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THE ASSIGNMENT OF A CSR ACTION CHOICE

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THE ASSIGNMENT OF A CSR ACTION CHOICE

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Abstract

Socially responsible behaviors represent a growing concern for economic agents : consumers, employees, investors, firms. Indeed, many people feel concerned about the social and environmental impact of their choices ; likewise, beyond their economic impact, companies are being made accountable and responsible for the incidence of their activities, their processes and their governance, in such fields. Firms are required to take part to the preservation and even the improvement of the environmental and socio-economic features of the area in which they are located and operate. Corporate Social Responsibility (CSR) is regarded as one possible answer to tackle market and redistributive failures and help building a new model respectful of social, ethics and economic dimensions. However, as many kinds of stakeholders are involved, conficts of interests may emerge. As a by-product, this paper deals with the choice of designing and implementing a CSR policy and seeks to address the question of its assignment in a multilevel governance framework. We use a mechanism design without transfer approach and we consider a three-tier hierarchy model involving an organization made of two levels of decisionmaking in the firm : the board and the management, and we assume that agents have taste for CSR. Such a policy can be financed through the funds derived from the willingness to pay of the different stakeholders involved in the firm activity. However, the preferences of the stakeholders are heterogenous and represent a private information of them. The board has to define which amount of CSR good should be produced or he can delegate this task to the firm management who may benefit from a better knowledge advantage. We show that it is optimal for the board to partially delegate the choice of CSR policy to better informed managers when their respective objectives do not display a great divergence and if their ideal points are highly sensitive to the agent private information. We enhance one type of firm organization likely to make interests converge and delegation be preferred : co-operative companies. They usually promote economic initiative and solidarity, an inclusive society, a good economic and social climate, and they historically display strong commitment to proximity, That's why it seems consistent that such a kind of firm be naturally eager to promote actions allowing to achieve social and environmental goals and that such an organization display an alignment of the interests.

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JEL Classification : D82, H20, H71, H77, Q54, Q58.

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1 Introduction

"*The well-being of future generations compared to ours will depend on what resources we pass on to them*", Report by the Stiglitz-Sen-Fitoussi Commission on the Measurement of Economic Performance and Social Progress, p 61. Sacrifices made today must be weighted against benefits that will occur in the future and the structure of incentives has to be modified in a sense of a more cooperative and sustainable way of living. Indeed, the acceleration of the global warming process and the growing reduction of exhaustible resources have highlighted and strengthened the need to take care of the common good that environment is. Likewise, the financial crisis has emphasized the fragility of the economic system as a whole, the importance of market and redistributive failures[1], and the need to build a new model, more respectful of social, ethics and economic dimensions. By the way, many people worry about the social and economic incidence of their choice, of their way of living and, conversely to Friedman (1970) according to whom firms are only expected to maximize profits and not to tackle externalities or public good provision, it has been increasingly considered that it is their duty to take into account the implications of their actions for all constituencies and address stakeholders[2]. Beyond their economic impact, companies are thus being made accountable and responsible for the social, the environmental incidence of theur activity, especially in the area in which they are located and operate.

Corporate Social Responsibility embodies the integration of this concern at firms level. Many definitions of this term have been provided. According to Heal (2005), corporate social responsibility designs corporate actions reducing externalized costs. The European Commission (2006) defines CSR as "*a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis*". The Worldbank (2003) precises that it "*covers a wide range of issues relating to business conduct, from corporate governance and environment protection, to issues of soial inclusion, human rights and economic development*". It can also be seen as a move to increase the social value added by corporate activity. Benabou and Tirole (2010) have provided three possible views of the term. The adoption of a long term perspective in a "win-win" approach, the delegated exercise of prosocial behavior to the firm as stakeholders may be endowed with social, environmental or ethical preferences that they are eager to see implemented at a wider level (they are willing to sacrifice money in order to further social goals) and the action or want of insider-initiated corporate philanthropy.

To put it in a nutshell, adopting a socially responsible behaviour means committing to behave ethically, to contribute to sustainable economic and social development, to improve quality of life in a way that is good for business and for society.

To what regards the reasons why economic agents commit to CSR, many elements can be underlined. On the one hand, consumers may have ethical concerns and appear increasingly eager

[1] Benabou and Tirole (2010).

[2] A stakeholder is "any group or individual who can affect or is affected by the achievement of the organization's objectives", Freeman (1984).

to buy fair trade products, made in convenient employment conditions and with environment-friendly methods. Indeed, some surveys have highlighted that a company's social reputation and its ethical features influenced to a great extend purchase decisions. Likewise, growing pressure also stems from investor to favor firms behaving in a socially responsible way : they may value CSR and prefer holding shares or financial products in this kind of firms[3]. As indicated by Lopez, Garcia and Rodriguez (2007), the existence of sustainability-related indexes as the DJSI proves that this issue is regarded as an important one to the creation of long-term value. On the other hand, employees may be eager to work harder or better for a firm engaged in a CSR behavior. Beyond a real will, to some extend, risks associated with unethical behaviors, the external pressure from the civil society also act as incentives to commit to CSR policies. Besides, managers will be willing to enhance corporate social responsibility because of private convictions (personal preferences for contributing to social causes), for personal satisfaction but also maybe for public acclaim In this respect, consumers are not reluctant to pay more, shareholders to receive lower returns on capital, employees to be granted lower wages if the firm behaves responsible and is ethically superior. CSR actions can also help getting competitive advantages at the same time. For instance, firms that use resources more efficiently than their competitors can lower costs and thus improve performance and the profits realized, beyond preserving environment. Likewise, socially responsible initiatives may enable a corporation to reach differentiation in its product market. In this respect, CSR must not be regarded as pure philanthropy or altruism but also as a strategic tool. Through its commitment to a CSR strategy, a firm may also be eager to develop an improved image and attract customers, investors and employees (for instance, consumers' valuation of the company is increased as their want to purchase its products and services), to prevent the enforcement of stronger regulation, to reduce its exposure to risk, to enhance innovation and new work processes. Thus, it can be considered that engagement in CSR initiatives allows addressing multiple stakeholders' concerns. As citizens are not only consumers likely to reward a firm for its CSR commitment, but also potential investors and shareholders able to take part to the board or to the decision process, and even potential employees or managers of the company, it is obvious that there exist multiple heterogeneous stakeholders that may drive and encourage CSR choices, contribute to their impact and be at the heart of their success. As underlined by the stakeholder theory, the long-run sustainability (and viability) of a firm is closely related to the cooperation of various constituents : a corporation needs financial resources provided by customers, investors, human resources (the working force), an efficient industry structure, a favourable socio-political arena. Its objective function includes not only profit maximization but also various benefits valued by its stakeholders. "*The corporation can be seen as a nexus of relationships between a corporation and its various stakeholders with a goal of mutual gain*", Bhattacharya, Korschun and Sen (2011)[4].

As a result, at the time of committing into such actions and into costly efforts aimed at lesse-

[3]Some stakeholders may be willing to work with firms pursuing socially responsible activities even if the present value of the firms' cash flows is reduced. What is important is the level of demand, as underlined by Gollier and Pouget (2009) who show that responsible firms are more valued than non-responsible ones if socially responsible strategies are not too costly and if the externality and the proportion of altruistic investors are high enough (and risk aversion low) ; a CSR premium can be associated with an increase in firm's CSR involvement.

[4]"Strenghtening stakeholder-company relationships through mutually beneficial corporate social responsibility initiatives", *forthcoming* in Journal of Business Ethics.

ning damaging consequences of activity, conflicts of interests may emerge. All the stakeholders may not share the same degree of concern and willingness with regard to enhancing corporate social responsible (CSR) policies. As a by-product, this raises the question of whether it is more relevant to assign the decision of the nature and the amount of socially responsible actions to the company management or to the board. Indeed, these behaviors are not valued the same way by firm executives and by elected members of its board, according the objective assigned to them, according their individual and collective concern for their potential contribution to sustainable economic and social development, to their impact upon the local community and the society as a whole... The board is a key element of the corporate governance efficiency.

This paper thus aims at investigating the economic rationale for the appropriate organization in such a context and examines whether such a policy can be delegated to the firm. We will try to bring tracks to the question : at what level is the preoccupation for social responsibility best accounted for ?

The theory of delegation is particularly helpful to tackle this issue. We analyse the endogenous allocation of responsibilities and thus consider that transfers among tiers are not allowed. To that end, we use a mechanism design framework without transfer, as initiated by Melumad and Shibano (1991). This approach was first sketched and built in opposition to Crawford and Sobel (1982) cheap talk model that initiated the literature on strategic communication. In these works, an agent, the sender, has private relevant information and transmits a message to the uninformed principal, the receiver, who then makes a decision according it but cannot commit to a policy rule before the agent reports his private information. This is no longer the case in the delegation models initiated by Holmström (1977, 1984), that revert the timing of signaling games and include commitment. Hence, Melumad and Shibano (1991) allows the principal to *ex ante* commit to a decision rule that describes the policy choices as a function of the messages sent by the agent. Martimort and Semenov (2006a) explain that the mechanism design approach displays many advantages. It takes into account the first-mover advantage of the principal, it solves the equilibrium indeterminacy arising in the former kind of games, it fully characterizes the set of incentive feasible allocations that can be achieved at any equilibrium of a communication game, and a more dynamic relationship is allowed.

In this paper, we consider a three-tier hierarchy model : the board, the firm management and representative agents (of all possible direct stakeholders : employees, customers, investors, suppliers...). A CSR action can be implemented through the funds derive from the willingness to pay of the different stakeholders involved in the firm activity (customers, employees, investors...). But the preferences of the stakeholders are heterogenous and represent a private information of them. The board has to decide which amount of CSR good should be produced or he can delegate this task to the firm management. The board cannot use message-contingent transfers to elicit information from the agents. The CSR decision competence is assigned to the board, but the company executives are assumed to have an informational advantage upon the former. Actually, they are more likely to learn a policy-relevant private feature of the agent. The principal (i.e. the board) can make his decision either on the basis of the report from the firm management, or he can prefer implementing a communication-independent policy that will be closer to his own preferred choice. This work examines the relationships between both layers of decision and the conditions for the emergence of a communication process among them. It

shows that some kinds of firms are more CSR-favorable thanks to their nature.

In the first part, the principle of mechanism design without transfer will be briefly remember. Second, the framework and main assumptions of the model will be presented. Then, the communication process between both tiers of decisionmakers will be examined and the impact of introducing information asymmetries will be analyzed. Last, we will focus on a special kind of firm : cooperative companies and show how and why they are more likely to commit to CSR policies.

2 Mechanism design without transfer

The seminal work of all this literature is Holmström (1984). Following Holmström (1984), the paper from Melumad and Shibano (1991) examines whether the introduction of communication in mechanisms design without transfer may be conducive to a Pareto optimal outcome.

A principal must implement a policy under uncertainty and can consult an agent, who possesses some relevant information concerning the decision to be made but who can have different preferences. Both players have non-monotonic preferences, which permits to capture potential conflict of interest[5]. It is assumed that the principal takes into account the satisfaction of the whole society, which may trigger some divergence. A bias $\mu > 0$ is thus introduced.

In a one-dimensional space, the agent has private information with regard to a policy-relevant parameter : θ, drawn from a uniform distribution on Θ, but the principal is the only one that can make the decision : $x \in R$.

The quadratic payoffs of the agent and of the principal are respectively

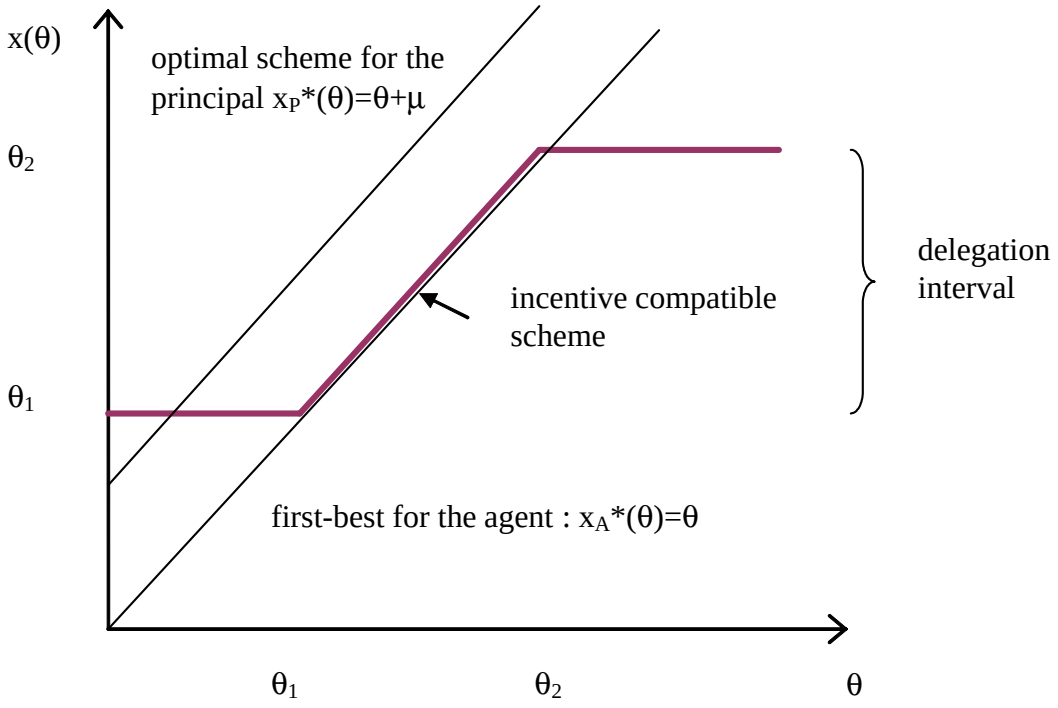
$$\begin{aligned} U_A(x,\theta) &= -\frac{1}{2}(x-\theta)^2 \\ U_P(x,\theta) &= -\frac{1}{2}(x-\theta-\mu)^2 . \end{aligned}$$

An optimal decision rule can be determined.

Without loss of generality, it can be considered that the principal offers a truthful direct revelatory mechanism $x\left(\widehat{\theta}\right)_{\widehat{\theta}\in\Theta}$. He commits to a mapping $x\left(\widehat{\theta}\right)$, i.e. for each $\widehat{\theta}$ announced by the agent, the policy $x\left(\widehat{\theta}\right)$ must be implemented. As a result, the potential conflict of interests gives rise, for the principal, to a trade-off. On the one hand, the principal can choose to communicate with the agent in order to learn her private feature and implement a more appropriate policy, at the expense of some control loss. On the other hand, the decisionmaker can define a rigid policy unresponsive to the agent's preferences but closer to the principal's ideal point.

The optimal mechanism is a compromise between both strategies. The first one corresponds to a separating mechanism implementing the agent's preferred choice $x(\theta) = \theta, \forall\theta$, whereas

[5]It is a necessary condition for communication between them to take place in a mechanism design framework without monetary transfers.



the choice of a rigid policy corresponds to a pooling scheme where $x(\theta) = x, \forall\theta \in \Theta$. With θ_1 and θ_2 designing the boundaries of the segment where the policy adopted corresponds to the agent's ideal point, following the minmax rule of Moulin (1980)[6], the optimal continuous mechanism is weakly increasing and combines segments where the policy decided by the principal is independent from the agent's report and segments where the ideal choice of the latter is implemented.

$$x(\theta) = \min\{\theta_2, \max(\theta, \theta_1)\}, \theta_1 < \theta_2 \ .$$

The agent preferred alternative is chosen if $\theta_1 < \theta < \theta_2$, i.e. she is offered the range of decision $[\theta_1; \theta_2]$, whereas if $\theta < \theta_1 (\theta > \theta_2)$ the policy implemented is $\theta_1(\theta_2)$.

An incentive-compatible decision rule is showed to be weakly increasing and consisting of segments where the policy is independent from the sender's report and segments where the decision prescribed by the incentive rule is equal to the sender's first best. When both players' sensitivities to the environment are negatively related, communication is valuable (provided that a preference reversal takes place). When players' sensitivities are similar, the optimal decision rule is continuous. Martimort and Semenov (2006a) provide a sufficient condition on the distribution of the agent's type that guarantees the continuity of the optimal mechanism. In a quadratic preferences setting, they show that the principal always benefits from communication on the upper tail of the distribution whereas pooling is preferred on the lower tail. This property is ensured by log-concavity (the optimal mechanism is partial delegation).

[6]Moulin H. (1980) : "On Strategy-Proofness and Single-Peakedness", Public Choice, 35, pp.437-455.

Alonso and Matouschek (2005) also characterize the optimal decision rule for general single-peaked utility functions satisfying the single-crossing property. The commitment power is endogeneized. They show that interval delegation is optimal if both players' preferences are similar enough. Indeed, it can be beneficial for the principal to raise the discretion of the agent if their interests are relatively convergent or if he is eager to implement locally state-sensitive decisions.

In a model related to Aghion and Tirole (1997) where the principal can delegate formal authority to an agent and thus provide him with incentives to try to learn information[7], Dessein (2002) proves that the principal is better off when he can commit to complete delegation, especially if the agent's bias is small enough relative to her informational advantage.

Another kind of solution can emerge : a veto-based delegation mechanism. Likewise, Mylovanov (2004) shows that when a principal faces a trade-off between delegating a decision to the better informed agent and preventing her potential opportunistic behaviour, the optimal arrangement consists in the agent making a recommendation and the principal deciding whether to enforce it or to veto it. In such a case, the principal takes into account the information sent by the agent and updates his beliefs.

Martimort and Semenov (2006b) introduce the existence of many agents. The paper examines the informational role of lobbying in a model considering that many interest groups take part to a decision process concerning a one-dimensional policy choice. Each one possesses a privately known ideal point. The principal faces a trade-off between learning them through communication or implementing an information-independent policy closer to his ideal point. The mechanism design approach allows analyzing the communication patterns that may emerge from various kinds of organization among these agents. Two forms of cooperation can take place : a strong coalition within which interest groups perfectly share information and a weak coalition where incentive compatible collusive mechanisms must be designed. A screening effect appears when interest groups compete, pointing out that one of them can see her preferred policy be implemented. If they form a strong coalition, information communication is improved (this is an informativeness effect). This form is superior when the conflict of interest is weak, whereas competition turns optimal when lobbies have highly diverging preferences.

Also considering the existence of many agents, Glazer and Rubinstein (1998) analyze a mechanism without transfer when a given target must be achieved and the different agents involved in the game are driven by diverging motives. A decision has to be made according the recommendations of experts, each of them holds some piece of information about the social desirability of the action to undertake. The social target cannot be met if all agents are driven only by a public motive (i.e. they are only interested in social objectives), whereas a combination of benevolence and private interests can bring the outcome closer to the implementation of the social target.

[7] A trade-off takes place between the loss of control triggered by such delegation and the incentives given to the agent in order to get him to make an effort to acquire information.

3 A three-tier hierarchy model of CSR : Framework and main assumptions

3.1 Preferences and information

We consider a game where a firm commits herself in a CSR policy. She undertakes socially responsible actions, i.e. actions that go beyond compliance with law and regulation. As CSR is multi-faceted, this includes using environment-friendly technologies, incorporating social features into production processes and ensuring quality and proximity of suppliers, fostering employees working conditions... Such a behavior aimed at furthering the firm positive contribution to economic, social and environmental improvements can be financed through the cost some stakeholders are ready to bear for social goals. We can assume that it involves the premium some customers are willing to pay for fair trade (esponsible products and services), as well as the part of performance wage some employees accept to give up in order to improve social and environment impacts of the firm activity. We could also think of savers renouncing to a part of the expected yield of their investment. As a whole, we define the transfer from economic agents t as a unique one (lump-sum), applying to the set of stakeholders and allowing the firm to provide a socially responsible action G produced at cost $G^2/2$.

The board is a key element of the corporate governance structure. It is defined by Monks and Minow (2004), Corporate Governance, Blackwell Publishing, Malden, MA., as "the link between the people who provide capital and the people who use that capital to create value". He must take into account the interest of the whole company (in the aggregate) and thus adopt a long run perspective.

Representative agents have heterogenous preference and these preferences constitute a private policy-relevant feature θ which belongs to the continuous set $\Theta = [\underline{\theta}; \underline{\theta} + 1]$, $\underline{\theta} > 1$, which refers to the willingness-to-pay for a more ethical behavior or stated otherwise to the benefit they derive from the CSR actions implemented (through motives of both altruistic and egoistic dimensions).

θ is distributed according the log-concave continuous function $F(\theta)$, with strictly positive density function $f(\theta)$, that represents the common knowledge law describing the prior of the firm and satisfying the monotonicity condition of the hazard rate $\frac{d}{d\theta}\left(\frac{F(\theta)}{f(\theta)}\right) > 0$.[8]

We assume that the firm management can be informed about θ or not and can use this information strategically *via* the signal sent to the board who chooses the level of socially responsible action provision. Indeed, the firm management is likely to have a better knowledge of consumers and employees preferences than the board thanks to satisfaction surveys, to the proximity with the working force, to the analyses led by different departments of the firm with respect to sales, customers' tastes... It can thus be considered that he benefits from an information advantage with regard to such features.

[8] We could equivalently consider that there is a unique agent instead of a continuum, the preference of which is unknown and belongs to the set Θ.

A potential conflict of interests among both tiers can emerge. Actually, as pointed out by Benabou and Tirole (2010), CSR can to some extent be considered as "insider-initiated corporate philanthropy". Views about priority areas and about the degree of the relevant firm commitment to CSR may diverge among the management of the firm and the board members. Beyond the personal prosocial preoccupation of some executives or trustees, some other motives may guide their want to foster the implementation of a CSR policy : responsible behaviors can be expected to generate positive externalities, advantages in termes of medium-run competitiveness, reputational effects... Besides, if on the one hand the firm management can face an increasing pressure to both maintain profitability and behave in a socially responsible way, on the other hand the board can have a long term perspective and thus be more convinced about the interest of enhancing socially responsible actions and discount the potential shortcomings involved (primarily the cost). He may take into account the benefits of the CSR policy adoption not only for the firm direct stakeholders but also for the whole society, or conversely he may, in some cases, be captured by private interests or privilege one kind of SR criteria among a set of criteria (job preserving actions *versus* environment protection for instance). As a result, their objective functions are highly likely to differ.

In order to capture this potential divergence between both layers and to make it possible for communication between them to emerge and be valuable, we use single-peaked quadratic preferences[9].

The functions of the agent θ, S, and of the firm F, V_F, respectively write

$$S = \theta G - t \tag{1}$$

$$V_F = t - \frac{G^2}{2} \ . \tag{2}$$

The objective function of the board B, V_B, writes

$$V_B(1) = \mu G + V_F + S \tag{3}$$

where $\mu > 0$ represents his bias.

3.2 The mechanisms

The board contracts with the firm management who, in turn, sub-contracts with the agents.

Laffont and Martimort (1997, 1998), Faure-Grimaud, Laffont and Martimort (2003) show that the Revelation Principle can be generalized, not only to the grand-mechanism but to the side-contract as well. Thus, the Revelation Principle can be implemented at the side-contracting stage, and there is no loss of generality in considering that the side-mechanism is a direct truthful mechanism. The Principle of Delegation Proofness can be applied in this framework.

[9]If the utility of the principal were monotone, her optimal decision would ignore the agents' preferences. Likewise, if the agent had a monotonic utility, she would send the same report to the principal whatever the state of nature.

Through the grand-mechanism, the upper-tier authority *ex ante* commits himself to a decision rule that describes which policy to implement as a function of the report made by the firm executives on the agents' types. There is no transfer between both levels.

Without loss of generality, the board offers a thruthful direct revelatory mechanism

$$\left\{G\left(\widehat{\phi}\right)\right\}_{\widehat{\phi}\in\Theta}$$

where $\widehat{\phi}$ is the report of the firm management.

Side-mechanisms also take place, among the firm management and the agent

$$\left\{t\left(\widehat{\theta}\right),\phi\left(\widehat{\theta}\right)\right\}_{\widehat{\theta}\in\Theta}$$

where $\widehat{\theta}$ is the signal sent by the agent to the firm executives and $\phi(\cdot)$ maps the agent's report into the set of messages the firm management thus sends to the board. The agent may agree on a side-contract that manipulates its report into the grand-mechanism.

4 A three-tier hierarchy model of CSR : Impact of information asymmetries

If no asymmetry of information occurs among the agents and the firm executives and the latter truly report the type of the agents to the board, everything happens as if they behaved as a unique entity with respect to the board.

4.1 The informed firm management case

4.1.1 Programme of the firm management

In such a context, the firm management can extract the exact amount corresponding to the willingness to pay or to renounce to a part of wage or yield of the agents, i.e. accurately revealing the benefit they derive from the CSR action.

The firm optimization programme is

$$\max_{\phi(\cdot)} \int_{\underline{\theta}}^{\underline{\theta}+1} \left(\theta G\left(\phi\left(\theta\right)\right) - \frac{G^2\left(\phi\left(\theta\right)\right)}{2}\right) f\left(\theta\right) d\theta \ . \tag{4}$$

4.1.2 Incentive compatibility

Maximizing pointwise the objective above, with $\phi^*(\theta) = \theta$, and from the standard revealed preferences argument, at any point of differentiability of $G(\cdot)$: $\dot{G}(\theta)(\theta - G(\theta)) = 0$.

Thus, $G(\cdot)$ is either constant along θ or corresponds to the true benefit of the agent.

Besides, from the incentive constraints we get $\left(\theta - \widehat{\theta}\right)\left(G(\theta) - G\left(\widehat{\theta}\right)\right) \geq 0$.

$G(\cdot)$ is weakly increasing and thus almost everywhere differentiable.

A last point can be made, with regard to $G(\cdot)$ potential discontinuity. If we consider that $G(\cdot)$ is discontinuous at point $\widetilde{\theta} \in \Theta$, $G\left(\widetilde{\theta}^+\right) \neq G\left(\widetilde{\theta}^-\right)$, but if an agent of type $\widetilde{\theta}$ must be indifferent between choosing the policies which are respectively proposed on the left and on the right of $\widetilde{\theta}$, then $G(\cdot)$ cannot be flat on these sides, and as a result : either $G\left(\widetilde{\theta}\right) = G\left(\widetilde{\theta}^-\right)$ or $G\left(\widetilde{\theta}\right) = G\left(\widetilde{\theta}^+\right)$.

The following lemma, derived from Melumad and Shibano (1991) can thus be written :

Lemma 1 : *An incentive compatible scheme $G(\cdot)$ must satisfy*
- *$G(\theta)$ weakly increasing and thus almost everywhere differentiable*
- *if $G(\theta)$ is strictly increasing, $G(\theta) = \theta$*
- *if $G(\theta)$ discontinuous at a point $\widetilde{\theta}$, then $G\left(\widetilde{\theta}^-\right) + G\left(\widetilde{\theta}^+\right) = 2\theta$, $G(\theta)$ flat on the right and on the left of $\widetilde{\theta}$, and $G(\theta) \in \left\{G\left(\widetilde{\theta}^-\right), G\left(\widetilde{\theta}^+\right)\right\}$.*

Two classes of schemes can be incentive compatible : pooling schemes, according to which $G(\theta) = G, \forall\theta \in \Theta$ and fulling separating schemes that correspond to the agent's characteristic, $G(\theta) = \theta, \forall\theta \in \Theta$. The optimal mechanism is a compromise between both. Continuous mechanisms have at most one strictly increasing part. The minmax rule of Moulin (1980) can be applied.

Lemma 2 : *For any continuous mechanism $G(\theta)$, there exists two cut-offs θ^* and θ^{**} such that the unidimensional scheme has the following form*

$$G(\theta) = \min\{\theta^*,\ \max\{\theta, \theta^{**}\}\} \tag{5}$$

with θ^* and θ^{**} designing the boundaries of the segment where $G(\theta) = \theta$
i.e.

$$G(\theta) = \begin{cases} \theta^* \ if \ \ \underline{\theta} \leq \theta \leq \theta^* \\ \theta \ if \ \ \theta^* \leq \theta \leq \theta^{**} \\ \theta^{**} \ if \ \ \theta^{**} \leq \theta \leq \underline{\theta} + 1 \end{cases}$$

the optimal mechanism is made of three segments.

In the quadratic case, Martimort and Semenov (2006a) provide a sufficient condition on the distribution of types to guarantee the continuity of the optimal mechanism[10].

4.1.3 Optimal mechanism

In accordance with the previous lemma, the board members' expected payoff with a continuous scheme characterized by the cut-offs θ^* and θ^{**} is $V_S(\theta^*, \theta^{**})$:

$$\int_{\underline{\theta}}^{\theta^*} \left((\theta+\mu)\,\theta^* - \frac{\theta^{*2}}{2} \right) f(\theta)\,d\theta + \int_{\theta^*}^{\theta^{**}} \left((\theta+\mu)\,\theta - \frac{\theta^2}{2} \right) f(\theta)\,d\theta + \int_{\theta^{**}}^{\underline{\theta}+1} \left((\theta+\mu)\,\theta^{**} - \frac{\theta^{**2}}{2} \right) f(\theta)\,d\theta \,. \tag{6}$$

On the one hand, optimizing with respect to θ^{**} yields

$$\frac{\partial V_B(\theta^*, \theta^{**})}{\partial \theta^{**}} = \int_{\theta^{**}}^{\underline{\theta}+1} (\theta + \mu - \theta^{**})\, f(\theta)\,d\theta > 0 \,.$$

It is thus optimal to always set $\theta^{**} = \underline{\theta} + 1$ and to rewrite V_B as a function of θ^* only.
Optimizing with respect to θ^* leads to

$$\frac{\partial V_B(\theta^*)}{\partial \theta^*} = \int_{\underline{\theta}}^{\theta^*} (\theta + \mu - \theta^*)\, f(\theta)\,d\theta = 0 \,.$$

As a by-product, the optimal mechanism is characterized by a unique cut-off satisfying the following condition :

$$\mu F(\theta^*) - \int_{\underline{\theta}}^{\theta^*} F(\theta)\,d\theta = 0$$

If we consider the uniform distribution case, the cut-off θ^* is :

$$\theta^* = 2\mu + \underline{\theta} \tag{7}$$

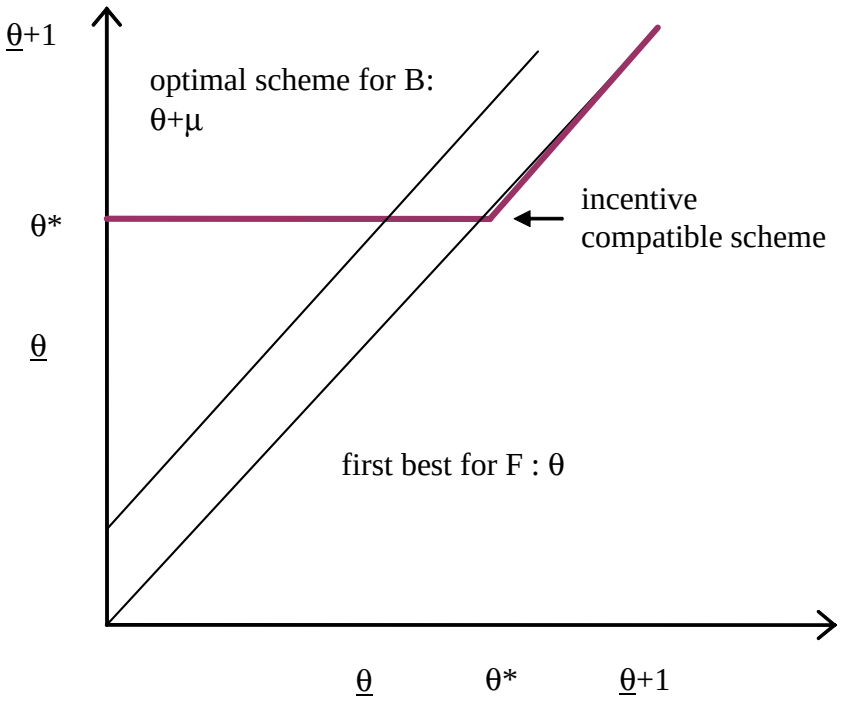
The optimality of the result is guaranteed by the second-order condition

$$\mu f(\theta^*) - F(\theta^*) \leq 0 \,. \tag{8}$$

Proof : see Annex.

[10] The condition $f(\theta) - \delta f'(\theta) \geq 0, \forall \theta$ guarantees the continual of the optimal mechanism, and it is equivalent to

$$\delta\left[2F(x) - F(x-\Delta) - F(x+\Delta)\right] - \int_{x-\Delta}^{x} F(y)\,dy - \int_{x}^{x+\Delta} F(y)\,dy \geq 0$$



Proposition 1 :

The optimal mechanism is $G(\theta) = max\{\theta, \theta^*\}$ *where the cut-off parameter* θ^* *is defined by*

$$\mu = \frac{1}{F(\theta^*)} \int_{\underline{\theta}}^{\theta^*} F(\theta)\, d\theta = \theta^* - \frac{1}{F(\theta^*)} \int_{\underline{\theta}}^{\theta^*} \theta f(\theta)\, d\theta \ .$$

Corollary 1 :

This condition sets a cap upon the value of μ*. Indeed, in the uniform distribution case, it is necessary to have* $0 \leq \mu \leq 0,5$ *for the problem to exist. Otherwise, if* $\mu > 0,5$*, no communication occurs.*

Proposition 2 :

Communication with the informed firm management becomes relevant as soon as the value of the private parameter of the agent is high that is agents highly value the socially responsible action (i.e. the willingness-to-pay or equivalently the impact of the CSR good upon agents' efficiency is strong). For values of θ *lower than* θ^**, the board chooses to ignore the information and implement a rigid policy, whereas for higher values of* θ*, the decision is delegated to the firm management and the policy corresponding to his preferred choice is adopted.*

Remark : For values lower than θ^*, it can be considered that the transfers from stakeholders may not be substantial enough to finance the provision of socially responsible products / actions.

4.2 Introduction of informational asymmetries between the agent and the firm management

4.2.1 Virtual ideal point of the firm management

Because of conflicts of interests, a rent must be left to the agents in order to induce them to reveal their private parameter :

$$S(\theta) = \max_{\{\widehat{\theta}\}} \int_{\underline{\theta}}^{\underline{\theta}+1} \left(\theta G\left(\phi\left(\widehat{\theta}\right)\right) - t\left(\widehat{\theta}\right)\right) f(\theta)\, d\theta.$$

The side-mechanism can be written as

$$\max_{\{S(\cdot),\phi(\cdot)\}} \int_{\underline{\theta}}^{\underline{\theta}+1} \left(\theta G(\phi(\theta)) - \frac{G^2(\phi(\theta))}{2} - S(\theta)\right) f(\theta)\, d\theta$$

subject to

$$\dot{S}(\theta) = G(\phi(\theta)) \text{ and } S(\theta) \geq 0 \ .$$

Which amounts to the following programme

$$\max_{\{\phi(\cdot)\}} \int_{\underline{\theta}}^{\underline{\theta}+1} \left(-\frac{G^2(\phi)}{2} + \theta G(\phi) - \frac{1-F(\theta)}{f(\theta)} G(\phi)\right) f(\theta)\, d\theta \ . \tag{9}$$

Pointwise optimization with respect to ϕ yields

$$G_F^{AI}(\theta) = \theta - \frac{1-F(\theta)}{f(\theta)}, \quad \text{for} \quad \phi^* = \theta \tag{10}$$

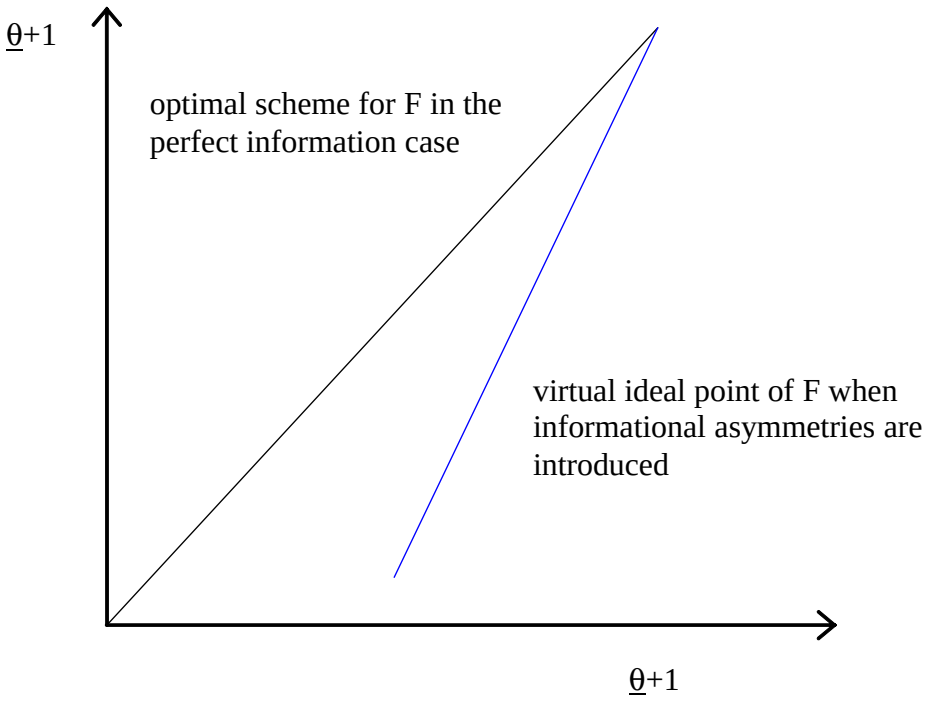
In the uniform case, the firm management's virtual ideal point is $G_B^{AI}(\theta) = 2\theta - \underline{\theta} - 1$.

Proposition 3 :
With a uniform distribution function, mechanisms are continuous

$$\dot{G}(\theta)\left[2\theta - \underline{\theta} - 1 - G(\theta)\right] = 0$$

and the optimal mechanism can be written as

$$G_F^{AI}(\theta) = \min\left\{\widehat{\theta},\ \max\left\{2\theta - \underline{\theta} - 1, \widehat{\widehat{\theta}}\right\}\right\},\ \textit{with}\ \widehat{\theta} < \widehat{\widehat{\theta}} \tag{11}$$



The comparison with the perfect information case indicates that $G^{AI}(\theta) < G(\theta)$*. The preferred point of the firm management is lower in the framework involving asymmetries of information, which means that he's more sensitive to the type of the agents.*

When uncertainty is introduced, the firm executives display some risk aversion and consider that taking into account the signal sent by the stakeholders concerning their willingness to pay for a social responsible policy is more relevant. The management's ideal point in terms of investment in CSR good is lower because of the informational rent of the agents.

4.2.2 Which communication between the board and the management ?

The programme of the board is

$$\max_{\{U(\cdot),G(\cdot)\}} \int_{\underline{\theta}}^{\underline{\theta}+1} \left((\theta+\mu) G(\theta) - \frac{G^2(\theta)}{2} \right) f(\theta)\, d\theta$$

subject to

$$G(\theta) = \min \left\{ \widehat{\theta},\ \max \left\{ 2\theta - \underline{\theta} - 1, \widehat{\widehat{\theta}} \right\} \right\} .$$

Considering the uniform distribution case, $V_B\left(\widehat{\theta},\widehat{\widehat{\theta}}\right)$ can be written as

$$\int_{\underline{\theta}}^{\frac{1}{2}\left(\widehat{\theta}+\underline{\theta}+1\right)}\left((\theta+\mu)\,\widehat{\theta}-\frac{\widehat{\theta}^2}{2}\right)f(\theta)\,d\theta+\int_{\frac{1}{2}\left(\widehat{\widehat{\theta}}+\underline{\theta}+1\right)}^{\underline{\theta}+1}\left((2\theta-\underline{\theta}-1)\left(\theta+\mu-\frac{2\theta-\underline{\theta}-1}{2}\right)\right)f(\theta)\,d\theta\ . \tag{12}$$

Optimizing with respect to $\widehat{\theta}$ gives the following result :

$$\frac{\partial V_B\left(\widehat{\theta}\right)}{\partial\widehat{\theta}}=\int_{\underline{\theta}}^{\frac{1}{2}\left(\widehat{\theta}+\underline{\theta}+1\right)}\left(\theta+\mu-\widehat{\theta}\right)f(\theta)\,d\theta=0\ .$$

So

$$-3\widehat{\theta}^2+2\widehat{\theta}\,(2\mu+3\underline{\theta}-1)+\left(-3\underline{\theta}^2+2\underline{\theta}+1+4\mu\,(1-\underline{\theta})\right)=0\ .$$

The roots of this second-degree equation are

$$\begin{aligned}\widehat{\theta}_1 &= \underline{\theta}-1\notin\Theta\\ \widehat{\theta}_2 &= \underline{\theta}+\frac{4}{3}\mu+\frac{1}{3}\ .\end{aligned}$$

As $\mu<\dfrac{1}{2}$, $\widehat{\theta}_2\in\Theta$.

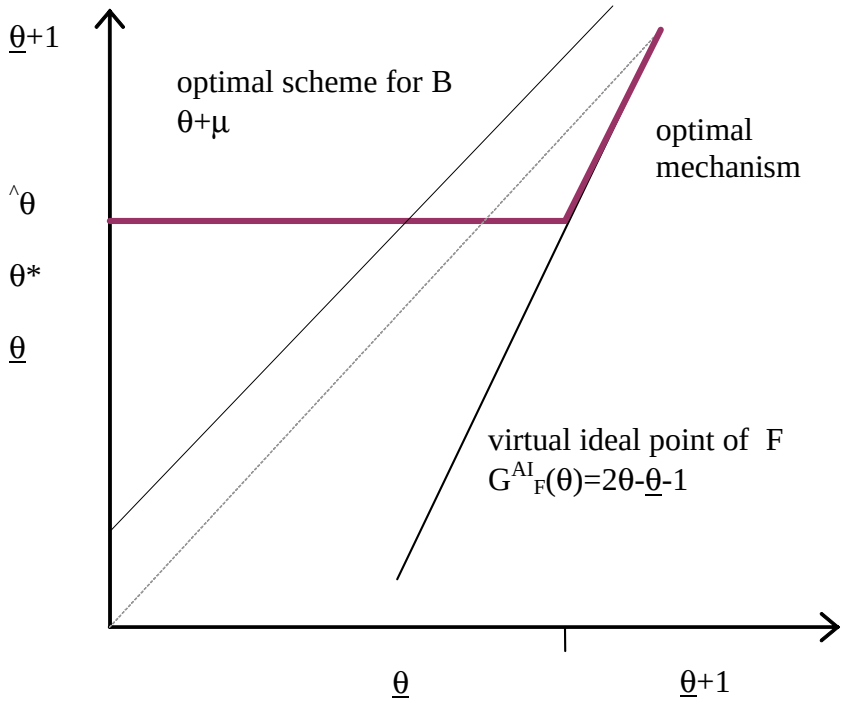
The cut-off is thus

$$\widehat{\theta}=\underline{\theta}+\frac{4}{3}\mu+\frac{1}{3} \tag{13}$$

In this case, the cut-off value is higher when informational asymmetries are introduced. The more noisy the management's report on agents' CSR taste, the less the board relies on it.

$$\theta^*<\widehat{\theta} \tag{14}$$

Proposition 4 : *In a framework involving informational problems, there is less communication when informational asymmetries are introduced than in the informed company executive case as the divergence of interests between both tiers is greater and thus makes communication less valuable. The board is more reluctant to make her decision according the firm management's report and thus commits to a more rigid policy, which is closer to her preferred ideal point.*



5 The case of a cooperative company

The International Cooperative Alliance (ICA, 1995) defines a cooperative as "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise" represented by the "one man, one vote" principle. Co-operatives' business model puts the members and customers at its heart, in a long-term perspective. Indeed, as underlined by the European Association of Co-operative Banks (EACB, 2005), "The primary mission of co-operative banks is to promote the economic interest of their members, who are their customers".

Their roots and their principles make them take into account a multiplicity of stakeholders, pursue long-term objectives and put at their heart the notions of proximity, solidarity and responsibility. For instance, due to their original mission, their mode of governance, their local anchorage, their contribution to economic and social development on their territory and their long-term perspective, cohesion and solidarity are at the very heart of co-operative activity and co-operative banks appear as pioneers in the field of sustainable development and corporate social responsibility. In comparison to commercial entities, cooperative members are involved in the activities of the firm, play an active part in decision-making : they are both users of the services provided by their co-operative banks (customers, borrowers, depositors) and thus require quality services which enables convergence between their interests and the business policy of the firm, they are also often employees and they generally invest a limited amount of capital in the cooperative, which guarantees that the conduct of the activity will be sound and profitable. On account of such proximity, co-operative banks can gather comprehensive information

on their customers and are enabled to adapt their products and services, thus answering more efficiently their needs and wishes. Likewise, they better anticipate market evolutions, and can play a leading innovative role (bank insurance, electronic banking...).

The board institutional structure matters to a great extent. Indeed, the choices can be different if it is composed of shareholders or if, as a mutual company, his elected representatives are social capital holders.

$$V_B(\cdot) = \mu G + V_F + (\beta + 1) S$$

with $\beta \geq 0$ designing the additional weight put on stakeholders.

The programme of the policymaker thus writes

$$\begin{aligned} & \max_{\{S(\cdot),G(\cdot)\}} \int_{\underline{\theta}}^{\underline{\theta}+1} \left((\theta + \mu) G(\theta) - \frac{G^2(\theta)}{2} + \beta S(\theta) \right) f(\theta) \, d\theta \\ \text{ST } G(\theta) &= \min \left\{ \overline{\theta}, \ \max \left\{ \theta - \frac{1 - F(\theta)}{f(\theta)}, \overline{\overline{\theta}} \right\} \right\} \end{aligned}$$

The objective of the principal can thus be written as follows :

$$\begin{aligned} V_B\left(\overline{\theta}, \overline{\overline{\theta}}\right) &= \int_{\underline{\theta}}^{\frac{1}{2}\left(\overline{\theta}+\underline{\theta}+1\right)} \left(\left(\theta + \mu + \beta \frac{1 - F(\theta)}{f(\theta)} \right) \overline{\theta} - \frac{\overline{\theta}^2}{2} \right) f(\theta) \, d\theta \\ &+ \int_{\frac{1}{2}\left(\overline{\theta}+\underline{\theta}+1\right)}^{\frac{1}{2}\left(\overline{\overline{\theta}}+\underline{\theta}+1\right)} \left(\left(\frac{\theta}{2} + \mu + \left(\beta + \frac{1}{2} \right) \frac{1 - F(\theta)}{f(\theta)} \right) \left(\theta - \frac{1 - F(\theta)}{f(\theta)} \right) \right) f(\theta) \, d\theta \\ &+ \int_{\frac{1}{2}\left(\overline{\overline{\theta}}+\underline{\theta}+1\right)}^{\underline{\theta}+1} \left(\left(\theta + \mu + \beta \frac{1 - F(\theta)}{f(\theta)} \right) \overline{\overline{\theta}} - \frac{\overline{\overline{\theta}}^2}{2} \right) f(\theta) \, d\theta \ . \end{aligned} \tag{15}$$

In the uniform distribution case, the first-order condition obtained with respect to $\overline{\overline{\theta}}$ is

$$\frac{1}{8}\overline{\overline{\theta}}^2 (3 + 2\beta) + \frac{1}{8}\overline{\overline{\theta}} (-6 - 4\mu - 6\underline{\theta}) + \frac{1}{8} 3 + 3\underline{\theta}^2 + 2\beta^2 \underline{\theta} + 6\underline{\theta} + 4\beta\underline{\theta} + 4\mu\underline{\theta} + 2\beta + 4\mu$$

So, $\forall \overline{\overline{\theta}}$, $\dfrac{\partial V_B\left(\overline{\theta}, \overline{\overline{\theta}}\right)}{\partial \overline{\overline{\theta}}} > 0$: it is thus optimal to always set $\overline{\overline{\theta}} = \underline{\theta} + 1$.

As a by-product, the problem can be rewritten as a function of $\overline{\theta}$ only

$$V_B\left(\overline{\theta},\overline{\overline{\theta}}\right) = \int_{\underline{\theta}}^{\frac{1}{2}\left(\overline{\theta}+\underline{\theta}+1\right)} \left(\left(\theta+\mu+\beta\frac{1-F(\theta)}{f(\theta)}\right)\overline{\theta}-\frac{\overline{\theta}^2}{2}\right) f(\theta)\,d\theta + \int_{\frac{1}{2}\left(\overline{\theta}+\underline{\theta}+1\right)}^{\underline{\theta}+1} \left(\left(\frac{\theta}{2}+\mu+\left(\beta+\frac{1}{2}\right)\frac{1-F(\theta)}{f(\theta)}\right)\left(\theta-\frac{1-F(\theta)}{f(\theta)}\right)\right) f(\theta)\,d\theta$$

Thus

$$\frac{\partial V_B}{\partial \overline{\theta}} = \frac{1}{8}\left[\begin{array}{c} \overline{\theta}^2(7\beta-27)+\overline{\theta}(22+22\underline{\theta}-10\beta\underline{\theta}-14\beta-4\mu) \\ +(-3\underline{\theta}^2+11\beta\underline{\theta}^2-6\underline{\theta}+22\beta\underline{\theta}+12\mu\underline{\theta}+11\beta+12\mu-3) \end{array}\right]$$

The roots of the eaquation are

$$\underline{\theta}_1 = \frac{22+22\underline{\theta}-10\beta\underline{\theta}-14\beta-4\mu-\sqrt{\Delta}}{54-14\beta} < 0$$
$$\underline{\theta}_1 = \frac{22+22\underline{\theta}-10\beta\underline{\theta}-14\beta-4\mu-\sqrt{\Delta}}{54-14\beta} > \underline{\theta}+1$$

Which means that they do not belong to the interval and that the cut-off value is above the upper-bound of the interval.

More communication will take place between both levels than in the previous case if the board puts a weight on stakeholders interest greater than one, i.e. if the board wants to favor their importance in his choice : $\beta > 1$. Indeed, both the board's and the firm executives' ideal point will be more sensitive to the agents parameter, the steepness of their optimal schemes increase. The reduction of the conflict of interests among them makes communication more likely to emerge and more relevant for the board to delegate the CSR choice to the management.

With respect to the perfect information case, communication appears relevant among the board and the company management if the former puts on stakeholders satisfaction an important weight. Indeed,$\overline{\theta} > \theta^*$ if and only if $\beta > \frac{2}{3-2\mu}$. This means that if the board discounts the CSR action (μ low), he will consider it more relevant to refer to the firm management only if the opinion and satisfaction of the stakeholders are important to him, which can be the case for instance if some members of the board also have interests in the firm activity as customers or investors. In this respect, the nature of the board appears crucial. In the case of cooperative entities, according the "one man - one vote" principle and due to the regional character of the firm, board members are strongly involved, they live and work in the local community in which the company operates, make their decisions as users/customers and listen carefully the needs of their territory. Actually, members of a cooperative board are private citizens, entrepreneurs...

that play an active role and are strongly involved in the monitoring of the company. As a result, their interests converge to a large extent with those of the community and with the business policy of their firm. They promote responsibility, solidarity, they favor a long run commitment, and seek the fulfillment of society common good.

Proposition 5 : *In a framework involving informational problems, when the board is deeply concerned with the satisfaction stakeholders may draw from CSR actions, his interests appears more consistent with those of the firm management and the sensitivity of their ideal virtual points to the type of the agents is more important. A reduction of the conflict of interest between the executives and the board makes it more relevant for the upper-tier to delegate the choice to the firm layer, both result better off through communication. Delegation is all the more relevant as there is a real congruence in their interests and as the nature of the company leaves a significant role to the users, the consumers, which is typically the case in the co-operative sector.*

6 Conclusion

We have raised the question of whether it was more relevant to assign the decision of socially responsible actions to a company management or to the board. Such policies are not valued the same way by firm executives and by elected members of its board, according the objectives assigned to them, their individual and collective concern for their potential contribution to sustainable economic and social development, to their impact upon the local community and society as a whole. This paper aims at investigating the economic rationale for the appropriate organization in such a context and examines whether such a policy can be delegated to the firm. We have tried to bring tracks to the question : at what level is the preoccupation for social responsibility best accounted for ? As soon as the assignment of some competences issue is tackled, information and the degree of congruence between the interests of the players appear crucial. This is particularly sensible when new kinds of actions and policies are at stake, as for instance the commitment to socially responsible behaviors the costs and the results of which are not always perfectly clear-cut.

We have assumed a model with an asymmetry of information among a company management and its board stemming from the fact that only the former could get some information concerning a private parameter of the main stakeholders, i.e. the customers, the employees, the investors, the suppliers... In this model built upon a mechanism design without transfer, we have shown that it was optimal for the principal (i.e. the board) to partially delegate the choice of CSR policy to better informed firm managers when their respective objectives did not display a great divergence and if their ideal points were highly sensitive to the private information of the agent. As a result, more communication takes place, which indirectly amounts to delegating the decision to the firm management, if the interests of both tiers converge and if the private parameter of the agent exerts a strong incidence upon their level of satisfaction. It is important to keep in mind that the outcome depends to a great extent on the relative weights of each

interest group and on the balance of conflicting objectives between those eager to promote and develop a socially responsible economy and those unwilling to change their way of life.

We have enhanced one type of firm organization likely to make interests converge and delegation be preferred : co-operative companies. They usually promote economic initiative and solidarity, an inclusive society, a good economic and social climate... They historically display strong commitment to social values, are at the heart of society and through proximity and their mode of governance allow a direct and well-oriented impact on the territory. That's why it seems consistent that such a kind of firm be naturally eager to promote actions allowing to achieve social and environmental goals (such as preserving workers' rights, reducing poverty etc.) and that such an organization display an alignment of the interests.

Nevertheless, the success of socially responsible commitments depends on the relative position of each player involved. Actually, if the agents are convinced about the importance and the emergency of a better society, a cleaner environment... and are eager to undertake actions that, in the long run, will improve economic, social, environmental and governance dimensions, then the decision is worth delegating. But though the movement in favor of CSR is gaining momentum, many actors remain reluctant and wonder whether it is a genuine motive of the firm, whether the cost to bear is not excessive for an uncertain result, whether market competition with firms less concerned about CSR might jeopardize their company ... All these queries need being taken into account in our studies and a further step can be to deepen and improve the model to more accurately integrate these elements. Another important issue remains to come to a better way of modeling the fact that some stakeholders are also members of the board or elect their representative in the company board for the case of cooperative firms.

7 Annex : proof of the optimality of the result in the benchmark case

Let's have

$$\begin{aligned} \mu(\theta) &= \frac{1}{F(\theta)} \int_{\underline{\theta}}^{\theta} F(x)\, dx \\ \dot{\mu}(\theta) &= 1 - \frac{f(\theta)}{F^2(\theta)} \int_{\underline{\theta}}^{\theta} F(x)\, dx = 1 - \frac{f(\theta)}{F(\theta)} \mu(\theta) \ . \end{aligned}$$

$F(\cdot)$ is log-concave, we can rewrite

$$\mu(\theta) = \frac{1}{F(\theta)} \int_{\underline{\theta}}^{\theta} \frac{F(x)}{f(x)} f(x)\, dx = \frac{F(\theta)}{f(\theta)} - \frac{1}{F(\theta)} \int_{\underline{\theta}}^{\theta} \frac{d}{dx} \left(\frac{F(x)}{f(x)} \right) F(x)\, dx < \frac{F(\theta)}{f(\theta)} \ .$$

Thus

$$\frac{f(\theta)}{F^2(\theta)}\int_{\underline{\theta}}^{\theta} F(x)\,dx = 1-\dot{\mu}(\theta) = \frac{f(\theta)}{F(\theta)}\left[\frac{F(\theta)}{f(\theta)} - \frac{1}{F(\theta)}\int_{\underline{\theta}}^{\theta}\frac{d}{dx}\left(\frac{F(x)}{f(x)}\right)F(x)\,dx\right]$$

$$\frac{f(\theta^*)}{F(\theta^*)}\int_{\underline{\theta}}^{\theta^*} F(\theta)\,d\theta = F(\theta^*) - \frac{f(\theta^*)}{F(\theta^*)}\int_{\underline{\theta}}^{\theta^*}\frac{d}{d\theta}\left(\frac{F(\theta)}{f(\theta)}\right)F(\theta)\,d\theta < F(\theta^*),$$

as the second part of the RHS of the inequity is nonnegative. ■

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