	2860
Adj. R-Squared	0.11	0.09	0.12	0.05	0.06	0.05

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

Table 2.12: CSR contracting impacts according to the governance model with IV estimation

	(1) ROA	(2) Human Resources	(3) Environment	(4) Customers and Suppliers	(5) Community Involvement	(6) Human Rights
CSR Contract & shareholder model	-4.58***	-0.38	1.34	6.36***	7.40***	1.60
	(0.95)	(1.60)	(1.72)	(1.71)	(2.31)	(1.79)
CSR Contract & stakeholder model	1.19	6.07***	11.65***	8.04***	12.28***	14.17***
	(0.89)	(2.23)	(2.63)	(2.62)	(3.80)	(2.45)
Log(Sales)	1.12***	0.87**	1.12**	0.90**	1.34**	0.01
	(0.30)	(0.34)	(0.47)	(0.44)	(0.58)	(0.38)
Log(Leverage)	-1.30***	0.16	-0.08	-0.04	-0.11	-0.03
	(0.13)	(0.19)	(0.20)	(0.16)	(0.22)	(0.18)
Volatility	-0.74***	-0.12	-0.20	-0.04	0.39	0.20
	(0.15)	(0.17)	(0.23)	(0.19)	(0.25)	(0.20)
SBVR	-0.03*	-0.03	-0.01	-0.04	0.02	-0.03
	(0.02)	(0.03)	(0.04)	(0.03)	(0.05)	(0.03)
ROA		0.02	-0.02	-0.01	-0.04	0.01
		(0.03)	(0.04)	(0.03)	(0.05)	(0.03)
ROE		0.00	0.01	-0.01	0.00	-0.00
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Price-to-Book		-0.01	0.00	-0.00	-0.02	-0.02**
		(0.01)	(0.03)	(0.01)	(0.03)	(0.01)
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
No. of firms	2860	2782	2688	2783	2764	2783
Adj. R-Squared	0.11	0.09	0.12	0.05	0.05	0.05

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

2.4.3 Summary of results

Table 2.13 presents a summary of the results. The hypothesis of a negative impact of CSR contracting on operating and financial performance is accepted for firms with a shareholder model of governance. The impact of CSR contracting on extra-financial performance is positive and highly significant only for firms with a stakeholder model of governance.

Table 2.13: Summary of results

	Hypothesis 1 – CSR contracting has a positive or neutral impact on financial and a positive impact on CSR performance for firms with a stakeholder governance model	Hypothesis 2 - CSR contracting has a negative impact on financial performance and a positive or neutral impact on CSR performance for firms with a shareholder governance model.
Financial performance	Yes (no effect)	Yes (negative effect due to possible conflicts)
Environmental performance	Yes (positive effect from synergies)	Yes (no strong effect)
Human resources performance	Yes (positive effect from synergies)	Yes (no strong effect)
Customer and suppliers performance	Yes (positive effect from synergies)	Yes (no strong effect)
Community involvement performance	Yes (positive effect from synergies)	Yes (no strong effect)
Human rights performance	Yes (positive effect from synergies)	Yes (no strong effect)

2.4.4 Robustness checks

To validate our results, we perform several regressions with additional control variables, alternative outputs or limited treatment groups. Tables of all these alternative specifications are presented in Appendix 2. Results are robust to several falsification and sensitivity checks.

CSR Z-scores

As seen before, regressions on Z-scores, i.e. industry standardized scores, suffer from omitted variable bias issues but are still commonly used to show the impact on the rank of the firm within a specific sector. Based on the Vigeo-Eiris score, we compute Z-scores for the five extra-financial interesting domains. The results of regression on Z-scores are consistent with our main results: CSR contracting has a positive impact on Z-scores for all CSR domains at a 1% or 5% significance level except for environmental performance (see Appendix 2.1).

Macroeconomic effects

Because of the construction of our governance model indicator variable, we may be concern that the differences in CSR contracting impacts between the two types of companies capture in reality macroeconomic variations across countries. To refute this hypothesis, we use macroeconomic data from the World Economic Outlook Database provided by the International Monetary Fund and add the following variables as control variables to our IV model: the Gross Domestic Product (GDP) (Purchasing power parity; international dollars), the current account balance (% of GDP), the gross debt

(% of GDP), the growth rate of goods and services imports volume (%), and the gross national savings (% of GDP).

First, we show that both financial and extra-financial performance are correlated with some of these macroeconomic performance measures (see Appendix 2.2). Above all, we show that the differences between companies with a shareholder or a stakeholder governance model are still significant after the addition of these control variables. It reinforces the idea that the impact of CSR contracting depends on the governance structure at the firm level.

Include almost treated firms

Vigeo-Eiris data provides some additional information on governance. For instance, the sub-score CG4.1 reveals the management quality of executive compensation. As seen before, the adoption of CSR contracting may be submitted to self-selection and most of the treated firms have already a high corporate governance performance score. In that sense, all firms with high CG (or CG4.1) score are potential candidates to implement CSR contracting. Adding firms in the top 10% of CG (or CG4.1) score to the treated group leads to results similar to our main results (see Appendix 2.3).

Detailed data on executive compensation programs

For some of the adopting firms, we have detailed data specifying the criteria on which CSR contracting is based. In our sample, only 101 firms have implemented CSR contracting on environmental criteria and 217 on human resources criteria. Restricting our sample to firms with CSR contracting based on environmental criteria, results are strongly significant: for firms with a stakeholder governance model, CSR contracting

is positively correlated to an increase in environmental performance at a 5% level (see Appendix 2.4). Restricting our sample to firms with CSR contracting based on human resources criteria, results are less significant and we do not show a positive correlation with CSR performance for firms with a stakeholder model of governance (see Appendix 2.5). The loss of quality can be imputed to the small size of the treated sample.

Results according to sectors and concentration of ownership

In the same way, we could restrict our sample according to the industry classification. The combining of Construction, Energy and Manufacturing corresponds to the secondary sector and represents 49% of our sample. The tertiary, or services, sector is composed of Finance, Health Care, Tourism, Media, and Transport and represents the other 51% of our sample. With firms from the primary and secondary sector, we show a strong negative impact on the ROA and ROE, with a 1% significance level for firms with a shareholder model of governance (see Appendix 2.6). Impacts on CSR scores are less clear. With the tertiary sector sub-sample, we do not show the negative impact on financial performance anymore, but we note positive impacts on extra-financial performance, which is higher for firms with a stakeholder model of governance (see Appendix 2.7).

Manufacturing and Finance & Insurance represent 27.56% and 25.77% of our total sample. Results are still similar if we delete them from the sample (see Appendix 2.8).

In the same way, our hypotheses H1 and H2 remain valid only with firms with wide ownership (bottom 20% SBVR) or concentrated ownership (top 20% SBVR) (see Appendix 2.9 and 2.10).

2.5 Discussion and conclusion

Our study examines the prevalence of CSR contracting and its impact on financial and extra-financial corporate performance. It identifies why companies may find it profitable to encourage executives to be concerned by long-term extra-financial gains and stakeholder engagement through a dedicated bonus policy. We employ an original econometric strategy based on a difference-in-difference approach to isolate causal effects and identify the mediating factor that explains the impact of CSR contracting on firm-level performance. The corporate governance model of the company appears to play a crucial role. Ours results show that the adoption of CSR contracting leads to (i) a decrease in firm value (measured by ROA, ROE and price-to-book ratio) but (ii) an increase in CSR performance. However, once we take into account whether the company has a governance model oriented toward shareholders or stakeholders, the results revert. In particular, for companies with a stakeholder governance model, the impact of CSR contracting becomes non-significant on financial performance, and positive on all environmental and social performance indicators.

Our study contributes to the literature in several ways. First, we document how CSR contracting affects firm performance, through a comprehensive dataset of large companies operating in 54 industrialized and emerging countries over the 2000-2015 period. Second, we highlight an important moderating factor in the CSR contracting-firm performance relationship: the nature of the corporate governance model. Firms with governance bodies oriented towards their stakeholders capitalize on the synergies and complementarities between the CEO, incentivized in CSR, and close and remote stakeholders, which is beneficial for financial and extra-financial performance. On the other hand, firms with governance bodies focused on shareholders do not find it

beneficial to orient managerial incentives toward stakeholders, whether we consider financial or extra-financial performance, with a strong and persistent negative impact in the former case.

Our results also have relevant implication for professionals and managers by showing that introducing extra-financial criteria in executive compensation programs provides an additional tool among other governance mechanisms that boards of directors can use to incentivize managers to take value-enhancing actions, provided that the corporate governance bodies are aligned with this long-term strategy.

The results can be used by decision makers in organizations with growing demands and pressures for moving toward more sustainable business practices in different ways. The results may encourage CEOs 1) to integrate ESG issues in the strategic management of their firm via specific incentives; 2) to foster more interactive dialogue between a company and its stakeholders on ESG issues; and 3) to develop familiarity with the ESG issues that are most important for their business and to create a proactive strategy for considering ESG performance in the governance bodies.

Our study is subject to some limitations that might open new areas for future research. Firstly, empirical results are conditioned by the sample and the availability of information (firms started implementing CSR contracting in 2010). Secondly, it would be important to consider all dimensions of managerial compensation, in particular the role of traditional short-term (pay for performance) financial bonuses (not only extra-financial). Thirdly, we have studied a specific characteristic of companies' governance models. Future research could focus on other bodies of governance, in particular the composition of board of directors.

2.6 Appendix 1 – IV estimation First and Second Stage

APPENDIX 1.1 - First stage of the IV estimation

	(1) CSR Contract	(2) CSR Contract & shareholder model	(3) CSR Contract & stakeholder model
Number of ESG	0.02***	0.04***	-0.05***
reporting instruments	(0.01)	(0.01)	(0.01)
One year after	0.49***	0.51***	0.17
ESG law	(0.09)	(0.09)	(0.23)
Two years after	0.49***	0.49***	0.22
ESG law	(0.09)	(0.09)	(0.23)
Three years after	0.16	0.21	0.11
ESG law	(0.17)	(0.18)	(0.37)
Four years after	0.30**	0.16	0.74***
ESG law	(0.14)	(0.16)	(0.23)
Five years after	0.23*	0.07	0.75***
ESG law	(0.12)	(0.14)	(0.20)
Six years after	0.14	-0.13	0.86***
ESG law	(0.12)	(0.14)	(0.17)
Seven years after	-0.31*	-0.41**	0.36
ESG law	(0.16)	(0.19)	(0.22)
Eight years after	0.20	0.32**	0.00
ESG law	(0.14)	(0.14)	(.)
Log(Sales)	0.17***	0.12***	0.27***
	(0.03)	(0.03)	(0.06)
Log(Leverage)	0.02	0.02	0.03
	(0.03)	(0.03)	(0.08)
Volatility	-0.04	-0.04	-0.20*
	(0.06)	(0.06)	(0.12)
SBVR	0.01**	0.01**	-0.00
	(0.00)	(0.01)	(0.01)
Year FE	YES	YES	YES
Industry FE	YES	YES	YES
No. of firms	2938	2938	2860
Pseudo R-Squared	0.24	0.24	0.32

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

APPENDIX 1.2 - Second stage of the IV estimation

	(1) CSR Contract	(2) CSR Contract & shareholder model	(3) CSR Contract & stakeholder model
$Pr(\widehat{CSRContract})$	1.18***		
	(0.08)		
$Pr(\widehat{CSRContract}\& model)$		1.08***	
		(0.08)	
$Pr(\widehat{CSRContract}\& model)$			1.16***
			(0.16)
Log(Sales)	-0.04***	-0.03***	-0.01***
	(0.01)	(0.01)	(0.00)
Log(Leverage)	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Volatility	-0.01*	-0.01*	0.00
	(0.01)	(0.01)	(0.00)
SBVR	-0.00**	-0.00**	0.00
	(0.00)	(0.00)	(0.00)
Year FE	YES	YES	YES
Industry FE	YES	YES	YES
No. of firms	2938	2938	2860
Adj. R-Squared	0.20	0.17	0.17

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

2.7 Appendix 2 – Robustness regression tables

APPENDIX 2.1 - Regression results with Z-score output

	(1) Human Resources	(2) Environment	(3) Customers and Suppliers	(4) Community Involvement	(5) Human Rights
CSR Contract & stakeholder model	0.29***	0.10	0.29***	0.43***	0.26***
	(0.09)	(0.08)	(0.10)	(0.09)	(0.09)
CSR Contract & shareholder model	0.06	-0.03	0.05	0.12**	0.02
	(0.05)	(0.05)	(0.05)	(0.06)	(0.05)
ROA	0.01**	-0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
ROE	-0.00**	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Price-to-Book	-0.00	-0.00	-0.00	-0.00	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Log(Sales)	0.07**	0.16***	0.06	0.17***	0.04
	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)
Log(Leverage)	-0.00	-0.00	-0.01	-0.02	-0.00
	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
Volatility	-0.00	-0.01	-0.02	0.05***	-0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
SBVR	-0.00	0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Firm FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
No. of firms	3005	2907	3008	2983	3003
Adj. R-Squared	0.32	0.25	0.17	0.15	0.23

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

APPENDIX 2.2 - Regression results with macroeconomic data (IV estimation)

	(1) ROA	(2) Human Resources	(3) Environment	(4) Customers and Suppliers	(5) Community Involvement	(6) Human Rights
CSR Contract & shareholder model	-5.42***	-0.76	1.19	6.36***	7.32***	1.30
	(0.95)	(1.60)	(1.72)	(1.70)	(2.31)	(1.76)
CSR Contract & stakeholder model	-0.41	7.16***	12.12***	7.81***	11.31***	10.26***
	(0.88)	(2.35)	(2.72)	(2.72)	(3.95)	(2.46)
Log(Sales)	1.38***	0.80**	0.83*	0.80*	1.42**	0.33
	(0.32)	(0.35)	(0.49)	(0.45)	(0.61)	(0.39)
Log(Leverage)	-1.25***	0.12	-0.10	-0.05	-0.08	0.06
	(0.13)	(0.19)	(0.20)	(0.16)	(0.22)	(0.19)
Volatility	-0.74***	-0.05	-0.08	0.02	0.42	0.11
	(0.15)	(0.18)	(0.24)	(0.20)	(0.26)	(0.20)
SBVR	-0.04**	-0.02	0.01	-0.03	0.03	-0.02
	(0.02)	(0.03)	(0.04)	(0.03)	(0.05)	(0.03)
GDP (PPP)	-0.00***	0.00***	0.00***	0.00	-0.00	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Current account (% of GDP)	-0.11***	0.29***	0.40***	0.23**	0.18	0.47***
	(0.04)	(0.09)	(0.10)	(0.10)	(0.12)	(0.09)
Gross debt (% of GDP)	0.06***	-0.05**	-0.13***	-0.06**	-0.00	0.01
	(0.01)	(0.02)	(0.03)	(0.02)	(0.03)	(0.02)
Importations growth (%)	0.04***	-0.02	0.02	0.02	-0.01	0.01
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Gross national savings (% of GDP)	0.28***	-0.14*	-0.39***	-0.24***	-0.21*	-0.28***
	(0.04)	(0.08)	(0.10)	(0.09)	(0.11)	(0.08)
ROA		0.03	0.01	0.00	-0.04	0.01
		(0.03)	(0.04)	(0.03)	(0.05)	(0.03)
ROE		0.00	0.00	-0.01	0.00	-0.00
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Price-to-Book		-0.01	0.00	-0.00	-0.02	-0.02*
		(0.01)	(0.03)	(0.01)	(0.03)	(0.01)
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
No. of firms	2762	2685	2599	2686	2667	2686
Adj. R-Squared	0.13	0.10	0.13	0.05	0.05	0.07

Note: GDP at purchasing power parity in international dollars. Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

APPENDIX 2.3 - Regression results considering Top CG scores as treated

	(1) ROA	(2) ROE	(3) Human Resources	(4) Environment	(5) Customers and Suppliers	(6) Community Involvement	(7) Human Rights
CSR Contract+Top CG & stakeholder model	0.14	-0.19	2.32**	2.30*	3.43***	4.57***	2.52**
	(0.38)	(1.30)	(1.13)	(1.19)	(1.11)	(1.44)	(1.10)
CSR Contract+Top CG & shareholder model	-1.30***	-3.89***	-0.04	0.00	0.99	1.75**	-0.21
	(0.31)	(1.03)	(0.69)	(0.83)	(0.67)	(0.85)	(0.70)
Log(Sales)	0.16	0.76*	1.62***	2.13***	0.83*	2.97***	0.70
	(0.13)	(0.43)	(0.42)	(0.51)	(0.44)	(0.65)	(0.45)
Log(Leverage)	-0.95***	-0.17	0.18	-0.06	0.03	-0.29	-0.00
	(0.08)	(0.19)	(0.21)	(0.22)	(0.19)	(0.25)	(0.19)
Volatility	-0.56***	-2.12***	0.04	-0.19	-0.25	0.49*	-0.38
	(0.10)	(0.38)	(0.24)	(0.27)	(0.22)	(0.30)	(0.23)
SBVR	-0.03***	-0.06	-0.01	0.05	0.00	0.05	0.05
	(0.01)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)
ROA			0.02	-0.03	0.02	-0.10**	-0.02
			(0.04)	(0.04)	(0.03)	(0.05)	(0.03)
ROE			-0.00	0.01	-0.00	-0.00	0.00
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Price-to-Book			0.00	-0.00	-0.00	-0.05**	-0.02**
			(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Firm FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
No. of firms	3105	3080	3005	2907	3008	2983	3003
Adj. R-Squared	0.14	0.07	0.07	0.19	0.11	0.05	0.04

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

APPENDIX 2.4 - Regression results with only CSR contracting on ENV criteria

	(1) ROA	(2) ROE	(3) Human Resources	(4) Environment	(5) Customers and Suppliers	(6) Community Involvement	(7) Human Rights
CSR Contract & stakeholder model	0.36	1.67	0.95	3.32**	2.34	0.91	1.95
	(0.59)	(1.83)	(2.26)	(1.61)	(1.83)	(1.48)	(1.52)
CSR Contract & shareholder model	-3.14***	-9.71***	-0.87	-1.88*	2.92**	2.97**	-1.26
	(0.58)	(1.80)	(1.19)	(1.14)	(1.25)	(1.43)	(1.13)
Log(Sales)	0.16	0.85**	1.55***	1.94***	0.66	2.66***	0.31
	(0.14)	(0.41)	(0.44)	(0.52)	(0.44)	(0.66)	(0.47)
Log(Leverage)	-0.91***	-0.07	0.20	-0.10	0.05	-0.32	0.01
	(0.08)	(0.20)	(0.22)	(0.23)	(0.19)	(0.25)	(0.20)
Volatility	-0.59***	-2.00***	0.09	-0.04	-0.12	0.89***	-0.32
	(0.10)	(0.39)	(0.25)	(0.27)	(0.23)	(0.30)	(0.24)
SBVR	-0.04***	-0.09**	-0.02	0.06	-0.02	0.06	0.05
	(0.01)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)
ROA			0.05	-0.00	0.07*	-0.05	0.00
			(0.04)	(0.04)	(0.04)	(0.05)	(0.03)
ROE			-0.01	0.00	-0.02*	-0.00	-0.00
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Price-to-Book			-0.00	-0.00	-0.01	-0.05**	-0.02**
			(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Firm FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
No. of firms	2877	2852	2784	2686	2787	2762	2782
Adj. R-Squared	0.14	0.07	0.07	0.19	0.11	0.05	0.05

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

APPENDIX 2.5 - Regression results with only CSR contracting on HR criteria

	(1) ROA	(2) ROE	(3) Human Resources	(4) Environment	(5) Customers and Suppliers	(6) Community Involvement	(7) Human Rights
CSR Contract & stakeholder model	0.82*	1.85	1.39	1.59	1.52	1.13	1.43
	(0.48)	(1.55)	(1.76)	(1.61)	(1.57)	(1.95)	(1.52)
CSR Contract & shareholder model	-1.78***	-5.44***	-0.14	-0.52	1.43*	2.32**	-0.79
	(0.38)	(1.20)	(0.81)	(0.98)	(0.82)	(0.97)	(0.78)
Log(Sales)	0.16	0.83**	1.66***	1.93***	0.97**	3.11***	0.52
	(0.14)	(0.40)	(0.43)	(0.51)	(0.44)	(0.64)	(0.46)
Log(Leverage)	-0.93***	-0.13	0.21	-0.01	0.11	-0.26	0.08
	(0.08)	(0.19)	(0.21)	(0.23)	(0.19)	(0.25)	(0.19)
Volatility	-0.57***	-2.02***	0.12	-0.12	-0.20	0.71**	-0.35
	(0.10)	(0.39)	(0.25)	(0.27)	(0.22)	(0.30)	(0.24)
SBVR	-0.03***	-0.07*	-0.01	0.06	-0.01	0.05	0.03
	(0.01)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)
ROA			0.03	-0.02	0.04	-0.09*	-0.01
			(0.04)	(0.04)	(0.04)	(0.05)	(0.03)
ROE			-0.01	0.01	-0.01	-0.00	-0.00
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Price-to-Book			-0.00	0.00	-0.00	-0.04*	-0.02*
			(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Firm FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
No. of firms	2987	2962	2892	2794	2895	2870	2890
Adj. R-Squared	0.14	0.07	0.07	0.18	0.10	0.05	0.04

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

APPENDIX 2.6 - Regression results with only firms of primary and secondary sectors (Construction, Energy and Manufacturing)

	(1) ROA	(2) ROE	(3) Human Resources	(4) Environment	(5) Customers and Suppliers	(6) Community Involvement	(7) Human Rights
CSR Contract & stakeholder model	0.08	-0.39	0.53	1.72	1.32	4.66**	1.02
	(0.54)	(1.71)	(1.83)	(1.36)	(1.66)	(2.23)	(1.41)
CSR Contract & shareholder model	-2.12***	-5.87***	-0.19	-0.89	1.21	0.45	-0.47
	(0.42)	(1.39)	(0.79)	(0.81)	(0.77)	(0.99)	(0.75)
Log(Sales)	0.44**	1.25**	1.21**	1.18*	0.22	2.75***	0.15
	(0.18)	(0.58)	(0.54)	(0.62)	(0.59)	(0.80)	(0.63)
Log(Leverage)	-1.15***	-0.57**	-0.01	-0.06	-0.06	-0.52*	0.04
	(0.12)	(0.26)	(0.24)	(0.26)	(0.24)	(0.31)	(0.22)
Volatility	-0.45***	-0.76	0.12	0.11	-0.50*	0.67*	-0.38
	(0.15)	(0.52)	(0.31)	(0.29)	(0.29)	(0.35)	(0.29)
SBVR	-0.04***	-0.09**	0.03	0.05	0.03	0.06	0.08*
	(0.02)	(0.05)	(0.05)	(0.05)	(0.04)	(0.05)	(0.04)
ROA			0.02	-0.05	0.05	-0.14**	0.00
			(0.05)	(0.05)	(0.05)	(0.06)	(0.04)
ROE			-0.02	-0.01	-0.02	-0.01	-0.02*
			(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Price-to-Book			-0.01	-0.03	0.02	0.03	-0.01
			(0.03)	(0.03)	(0.03)	(0.06)	(0.03)
Firm FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
No. of firms	1572	1566	1530	1518	1531	1528	1529
Adj. R-Squared	0.19	0.10	0.12	0.18	0.13	0.06	0.06

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

APPENDIX 2.7 - Regression results with only firms of service sectors (Finance, Health Care, Tourism, Media and Transport)

	(1) ROA	(2) ROE	(3) Human Resources	(4) Environment	(5) Customers and Suppliers	(6) Community Involvement	(7) Human Rights
CSR Contract & stakeholder model	0.54	0.15	3.80***	2.92	5.58***	4.34**	3.96**
	(0.44)	(1.99)	(1.25)	(1.87)	(1.44)	(1.73)	(1.66)
CSR Contract & shareholder model	0.52*	0.09	-0.16	1.76	-0.31	3.20**	0.15
	(0.27)	(1.24)	(1.26)	(1.74)	(1.10)	(1.55)	(1.39)
Log(Sales)	-0.19	0.09	1.62**	3.74***	1.21*	3.07***	1.08*
	(0.19)	(0.64)	(0.63)	(0.92)	(0.65)	(1.03)	(0.65)
Log(Leverage)	-0.69***	0.37	0.26	0.03	0.02	-0.11	-0.08
	(0.09)	(0.28)	(0.33)	(0.36)	(0.29)	(0.39)	(0.31)
Volatility	-0.65***	-3.76***	0.05	-0.39	0.11	0.62	-0.13
	(0.12)	(0.54)	(0.35)	(0.46)	(0.33)	(0.47)	(0.35)
SBVR	-0.02	-0.02	-0.02	0.06	-0.02	0.04	0.02
	(0.01)	(0.06)	(0.05)	(0.06)	(0.05)	(0.07)	(0.05)
ROA			0.10*	0.01	0.04	0.02	0.01
			(0.06)	(0.07)	(0.05)	(0.07)	(0.05)
ROE			0.00	0.02	0.00	-0.00	0.01
			(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Price-to-Book			0.01	0.01	-0.00	-0.06**	-0.02
			(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Firm FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
No. of firms	1533	1514	1475	1389	1477	1455	1474
Adj. R-Squared	0.10	0.05	0.06	0.21	0.13	0.05	0.04

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

APPENDIX 2.8 - Regression results with only firms of minor sectors

	(1) ROA	(2) ROE	(3) Human Resources	(4) Environment	(5) Customers and Suppliers	(6) Community Involvement	(7) Human Rights
CSR Contract & stakeholder model	0.68	0.46	3.19***	1.07	3.88***	2.69	1.26
	(0.60)	(2.27)	(1.23)	(1.59)	(1.40)	(2.06)	(1.45)
CSR Contract & shareholder model	-2.50***	-7.89***	-0.56	-0.69	1.46*	0.97	-1.29
	(0.42)	(1.33)	(0.77)	(0.81)	(0.85)	(1.07)	(0.79)
Log(Sales)	0.46**	1.34**	1.92***	1.30*	-0.24	2.97***	0.36
	(0.18)	(0.58)	(0.59)	(0.68)	(0.67)	(0.96)	(0.63)
Log(Leverage)	-1.02***	-0.10	-0.04	-0.12	-0.13	-0.40	-0.39
	(0.10)	(0.28)	(0.30)	(0.32)	(0.26)	(0.34)	(0.24)
Volatility	-0.64***	-2.56***	0.40	0.19	-0.40	0.19	-0.60*
	(0.14)	(0.47)	(0.34)	(0.36)	(0.32)	(0.44)	(0.32)
SBVR	-0.02	-0.04	0.00	0.01	-0.03	0.08	0.08
	(0.02)	(0.06)	(0.05)	(0.05)	(0.05)	(0.06)	(0.05)
ROA			0.09*	0.03	0.09*	-0.03	0.04
			(0.05)	(0.06)	(0.05)	(0.07)	(0.04)
ROE			-0.02	0.01	-0.02	-0.01	-0.01
			(0.01)	(0.02)	(0.01)	(0.02)	(0.01)
Price-to-Book			0.00	0.02**	-0.02*	-0.08***	-0.04**
			(0.01)	(0.01)	(0.01)	(0.03)	(0.02)
Firm FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
No. of firms	1470	1453	1409	1356	1411	1406	1409
Adj. R-Squared	0.19	0.10	0.10	0.21	0.14	0.05	0.06

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

APPENDIX 2.9 - Regression results with only firms with concentrated ownership (top 20% SBVR)

	(1) ROA	(2) ROE	(3) Human Resources	(4) Environment	(5) Customers and Suppliers	(6) Community Involvement	(7) Human Rights
CSR Contract & stakeholder model	0.32	-0.74	2.13*	2.18*	3.61***	4.88***	2.67**
	(0.36)	(1.31)	(1.24)	(1.23)	(1.20)	(1.53)	(1.18)
CSR Contract & shareholder model	-0.96***	-2.53**	-0.18	-0.32	0.72	1.55	-0.63
	(0.34)	(1.10)	(0.77)	(0.87)	(0.73)	(0.94)	(0.78)
Log(Sales)	0.24	1.27***	1.73***	2.22***	1.13**	3.36***	0.99**
	(0.15)	(0.48)	(0.48)	(0.57)	(0.48)	(0.71)	(0.50)
Log(Leverage)	-0.97***	-0.37*	0.10	-0.01	-0.06	-0.25	-0.05
	(0.09)	(0.20)	(0.24)	(0.26)	(0.21)	(0.28)	(0.21)
Volatility	-0.63***	-2.55***	0.10	-0.10	-0.27	0.55*	-0.37
	(0.11)	(0.43)	(0.28)	(0.29)	(0.25)	(0.33)	(0.27)
SBVR	-0.05***	-0.07	-0.05	0.05	-0.02	0.08	0.02
	(0.02)	(0.06)	(0.05)	(0.06)	(0.05)	(0.06)	(0.05)
ROA			-0.01	-0.06	-0.02	-0.11**	-0.04
			(0.04)	(0.05)	(0.04)	(0.05)	(0.04)
ROE			0.00	0.01	-0.00	0.00	0.00
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Price-to-Book			0.01	0.00	0.00	-0.05*	-0.02
			(0.01)	(0.01)	(0.01)	(0.03)	(0.01)
Firm FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
No. of firms	2488	2477	2430	2345	2432	2412	2427
Adj. R-Squared	0.15	0.07	0.07	0.18	0.12	0.05	0.04

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

APPENDIX 2.10 - Regression results with only firms with large ownership (bottom 20% SBVR)

	(1) ROA	(2) ROE	(3) Human Resources	(4) Environment	(5) Customers and Suppliers	(6) Community Involvement	(7) Human Rights
CSR Contract & stakeholder model	0.58	1.20	9.18***	7.99***	9.58***	5.76	6.34***
	(0.72)	(2.76)	(1.65)	(1.88)	(1.14)	(4.55)	(1.80)
CSR Contract & shareholder model	-0.14	-0.44	4.24*	1.21	3.01	1.92	1.86
	(0.85)	(2.00)	(2.33)	(2.96)	(2.43)	(2.50)	(2.54)
Log(Sales)	0.22	3.58***	0.30	0.26	1.68	3.82***	1.99
	(0.29)	(1.12)	(1.14)	(1.33)	(1.17)	(1.39)	(1.22)
Log(Leverage)	-1.09***	-1.12**	0.46	0.74	-0.23	-0.53	-0.36
	(0.21)	(0.48)	(0.74)	(0.67)	(0.56)	(0.61)	(0.64)
Volatility	-0.60***	-3.43***	-0.07	-0.47	-1.10**	-0.25	0.19
	(0.22)	(0.88)	(0.66)	(0.64)	(0.55)	(0.69)	(0.61)
SBVR	-0.02	0.14	-0.10	-0.30	-0.26	0.48**	-0.07
	(0.07)	(0.27)	(0.19)	(0.19)	(0.19)	(0.21)	(0.19)
ROA			-0.13	-0.08	-0.26*	-0.02	0.12
			(0.12)	(0.15)	(0.13)	(0.14)	(0.10)
ROE			0.03	0.02	0.03	-0.03	-0.04
			(0.03)	(0.04)	(0.03)	(0.04)	(0.03)
Price-to-Book			-0.03	-0.04	-0.08	-0.16	0.01
			(0.10)	(0.08)	(0.09)	(0.12)	(0.06)
Firm FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
No. of firms	607	606	595	567	595	594	594
Adj. R-Squared	0.17	0.12	0.07	0.20	0.13	0.06	0.07

Note: Robust standard errors in parentheses are clustered on firms. Significance level: *** p<0.01, ** p<0.05, * p<0.1

Chapter 3

Team work and heterogeneous incentives: Application to the Board-CEO relationship

Joint work with Patricia Crifo (University Paris Nanterre, Ecole Polytechnique and CIRANO)

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Abstract: *While executive compensation has literally exploded during last decades, firm owners have started to give more responsible compensations including CSR criteria in executive variable compensations. Doing CSR can be highly rewarded by the environment outside the firms but this practice, named CSR contracting, correspond to the monetarization and the internalization by the firms of the incentives to do CSR. Empirical studies on CSR contracting seem to show a positive impact on CSR performance but some highlight that there is variations across firms based on governance factors (cf chapter 2). Here we propose a theoretical approach to answer this issue. We develop a model based on Che and Yoo model to study the influence of compensation among a team of two managers who have to work on a CSR task. We determine the optimal compensation between three compensation mixes: both agents receive monetary compensations, both agents receive external rewards from their environment, one agent receives monetary compensation and the other receives an external reward. Then, using evidence from executive compensation, we apply this model to the relationship between the CEO and the board of directors. We show that the choice of the optimal compensation scheme depends on the environment outside the firm, i.e. the level of the exogenous reward, and the environment inside the firm through the level of the interdependence between the managers' decisions which corresponds to the capacity of the firm to create cooperation between the agents. Then, we show that this decisional interdependence has two opposite effects on the determination of the optimal compensation design. Studying the specific case of the relation between the CEO, the board of directors and the shareholders, we show that the adoption of monetary incentives for CSR tasks is more suitable for firms with a high decisional interdependence than for firms with a lower interdependence.*

Keywords: *principal-agent theory, intrinsic motivation, non-monetary incentives, corporate governance, corporate social responsibility, executive compensation, environmental, social, and governance (ESG) criteria.*

JEL Classification*: M14; M12 ; G30 ; C23*

3.1 Introduction

Defining the compensation scheme of an employee is a precision game, to find the right level of incentive without spending excessive money. This dilemma, entailing moral hazard consequences, has been a case study for economists who have developed variations of the principal-agent model to describe the link between compensation and performance and to find the optimal level of compensation. Most of these studies have considered the compensation from a monetary perspective (Holmstrom and Milgrom, 1991; Slade, 1996) with one or several agents (McAfee and McMillan, 1991; Che and Yoo, 2001). On the other hand, non-monetary rewards have been an increasing concern for the last decades but remain insufficiently explored, in particular in case of several agents.

Recently, the study of compensation structure has emerged in the CSR literature. While executive compensation has literally exploded during last decades, firm owners have started to give more responsible compensations including CSR criteria in executive variable compensations, a practice named CSR contracting. Empirical studies on CSR contracting seem to show a positive impact on CSR performance but some highlight that there is variations across firms based on governance factors (cf chapter 2). To date, the adoption of CSR contracting has been on a voluntary basis, so we cannot exclude that empirical studies are susceptible to selection biases. Therefore we need more study to measure the influence of monetary or non-monetary incentives dedicated to improving the CSR performance.

Here we propose a theoretical approach to answer this issue. We develop a model based on Che and Yoo model to study the influence of compensation among a team of two managers who have to work on a CSR task. We determine the optimal compensation between three compensation mixes: both agents receive monetary compensations, both agents receive external rewards from their environment, one agent receives monetary compensation and the other receives an external reward. Then, using evidence from executive compensation, we apply this model to the relationship between the CEO and the board of directors.

We show that the choice of the optimal compensation scheme depends on the environment outside the firm, i.e. the level of the exogenous reward, and the environment inside the firm through the level of the interdependence between the managers' decisions which corresponds to the capacity of the firm to create cooperation between the agents. Then, we show that this decisional interdependence has two opposite effects on the determination of the optimal compensation design. Studying the specific case of the relation between the CEO, the board of directors and the shareholders, we show that the adoption of monetary incentives for CSR tasks is more suitable for firms with a high decisional interdependence than for firms with a lower interdependence.

3.2 Related Literature

The literature on the use of non-financial incentives relies on behavioural theories on work motivation. Relying upon developments in psychology and the distinction between intrinsic and extrinsic motivation, this literature departs from the assumption of purely self-interested agents and explores the effects of monetary and non-monetary re-

wards on motivation and effort (see e.g. Frey, 1997; Kreps, 1997; Frey and Oberholzer-Gee, 1997). An individual is considered as motivated by intrinsic (sometimes called ethical) factors when her/she completes a task without receiving any (financial) reward for it and by extrinsic factors when he/she is completing the task because it leads to a separable (often financial) outcome (Ryan and Deci, 2000).

When intrinsic motivation is private information and cannot be contracted upon, the design of an incentives contract becomes complex. Both long term concerns as well as short term incentives will matter and there may be hidden costs of purely monetary incentives (Bénabou and Tirole, 2003). A large literature in turn analyzes the optimal incentives mix with monetary and non-monetary rewards highlighting the benefits of combining both kind of rewards (Auriol and Renault, 2008; Akerlof and Kranton, 2005; Fershtman, Hvide, and Weiss, Fershtman et al.; Crifo and Diaye, 2011).

Interestingly, recent literature has developed to analyze the determinants of CSR relation to intrinsic and extrinsic motivation. Nyborg and Brekke (2004) show for instance that CSR can reduce moral hazard by serving as a screening device for firms that want to attract ethically motivated agents. Hence, matching motivated agents and principals developing CSR can help avoid the hidden costs of financial incentives, and also the substitution effect between extrinsic and intrinsic incentive (Kitzmueller and Shimshack, 2012). The application of such models to the introduction of CSR criteria in executive compensation has received a much less attention in the literature, although it represents a key issue for corporate governance (see Flammer et al., 2017).

In turn, because CSR strategies are stakeholders-oriented (Liang and Renneboog, 2017), they are the result of an intra-firm bargaining (Thauer, 2014) in a game including three players: the managers, the shareholders and the stakeholders (Frankel, 2009). In particular, as highlighted by Flammer et al. (2017), managers may be reluctant to

address all stakeholder claims especially if those claims are heterogeneous and may conflict with each other, potentially threatening performance. For instance, among the many constituencies having a stake in the firm, workers are usually considered as playing a crucial role. Unlike consumers or local communities for example, workers invest at risk their human capital in the company (Crifo and Rebérioux, 2016; Griffin and Prakash, 2014). A critical issue in stakeholder theory then is how firms can successfully balance the competing demands of various stakeholders and how this affects corporate performance (Akpinar et al., 2008; Mazutis, 2010, 2013). Consequently, firms could identify different balances at different times within same context (Griffin and Prakash, 2014). Cavaco and Crifo (2014) show for instance that some CSR dimensions may be substitutable in the sense that investing simultaneously in one of them decreases the relative value in investing in another one, while others would be complementary.

Hence, if managerial incentives are crucial in mediating and balancing the interests of shareholders and the interests of other stakeholders, they rely on the overall set of formal and informal rules and structures that shape managerial decision and accountability within a firm. For example, Kooiman (2003) argues that hierarchical governance has a higher capacity to deal with complexity as a result of a more effective monitoring. Simply stated, governance factors describe the balance of power and the level of interdependence between managerial decisions. They also describe the structural inertia of the decision-making process that may hinder the integration of stakeholders' concerns (Hannan and Freeman, 1984). Duit and Galaz (2008) show that a governance structure can be characterized by its level of "exploitation", that is its capacity to ensure cooperation among the agents as well as for keeping transaction costs at an acceptable level. They argue that a high level of "exploitation" leads to ro-

bust decision-making processes, which is a key for developing strong partnerships with stakeholders. On the other hand, a low level of "exploitation" offers flexibility and adaptability that can be more suitable to deal with stakeholders' multi-level demands.

Overall, this literature suggests that incentives for CSR should be carefully desgined. It is all the more important to orient managerial attention via proper incentives towards stakeholders that contribute to value creation. However, the effectiveness of linking executive compensation to CSR criteria can depend on the decisional interdependence between all the managers who may or may not already have intrinsic motivation. The influence of this interdependence is not clear. For a firm with a high level of interdependence, i.e. forced cooperation, the introduction of CSR criteria into executive compensation is desirable given that it will align the managers' motivations and therefore reduce the cooperation cost. On the other hand, it will increase compensation costs in a system that has already established a sustainable relationship with the stakeholders.

In the following section, we propose a theoretical model to formalize the relationships between shareholders, stakeholders (i.e. CSR concerns), the CEO and the board of directors. In this model, two managers work in team to provide CSR efforts, with moral hazard. In section 3.4 we also develop and test the main predictions of the model using French data and empirical estimations.

3.3 Model

We consider a principal-agent relationship with moral hazard based on the static setting of Che and Yoo (2001) model. The principal is the owner of a firm with a production process composed of one task. We consider that this unique task is a CSR task. The principal hires a team of two agents and the agents' efforts on the CSR task are unobservable by the principal. The only signal received by the principal is the success or the failure of the task. All parties are risk neutral and there is no adverse selection.

In their article, Che and Yoo compare two work organizations: "individual production" when the task is performed by one agent or "team production", when the task is performed jointly by two agents. Consistent with Itoh (1994) and Hemmer (1995), this model demonstrates that team production is preferred when there are synergies, i.e. when the probability of success of the task is higher with two agents compared with the probability of success with one agent exerting the same level of effort. Here, we consider the case of team production only, corresponding to synergies within the team, and focus on the role of incentives, considering extrinsic (monetary) and intrinsic (non-monetary) incentives.

There are several types of non-monetary incentives that the principal may offer, such as fringe benefits, extra holidays promotion or any kind of symbolic (not equivalent to purely financial) rewards. Here, we restrict our attention to exogenous non-monetary rewards related to CSR concerns and therefore representing any kind of intrinsic motivation or recognition by peers or civil society. For example, an individual may care about the firm's environmental impact because it affects positively his/her self-image as a good citizen while another individual may care about respon-

sible practices towards the firm's customers or suppliers because of career concerns. These rewards are not observable by the principal but we assume that they have a decreasing probability density function, i.e. high intrinsic rewards are less common that small ones.

3.3.1 Technology and preferences

Each agent makes a binary effort decision ($k \in \{0;1\}$) either 'high' or 'low' where a high effort means that the CSR demand is taken into account by the agent ($k = 1$) and a low effort means that the CSR demand is not taken into account by the agent ($k = 0$). The efforts cost is ke, with $e > 0$. Then, the task can either "succeed" or "fail". The principal's gross payoff is respectively of $R > 0$ and 0. We assume that R is high enough to ensure that the principal is better off when at least one of the agents exerts a high effort rather than a scenario where both exert a low effort.

The probability of success of the task depends on the total amount of effort. We denote this probability by p_{kl} where $k \in \{0;1\}$ and $l \in \{0;1\}$ represent the agents' effort decisions. The distribution function is described by $1 > p_{11} > p_{10} = p_{01} \geq p_{00} \geq 0$. Che and Yoo define by $\Delta_k = p_{k1} - p_{k0}$ as the level of technological interdependence between the agents, $k \in \{0;1\}$. Here, because we focus our attention on a CSR task performed by managers, Δ_k corresponds to the decisional interdependence mentioned in the previous section.

Each agent receives a fixed wage equal to his reservation utility (which can be considered as a fixed wage over standard productive tasks) meaning that his participation constraint is fulfilled. In addition to this fixed wage, the agent may receive a financial bonus on the CSR task denoted by w in case of success of the project. Due to limited

liability, w cannot be negative. If the project fails, the optimal choice for the principal is to offer no financial bonus.

The non-monetary (external) incentive is noted by θ. If an agent is rewarded with an external (exogenous) incentive, he/she is "intrinsically" motivated. Similarly to the wage bonus, the agent receives θ only in case of success of the project and 0 otherwise. The level of θ is only observable by the agent but not by the principal.

The agents cannot receive both a financial bonus and an external reward at the same time. All the parties agree on the compensation scheme ex ante, but they receive the financial or the external reward ex post as standard in the principal-agent framework with incentives based on an observable output of the firm. At the team level, three compensation schemes are possible (in addition to the fixed wage equal to the reservation utility):

1) Both agents are financially motivated, i.e. they receive a financial bonus for the CSR task;

2) Both agents are intrinsically motivated, i.e. they receive an external reward for the CSR task;

3) One agent receives a financial bonus and the other agent receives an external reward for the CSR task.

3.3.2 Payoffs and incentives

First, we determine the principal's payoff under each compensation scheme, and second we compare and determine the conditions under which each scheme is optimal.

Case 1: both agents are financially motivated on the CSR task

For the principal, it is optimal to set the financial incentive to the minimum level. The agent is willing to exert a high effort rather than a low effort on the CSR task if and only if $p_{11}w - e \geq p_{10}w$. The minimum incentive satisfying this condition is $w^* = \frac{e}{p_{11}-p_{10}}$.

The principal's expected payoff is then:

$$EU(w^*, w^*) = p_{11}R - 2p_{11}\frac{e}{p_{11} - p_{10}} \tag{3.1}$$

Case 2: both agents are intrinsically motivated on the CSR task

In case of external reward, the agent's effort decision is based on the same principle. The agent will exert the high effort level if and only if $p_{11}\theta - e \geq p_{10}\theta$, then if $\theta \geq \frac{e}{p_{11}-p_{10}}$.

The level of the external reward θ is not fixed by the principal but is an exogenous parameter. Let denote by $p_\theta = \Pr(\theta > w^*)$ the probability that the external reward is above the minimal threshold in exchange for the high effort level. Then, the principal's expected payoff is:

$$EU(\theta, \theta) = p_\theta^2 p_{11}R + 2p_\theta(1 - p_\theta)p_{10}R + (1 - p_\theta)^2 p_{00}R \tag{3.2}$$

To simplify the comparison between the three scenarios, we set $p_{00} = 0$. This constraint reduces our model to tasks requiring at least the effort of one agent to have a chance of success, which is a realistic assumption in a business context.

Case 3 : the agents receive heterogeneous incentives

Combining the previous cases, the principal will offer $w^* = \frac{e}{p_{11}-p_{10}}$ to one agent while the other agent receives an exogenous reward, with a distribution described by p_θ.

Then, the principal's expected payoff is:

$$EU(w^*, \theta) = EU(\theta, w^*) = p_\theta p_{11}(R - \frac{e}{p_{11} - p_{10}}) + (1 - p_\theta)p_{10}(R - \frac{e}{p_{11} - p_{10}}) \quad (3.3)$$

Optimal compensation scheme

The principal does not know the level of the eternal reward θ received from the agent, but the distribution of θ is known. Comparing (1), (2) and (3), we can determine the optimal compensation scheme according to the value of p_θ.

Proposition 1: Heterogeneous incentives
The principal offers financial incentives to one agent only, i.e. $EU(w*, \theta) > EU(\theta, \theta)$ *if :*

$$p_\theta \leq 1 - \frac{p_{11}e}{R\Delta_1^2} \quad (3.4)$$

PROOF: see Appendix A.

Proposition 2: Homogeneous financial incentives

The principal prefers offers financial incentives to both agents, i.e. $EU(w*, w*) > EU(\theta, w*)$ *iff :*

$$p_\theta \leq 1 - \frac{p_{11}e}{R\Delta_1^2 - e\Delta_1} \tag{3.5}$$

PROOF: see Appendix A.

These results show that the choice of the optimal compensation scheme mainly depends on two parameters: the distribution of θ and the level of decisional interdependence Δ_1.

Regarding the distribution of θ, the results are intuitive in the sense that when there is a high probability that the agent intrinsically motivated receives a sufficient level of reward, the principal will choose not to offer monetary incentives on the CSR task. However when this probability decreases, the principal will find it profitable to offer monetary incentives rather than to expect a hypothetical level of external reward for the agent to exert a high effort level on the CSR task.

On the other hand, the decisional interdependence has two opposite effects. First, the minimum external reward needed for the agent to exert a high effort level on the CSR task $w*$ is a decreasing function of the level of decisional interdependence Δ_1. Then, when the decisional interdependence increases, the probability that θ is above the minimum wage also increases given that θ has a decreasing distribution. It means that compensation schemes with monetary incentives are more suitable for firms with a low level of decisional interdependence because they will align the interests of managers who can be less intrinsically motivated. On the other hand, for firms with high decisional interdependence, managers are more easily intrinsically motivated so firms do not need to undertake additional compensation costs. We call this effect the

"motivation effect" because it plays with the level of the minimum reward acceptable to offer a high effort level.

Nevertheless, when the decisional interdependence Δ_1 increases we see that the limits detailed in 3.4 and 3.5 tend towards 1, i.e. the difference in expected utility between the three compensation schemes decreases. It means that introducing monetary incentives on CSR is relatively less costly for firms with a high level of decisional interdependence, given that they already have an important collaborative structure. In that case, the principal will tend to prefer financial incentives to elicit a high effort level on the CSR task rather than expect that the minimum level of external reward is reached. On the other hand, for firms with a low level of decisional interdependence, the differences between the three compensation schemes can be more important and should be exploited carefully. For these firms, the introduction of monetary incentives on CSR will restrain their capacity to be flexible and to propose adaptative solution to stakeholders demands. We call this effect the "flexibility effect".

These two opposite effects take place at the same time but may be not with the same power. In the following section, we want to determine which effect is stronger in the case of the relationship between CEO, shareholders and other stakeholders.

3.4 Application to the relationship between CEO and the board of directors

The literature reviewed in section 3.2 highlights the importance of extrinsic or intrinsic managerial motivation to address the CSR demands, and the particular governance factor that is the interdependence between managers' decisions. Overall, the possible opposition between the shareholder and stakeholder demands support the need for an institution between CEOs and shareholders to efficiently discipline CEOs, represent shareholders, and perhaps represent other stakeholders: the board of directors (or supervisory board). Accordingly, not only managers but also boards of directors have an important role to play in CSR strategies responding to stakeholders' demands (Crifo and Rebérioux, 2016).

In our model, shareholders are represented by the principal, and the team of two agents is composed of the CEO and the board of directors. Each agent may then be intrinsically or extrinsically motivated to take into account the other stakeholders' demand. The results of this effort towards the stakeholders are measured by a firm's CSR performance data on several CSR sub-dimensions, and the nature of the agents' motivation is measured by the introduction of CSR criteria into executive compensation, a practice we call "CSR contracting".

To date, there are few empirical studies measuring the impact of the adoption of CSR contracting. Notable contributions show that CSR contracting is an effective way to improve CSR performance (See Maas, 2016; Hong et al., 2016; Flammer et al., 2017). Flammer et al. (2017) also show, on US data between 2004 and 2013, that CSR contracting leads to an increase in firm financial performance. Moreover, in the chapter

2, we show that the impact of CSR contracting differs according to the governance model. For firms with a stakeholder corporate governance model, we find that CSR contracting is not correlated to financial performance and has a large positive impact on human resources, environmental and human rights performance. On the other hand, CSR contracting has a negative impact on financial performance but no impact on extra-financial performance for firms with a shareholder corporate governance model.

In our model, decisional interdependence is defined as the increase in the probability of success of the project when one member of the team exerts an effort towards the firm's stakeholders, given that the other member of the team also exerts an effort towards the firm's stakeholders. In the board-CEO context, this decisional interdependence captures the efficiency of the balance of power between the board and the CEO: a high level of interdependence means that both the CEO and the board are efficient in sharing information and decision-making to address CSR demands. A low level of interdependence means that the board fails to monitor and advise the CEO and that the CEO fails to share information in return. On the contrary, this absence of monitoring offers to the CEO more flexibility to prioritize and answer to stakeholders concerns.

This leads to the following testable hypotheses.

Hypothesis 1: When the "flexibility effect" of the decisional interdependence is stronger than the "motivation effect", CSR contracting has a positive impact on CSR performance for firms with a strong decisional interdependence and a negative impact on CSR performance for firms with a lower decisional interdependence.

Hypothesis 2: When the "motivation effect" of the decisional interdependence is stronger than the "flexibility effect", CSR contracting has a negative effect on performance for firms with a strong decisional interdependence but a positive effect for firms with a

lower decisional interdependence.

To test the validity of H1 and H2, we use the prediction of our model of the optimal compensation scheme. The emergence of CSR contracting allows us to study two of the three compensation scheme scenarios previously described. For firms who have not adopted CSR contracting, the CEO and the board are both motivated by external rewards. On the other hand, in the case of CSR contracting, the board is still intrinsically motivated while the CEO receives a wage bonus based on CSR criteria.

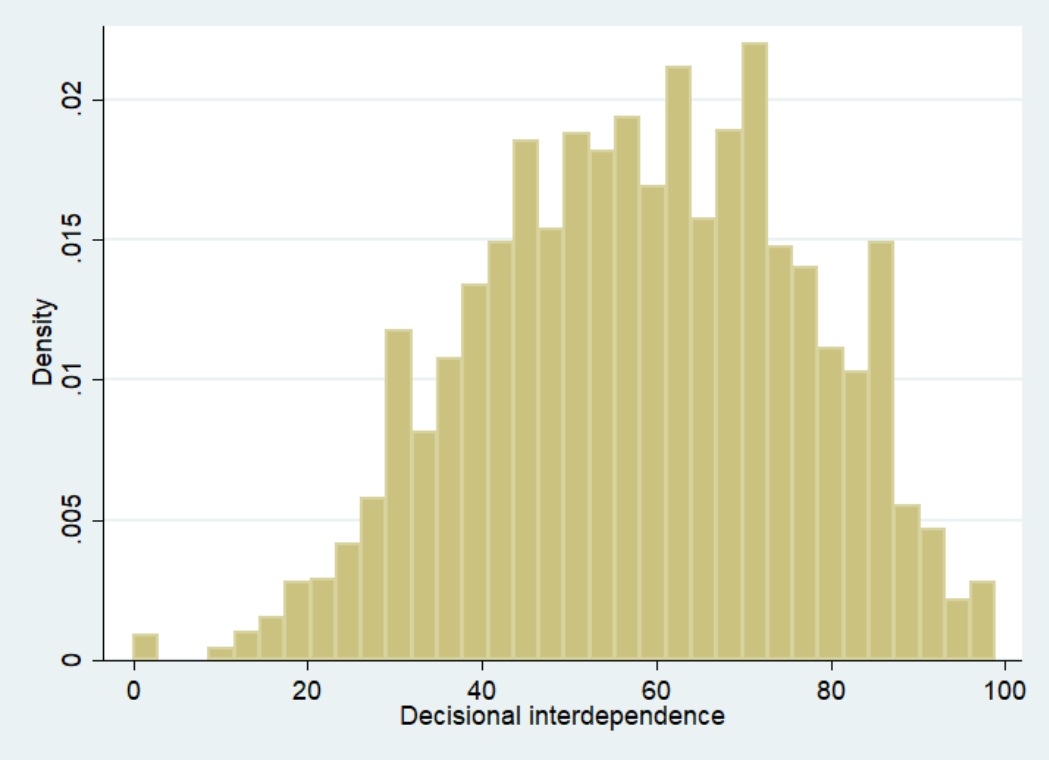
3.4.1 CSR contracting and decisional interdependence

First, we study the relation between the adoption of CSR contracting and the level of decisional interdependence using the same dataset that we build for chapter 2 (Cavaco and al. (2018)). This dataset is composed of about 3000 firms over the 2006-2015 period and provides CSR performance data from the extra-financial rating agency Vigeo according to five main domains: Human resources, Environment, Customers and Suppliers, Community Involvement, Human Rights. For each domain, Vigeo provides a firm annual absolute score from 0 to 100.

Vigeo also provides a score named "Balance of Power" which measures the company's commitment to "set up a board of directors with capability to control upon and advise executives and to be held accountable to shareholders". It is an absolute score between 0 and 100. Consistent with the literature on board composition (See e.g. Tirole, 2001; Adams and Ferreira, 2007; Dass et al., 2014), this score is correlated with the share of independent and the share of expert directors. For example, during the considered period, Vigeo gives a score from 0 to 10 to the French firm Alten because its board is composed by 5 directors with no independent directors. On the contrary,

the firm Technicolor receives scores from 50 to 80 and has a board composed by 80% of independent directors and by 70% of directors with an industry-related expertise. Nevertheless, Vigeo's "Balance of Power" score is based on multiple criteria and we consider that this indicator is a good proxy for the decisional interdependence between the CEO and the board. According to the definition of the score, a high value means that the firm has setting up a good level of monitoring of the CEO and that the board work with the CEO, helping him to balance the interests of the shareholders and of the stakeholders. On the other hand, Vigeo gives bad score to firm when the board is under-monitoring or under-advising the CEO, meaning that the CEO has to balance the shareholders' and the stakeholders' interests by his own. Figure 3.1 reveals the normal distribution of the score.

Figure 3.1: Distribution of the decisional interdependence measures



Note: The decisional interdependence corresponds to Vigeo's score CG1.1..

Then, we use a probit model to estimate the probability of a firm adopting CSR contracting depending on its level of decisional interdependence. We also control for several financial and ownership factors and use the number of ESG reporting instruments in the country to control for macroeconomic effects. We add industry and year fixed effects. Table 3.1 presents the results of this probit regression.

The results reveal that the adoption of CSR contracting is correlated to the level of decisional interdependence. Firms are more inclined to adopt CSR contracting when interdependence is high. Considering that firms take rational decisions, it is hard to believe that they will adopt CSR contracting if there is a negative effect on performance. Therefore, these results are an argument in favor of our hypothesis H1.

Table 3.1: Probit estimation of the impact of the decisional interdependence on the adoption of CSR contracting

	(1) CSR Contracting
Decisional interdependence	0.02***
	(0.00)
Log(Sales)	-0.01
	(0.05)
Log(Total Assets)	0.18***
	(0.05)
Log(Leverage)	-0.01
	(0.04)
Volatility	-0.06
	(0.07)
SBVR	-0.01
	(0.01)
ROA	-0.02*
	(0.01)
ROE	0.00
	(0.00)
Price-to-Book	0.00
	(0.00)
Number of ESG reporting instruments	0.02**
	(0.01)
Year FE	YES
Industry FE	YES
No. of firms	2835.00
Pseudo R-Squared	0.28

Note: Robust standard errors are in parentheses. Significance levels: * 10%, ** 5%, *** 1%

3.4.2 CSR performance and decisional interdependence

Then, we focus our attention on companies which have adopted CSR contracting. To test for H1, we want to measure if the probability that the CSR performance increases after the adoption of CSR contracting, i.e. that CSR contracting has a positive effect, depends on the level of decisional interdependence. For each CSR domain, we use a dummy equal to 1 if the difference in performance between the year after the adoption and the year before the adoption of CSR contracting is positive and 0 otherwise. Summary statistics are presented in Table 3.2 and the results of the probit estimation are displayed in Table 3.3.

On the other hand, to test for H2, we wanted to measure if the probability that CSR performance decreases after the adoption of CSR contracting is positively correlated to a lower value of decisional interdependence. Then, we inverse the value of the interdependence. Results of the probit estimation are displayed in Table 3.4.

Table 3.2: Differences between the performance pre-adoption and post-adoption

	(1) $\Delta CSR < 0$	(2) $\Delta CSR > 0$
Human Resources (HR)	176	95
Environment (ENV)	194	76
Customers & Suppliers (CS)	167	105
Community Involvement	162	110
Human Rights (HRts)	166	106

Note: ΔCSR is the difference between the CSR score a full year after the adoption of CSR contracting and the year before the adoption.

Table 3.3: Probit estimation of the impact of the decisional interdependence on positive CSR performance in case of CSR contracting

	(1) P(Δ Human Resources > 0)	(2) P(Δ Environment > 0)	(3) P(Δ Customers and Suppliers > 0)	(4) P(Δ Community Involvement > 0)	(5) P(Δ Human Rights > 0)
Decisional interdependence	0.01**	0.00	0.02***	0.02**	0.01
	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)
D2.ROA	0.00	-0.00	-0.00	0.02	0.02**
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
D2.P/B	-0.01	0.01*	0.01**	0.02**	-0.00
	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)
D2.Log(Sales)	-0.09	-0.16	-0.33	-0.18	-0.32
	(0.20)	(0.33)	(0.28)	(0.25)	(0.20)
D2.Log(Leverage)	0.16	0.09	0.21**	-0.05	0.10
	(0.12)	(0.15)	(0.09)	(0.09)	(0.18)
D2.Volatility	-0.02	-0.26***	0.08	-0.16**	-0.14***
	(0.07)	(0.04)	(0.07)	(0.07)	(0.04)
D2.SBVR	-0.01	0.01	0.01	0.04***	0.03*
	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
No. of firms	8.00	8.00	7.00	8.00	7.00
Pseudo R-Squared	0.06	0.06	0.12	0.13	0.07

Note: Standard errors clustered on industry are in parentheses. Significance levels: * 10%, ** 5%, *** 1%. ΔCSR is the difference between the CSR score a full year after the adoption of CSR contracting and the year before the adoption.

Table 3.4: Probit estimation of the impact of the decisional interdependence on negative CSR performance in case of CSR contracting

	(1) P(Δ Human Resources < 0)	(2) P(Δ Environment < 0)	(3) P(Δ Customers and Suppliers < 0)	(4) P(Δ Community Involvement< 0)	(5) P(Δ Human Rights < 0)
Decisional interdependence$_{-1}$	29.50**	12.75	34.17*	18.63**	42.11***
	(13.76)	(13.87)	(20.31)	(9.02)	(7.54)
D2.ROA	-0.03***	0.00	0.01	-0.01	-0.04***
	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)
D2.P/B	0.00***	-0.00	0.00	0.00**	0.01**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
D2.Log(Sales)	-0.08	-0.66***	-0.97**	-0.77*	-0.83*
	(0.18)	(0.22)	(0.47)	(0.42)	(0.46)
D2.Log(Leverage)	0.45*	0.02	0.59	0.16	0.01
	(0.27)	(0.16)	(0.37)	(0.19)	(0.22)
D2.Volatility	0.01	0.00	-0.05	0.13	0.08
	(0.16)	(0.06)	(0.09)	(0.09)	(0.10)
D2.SBVR	0.05***	-0.00	-0.02	0.04**	0.01
	(0.01)	(0.03)	(0.04)	(0.02)	(0.02)
Year FE	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES
No. of firms	8.00	8.00	5.00	8.00	7.00
Pseudo R-Squared	0.09	0.05	0.11	0.08	0.15

Note: Standard errors clustered on industry are in parentheses. Significance levels: * 10%, ** 5%, *** 1%. ΔCSR is the difference between the CSR score a full year after the adoption of CSR contracting and the year before the adoption.

The results confirm that the efficiency of the adoption of CSR contracting in improving CSR performance is correlated with the level of decisional interdependence. Firms which have adopted CSR contracting are more likely to have better CSR performance when they have a strong level of interdependence. We also show that firms are more likely to face a diminution of their CSR performance after the adoption of CSR contracting when they have a lower level of decisional interdependence. These results support H1 over H2, i.e. that the "flexibility effect" of the decisional interdependence is stronger that the "motivation effect".

3.4.3 Discussion

First, our results support the idea that the design of the CEO compensation should rely on the level of interdependence between the decision of the CEO and the board. As seen in section 3.3, the adoption of CSR contracting for the CEO is not always optimal and negative consequences are correlated with the level of decisional interdependence. Consistent with the findings of chapter 2, it highlights the importance of the governance factors impact on the efficiency of executive compensation policies.

Secondly, these results show that the "flexibility effect" drives the impact of decisional interdependence on the compensation policy. When the decisional interdependence increases, the relative cost of the monetary incentive decreases. Then, it is more profitable for firms to adopt CSR contracting. On the other hand, when the decisional interdependence is low, the adoption of CSR contracting seems to be inconsistent with structural flexibility and therefore, creates frictions that leads to a decrease of CSR performance.

3.5 Conclusion

In this chapter, we examine the influence of the nature of the motivations to execute CSR tasks when an agent can receive an exogenous reward (intrinsic motivation) or monetary compensation (extrinsic motivation) for his work. We study and compare three possible compensation schemes considering that the CSR strategy is managed by a team of two agents: both agents are extrinsically motivated; both agents are intrinsically motivated; and one agent receives a monetary compensation and the other is intrinsically motivated. We show that the choice of the optimal compensation scheme depends on the environment outside the firm, i.e. the level of the exogenous reward, and the environment inside the firm through the level of the interdependence between the managers decisions.

Then, we show that this decisional interdependence has two opposite effects on the determination of the optimal compensation design. The decisional interdependence corresponds to the capacity of the firm to create cooperation between the agents. When the decisional interdependence is high, i.e there is coercive collaboration, the "flexibility effect" favors monetary incentives because it will align the agent's motivations and reduce the collaboration cost. The "motivation effect" will incite the firm to rely on external reward because there is a high probability that the agent will be intrinsically motivated. On the other hand, when the decisional interdependence is poor, i.e. the agents benefit from a freedom of action, the "flexibility effect" increases the comparative cost between the adoption of intrinsic or extrinsic motivations while the "motivation effect" incites the firm to adopt monetary incentives because there is a low probability that the agent receives a sufficient external reward to encourage him to work.

In the second part, we use the specific case of the relation between the CEO, the board of directors and the shareholders to determine the relative strength of these two effects. Using executive compensation data, we show that the "flexibility effect" may be stronger than the "motivation effect". Consequently, the adoption of monetary incentives for CSR tasks is more suitable for firms with an higher decisional interdependence than for firms with a lower interdependence. These results echo the findings of the chapter 2 where we find that the efficiency of CSR contracting depends on the overall governance structure. Here we show a more precise outlook of the governance factors and processes involved.

This chapter contributes to the literature in several ways. First, these findings help support the theory that governance factors have a significant impact on the efficiency of CSR strategies, of compensation policies, and in particular of compensation policies design to improve CSR performance. Second, this chapter highlights the importance of the interdependence between the decisions of the agents and in particular, between the decisions of the CEO and board of directors. While there is a subordinate relationship of the CEO to the board, we show that their relationship has some characteristics of an agent-agent relationship and that the level of proximity and balance of power influence the firm's performance.

3.6 Appendix A

Proof of Proposition 1

If $p_\theta \leq 1 - \frac{p_{11}e}{R\Delta_k^2}$

$\iff (p_\theta - 1)R\Delta_k \leq -\frac{p_{11}e}{\Delta_k}$

$\iff -(p_\theta - 1)Rp_{10} \leq -(p_\theta - 1)Rp_{11} - \frac{p_{11}e}{\Delta_k}$

$\iff (1 - p_\theta)Rp_{10} \leq p_{11}((1 - p_\theta)R - \frac{e}{\Delta_k})$

Because $p_\theta > 0$ and $p_{11}p_\theta < p_{11}p_\theta + p_{10}(1 - p_\theta)$, we obtain:

$\iff p_\theta(1-p_\theta)Rp_{10} \leq p_{11}p_\theta((1-p_\theta)R - \frac{e}{\Delta_k}) \leq (p_{11}p_\theta + p_{10}(1-p_\theta))((1-p_\theta)R - \frac{e}{\Delta_k})$

$\iff 2p_\theta(1 - p_\theta)Rp_{10} + p_\theta^2 Rp_{11} \leq (p_{11}p_\theta + p_{10}(1 - p_\theta))(R - \frac{e}{\Delta_k})$

Finally we obtain $\iff (1) \leq (3)$

Proof of Proposition 2

If $p_\theta \leq 1 - \frac{p_{11}e}{\Delta_k(R\Delta_k - e)}$ then

$\iff (p_\theta - 1)(R\Delta_k - e) \leq -\frac{p_{11}e}{\Delta_k}$

$\iff (p_\theta - 1)\Delta_k(R - \frac{e}{\Delta_k}) \leq -\frac{p_{11}e}{\Delta_k}$

$$\iff (p_\theta - 1)p_{11}(R - \tfrac{e}{\Delta_k}) - (p_\theta - 1)p_{10}(R - \tfrac{e}{\Delta_k}) \leq -\tfrac{p_{11}e}{\Delta_k}$$

$$\iff (p_\theta - 1)p_{11}(R - \tfrac{e}{\Delta_k}) + (1 - p_\theta)p_{10}(R - \tfrac{e}{\Delta_k}) \leq p_{11}(R - \tfrac{2e}{\Delta_k})$$

Finally we obtain $\iff (3) \leq (2)$

Conclusion

The objective of this dissertation was to provide empirical and theoretical understanding on the links between firm governance and CSR performance. In chapter 1, we show that gender quota induces several changes within the board composition that do not lead to significant variations in terms of performance. On the other hand, in chapter 2, we show that the compensation structure has a significant influence on the firm financial and extra-financial performance. We also show that the overall governance structure has an impact on the performance. In chapter 3, we highlight the importance of the nature of the incentives and of the decisional interdependence between agents. All these findings show that the compensation policy and the decision-making process have to be carefully designed in order to improve the firm performance.

To achieve this dissertation, I would like to draw new research avenues and then discuss some policy perspectives.

The first one is about the way we consider diversity. Chapter 1 shows that focusing on one characteristic (e.g. gender) when dealing with human individuals can bring misleading conclusions. Diversity has to be taken as a whole and the economic literature could use some methodologies from biology studies on biodiversity. Campbell and Mínguez-Vera (2007) already introduced the Blau and the Shannon index but they only considered diversity through its gender aspect. More empirical studies need to be conducted to analyze the joint effect of gender, age, experience and education on firm financial and extra-financial performance.

Secondly, this dissertation shows the importance of governance framework. The emergence of hybrids between the shareholder and the stakeholder models is an ongoing process which needs to be studied in order to be up to date with our understanding of the interactions inside and outside the firm. In particular, we need more theoretical breakthrough to describe the impact of the decision making-process inside the firm on firm performance. In the chapter 3, we developed the case of the interdependence between managers' decisions, but there are other parameters such as the number of people in charge of one decision or the number of hierarchical level within a firm.

This dissertation also highlights the need to study CSR and firm performance of governance factors from different levels. Crifo and Rebérioux (2016) describe three levels of influence: the structure of the equity ownership (the identity of the shareholders), the composition and structure of the board of directors, and the regulatory framework on corporate governance and CSR. However, governance factors at a fourth level, outside the firms, are perhaps being forgotten: the network level composed of a firm and its peers. Indeed, little is known about the influence of peer effects on CSR. In particular, there are multiple board interlocks between listed firms (e.g. the SBF120), for instance through a common director or through the director's ties with his/her educational network. It would make sense to ask ourselves if these connections could help cause unconscious imitation behaviour or even homogenization.

From a policy perspective, this dissertation gives arguments in favour of gender quota. On the particular case of the board of directors, we refute the hypothesis that the women talent pool was under qualified for these positions. The quota is an effective tool to respond to the existence of glass ceiling. Today, if we achieved parity in board, the top executives position remains mostly hold by male. In Europe, women represent only 15% of executive positions and 6% of CEO positions (Source:

European commission). If we look at the firms listed on the SBF120 index, there are only 6 women CEO but this percentage has been doubling each year from 2015. If we hardly imagine a government taking a stand to regulate the number of women executives by a quota law, we first need to highlight the success of the board quota in order to increase the spillovers on executive positions.

Finally, this dissertation supports the idea that sustainability is a complex concept that is enhanced by good governance. When developing their CSR strategies, firms are increasingly taking into account their negative impacts on the society. All around the world, we are facing an unprecedented environmental challenge in the 21th century and politics need to guide firms into adopting a more environmentally friendly governance. We show that it could be achieve by regulating the CEO compensation forcing firms to limit the maximum of executive compensation and to include ESG criteria.

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Titre : Gouvernance et Responsabilité Sociétale des entreprises

Mots clés : gouvernance, responsabilité sociétale de l'entreprise (RSE), conseil d'administration, rémunération des dirigeants.

Résumé : D'après la théorie des parties prenantes, la Responsabilité Sociétal de l'Entreprise (RSE) est la réponse donnée par les entreprises à la pression croissantes des employées, actionnaires, communautés locales, ONG environnementales ou régulateurs afin de prendre en compte les impacts environnementaux et sociaux de leurs activités. L'enjeu n'est pas une simple compensation des externalités négatives mais une transformation des entreprises pour permettre une croissance durable. Ainsi, la RSE pousse les entreprises à être proactive et à dépasser les attentes règlementaires. Cependant, comment réussir à concilier des objectifs si différents voire opposés ? Alors que de plus en plus d'entreprises intègrent la RSE au cœur de leurs stratégies, les processus de gouvernance semblent être le chainon manquant pour réunir performance économique, sociale et environnementale. Cette thèse présente des arguments empiriques et théoriques de l'impact de la gouvernance à son plus haut niveau, du conseil d'administration au Directeur Général (DG). Après un chapitre d'introduction, le chapitre 1 analyse le lien entre la composition des conseils d'administrations et l'intégration de la RSE dans la stratégie des entreprises. Il s'appuie sur une loi sur la représentation des femmes dans les conseils d'administrations, adopté en France en 2011, qui a entrainé la nomination de nouveaux administrateurs, majoritairement des femmes, plus jeunes que leurs prédécesseurs. Pour autant, ce chapitre montre que l'augmentation de la diversité au sein des conseils n'est pas corrélée à variation de la performance financière et extra-financière. Ce chapitre repose sur l'étude des entreprises du SBF 120 de 2009 à 2015. Cependant, si les caractéristiques des administrateurs sont impliquées dans les processus de décisions, la mise en place des stratégies et le management de l'entreprise est confié au soin du DG. Grâce à un système de rémunération avec part variable, le conseil d'administrations s'applique à aligner les intérêts du DG avec les siens. Le chapitre 3 étudie l'efficacité des rémunérations variables basées sur des critères environnementaux ou sociétaux. Il montre que l'impact de ces bonus RSE dépend du modèle de gouvernance de l'entreprise. Chez les entreprises possédant une gouvernance de type actionnarial, les bonus RSE semble n'avoir qu'un impact négatif sur la performance financière. En revanche, pour les entreprises du type partenarial, ces bonus permettent efficacement l'amélioration des performances extra-financières sans diminuer la performance financière. Cette étude empirique se base sur un panel mondial de 3500 entreprises sur la période 2006-2015. Le chapitre 4 propose un modèle théorique permettant d'analyser l'impact de la nature intrinsèque ou extrinsèque des motivations. Basé sur la modèle principal-agent développé par Che et Yoo (2001), notre modèle décrit le modèle d'incitation optimal pour une entreprise composée de deux agents travaillant sur une tâche RSE. Trois scénarios sont étudiés : les deux agents reçoivent une compensation financière, les deux agents sont motivés intrinsèquement, un agent est motivé intrinsèquement et l'autre financièrement. Le modèle montre que le scénario optimal pour le principal dépend du niveau de motivation intrinsèque mais également de l'interdépendance entre les décisions des deux agents. Dans le cas particulier de la rémunération des directeurs d'entreprises, les données empiriques montrent qu'inclure des critères RSE dans la rémunération est plus adapté aux entreprises avec une forte interdépendance décisionnelle. La conclusion retrace le lien qui unit gouvernance et RSE à plusieurs niveaux, et discute de l'implication des réseaux et effets de mimétisme entre entreprise.

Title : Corporate Governance and Corporate Social Responsibility

Keywords : corporate governance, corporate social responsibility (CSR), board quota, executive compensation, ESG criteria.

Abstract : From the stakeholders' perspective, Corporate Social Responsibly is the firm's response to increasing pressure from employees, shareholders, communities, environmental NGOs or regulators to consider the social and environmental consequences of their business activity. What is at stake, is not only a compensation of negative externalities but the adaptation and the participation of firms to a sustainable growth. In that sense, CSR is not just about being efficient but being the best and push firms to be proactive and go beyond legal requirements. But how manage objectives so various and even opposite? While firms start to integrate CSR into their global business strategy, at the top of the decision-making process, corporate governance appears to be the missing link to join economic, environmental and social objectives. This dissertation provides empirical and theoretical evidences of the determining factors involved at the high level of firms' governance, from the board of directors to the CEO. After an introduction chapter, chapter 1 investigates the link between board composition and integrated CSR strategies. Adopted in 2011, the law targets listed firms and brought about the entrance of new directors, more likely to be women and younger than prior directors. However, we do not find evidence that this diversity is correlated to financial or extra-financial performance. For this chapter, we use a panel composed of French listed companies (SBF120 index) over the 2009-2015 period. If director's characteristics are involved at the top of the decision making-process, the execution of the strategy and management of the firm is delegated to the CEO. Using variable pay, compensation part determined by performance objectives, the board aligns the CEO's interests with his own interests. Chapter 2 shows evidence of the effectiveness of CSR based compensation part, labelled under the term "CSR contracting". We show that the impact of such compensation depends on the governance structure. For firms who focus on shareholder, CSR contracting is more likely to have a negative impact on financial performance and no impact on extra-financial performance. On the contrary, for firms with a stakeholder model of governance, we show that CSR contracting is effective and have a positive impact on the environmental and social performance without impacting the economic results. This empirical work is conducted on a worldwide dataset with 3500 firms over the 2006-2015 period. Chapter 3 provides a theoretical framework to understand the role of governance factor on the efficiency of incentives. We develop a model based on Che and Yoo (2001) model to study the influence of compensation among a team of two managers who have to work on a CSR task. We determine the optimal compensation between three compensation mixes: both agents receive monetary compensations, both agents receive external rewards from their environment, one agent receives monetary compensation and the other receives an external reward. We show that the choice of the optimal compensation scheme depends on the environment outside the firm, i.e. the level of the exogenous reward, and the environment inside the firm through the level of the interdependence between the managers' decisions which corresponds to the capacity of the firm to create cooperation between the agents. Then, using evidence from executive compensation, we apply this model to the relationship between the CEO and the board of directors and find that the adoption of monetary incentives for CSR tasks is more suitable for firms with a high decisional interdependence than for firms with a lower interdependence. In conclusion, from directors' characteristics to the overall governance organisation, we retrace the link between corporate governance and CSR integrated strategies; a link who could go beyond firm frontiers and include industry ties and peer effects.

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