The trust game corporation

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Introduction

- Corporate social responsibility is becoming an increasingly relevant feature of the modern corporate environment.

- KPMG (2005) reports that in the year 2005 52 percent of the top 100 corporations in the 16 more industrialized countries published a CSR report. To this change the growth of socially responsible consumption and investment have contributed significantly.

- Corporate social responsibility involves, by definition, <u>a shift of focus from the maximization of shareholders wealth to the maximization of a more complex objective function in which interests of different stakeholders are considered according to their relative weights.</u>

- The crucial question on it is whether this change of focus is compatible with firm survival and growth in a highly competitive environment. In other terms, borrowing an example from biology, we wonder whether this new species of corporations is going to coexist or to be eliminated by traditional corporations in the Darwinian selection of market competition.

- A privileged perspective to provide elements to the solution of this puzzle is the analysis of the nexus between corporate social responsibility and corporate performance.

The CSR debate (1)

- Perfect world
- Benevolent planners exist to correct the divergence between individual and social welfare generated by negative externalities and insufficient provision of public goods. Any departure of managers from the max shareholders' wealth is a failure of their mandate or can create a waste of cash flow (Friedman, 1962; Jensen 1986)
- Imperfect world
- Benevolent planners do not exist and the institutions are driven by conflicts between their objective functions and the personal ones of those are in charge of them. Consequently, governance and rules are far from optimal. Here, stakeolders are increasingly asking corporations to do their part by internalizing social environmental goals to minimize conflicts with the stakeholders (Freeman, 1984)

- CSR is an endogenous reaction of the system to the failure of the old system of checks and balances due to the loss of bargaining power of domestic institutions and trade unions

The CSR debate (2)

- "Any departure of corporate managers from the task of maximising shareholders' wealth is considered as a betrayal of their mandate" (Friedman, 1962)
- "The goal of maximising interest of a wide range of stakeholders is complex and create room for cash flow waste"
- (Jensen, 1986)
- "CSR is an efficient response of firms to minimise transaction costs with stakeholders"
- (Freeman, 1984)
- "CSR helps against market failures but endangers maximisation of shareholder's wealth and therefore makes CSR firms more fragile in financial markets (i.e. takeover threats)"
- (Tirole, 2001)

Theoretical research on CSR

- The emergence of "social market enterprises" (i.e. fair trade producers) and their role on CSR may be modeled in a duopoly product differentiation model in which these pioneers trigger profit maximizing incumbent partial imitation in CSR (Becchetti-Solferino, 2004; LeClair2002; Moore, 2004).
- The static and dynamic models show that
- i) the level of CSR of the imitator is higher than in the counterfactual scenario
- ii) the duopoly ensures in equilibrium a total amount of CSR which is superior to the one which would have been fixed by a (national) benevolent planner and more similar to the one preferred by a global benevolent planner

Previous empirical findings (1)

- Positive relationship between CSR and corporate performance (Soloman-Hansen, 1985; Pava-Krausz, 1996; Preston-O'Bannon, 1997; Stanwick-Stanwick, 1998; Verschnoor, 1998; Ruf et al, 2001; Simpson-Kohers, 2002)

- No significant direction in the link between CSR and corporate performance (Anderson-Frankle, 1980; Freedman-Jaggi, 1986; Aupperle-Caroll-Hatfield, 1986; Mc Williams-Siegel, 2000)

- Becchetti et al. (2005 AE) findings do not contradict the *shift of focus hypothesis* showing that Domini affiliation significantly reduces return on equity, while having (according to different estimate specifications) neutral or significantly positive effects on net sales per worker.

- Bauer et al. (2002) compare active strategies of ethical and traditional investment funds finding mixed results (not univocal prevalence of one over the other) but observing a learning process which gradually improves the performance of ethical investment fund managers.

- Geczy, Stambaugh and Levin (2003) calculate the cost of imposing socially responsible investment constraints in terms of risk adjusted returns and show how they depend on the share of SR investment, on views about asset pricing models (SR funds are less able to offer exposure to size and value factors than to the standard one CAPM factor) and on stock managers ability.

Previous empirical findings (2)

- Becchetti 2005 no significant differences in risk adjusted returns between the two (SR and control sample) portfolios but that the buy-and-hold portfolio of the SR stocks exhibits significantly lower exposition to systematic nondiversifiable risk. These last findings are robust to different – market model, GARCH(1,1), APARCH(1,1) - estimating techniques.

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- Event study on a sample of 327 events of entries and exits from the Domini 400 Social Index between 1990 and 2004. Two main findings: i) a significant upward trend in absolute value abnormal returns, irrespective of the event (addition/deletion) type; ii) a significant negative effect of announcements of exit from the Domini index on abnormal returns which persists after controlling for concurring financial distress shocks and stock market seasonality.

Our a priori on the CSR- corporate performance nexus

1) <u>Cost increasing effects</u>:
   CSR is not a free lunch and almost all CSR criteria entail extra costs.

2) <u>Consumer demand enhancing effects</u>:
   WTP for social and environmental responsibility is between 30-40 according to WWS data and several empirical analyses.

3) **<u>Productivity enhancing effects</u>:**

(efficiency wages) Yellen, 1984; Stiglitz-Shapiro, 1984; Akerlof, 1982; ii) (intrinsic motivation) Ryan et al., 1991 Frey et al. 1997.

4) <u>Minimisation of transaction costs effect</u>:

CSR may be conceived as an optimal strategy which minimises transaction costs with stakeholders and the risk of reputation losses (Freeman 1984). (US corporations paid around 9 billion dollars to investors for financial scandals to avoid courts in 2005)

5) <u>Signaling effect</u>

CSR may be a signal on the (non CSR) quality of the product in a framework of asymmetric information. This signal is particularly important in those industries in which the cost of buying "lemons" is particularly high for consumers (i.e. for health consequences in the food industry, for negative wealth effects in the financial industry)

Our paper provides a new rationale for point 3) showing a new productivity enhancing effect based on the characteristics of firm organization.

Motivation

- When we conceive corporate workforce as being composed by self interested individuals maximising consumption under standard budget constraints in a framework of asymmetric information with hidden action and moral hazard, it becomes hard to explain why contemporary firms invest money to increase the quality of relationships among workers inside and outside the workplace and why tournament incentives or individual pay for performance schemes are not one of the main rewarding schemes used to enhance productive incentives.

Some puzzles

- why pay for performance schemes are relatively less and team compensation schemes are relatively more widespread than expected (Baker, Jensen and Murphy, 1988; Baker, Gibbons and Murphy (2002)

- why firms spend money for corporate recreational activities by paying, for instance, group weekend holidays to their high skilled workers.

- Why firms use to hire teams

Our response to the puzzle

- an essential trait of contemporary firms is that their activity crucially depends on the realisation of complex tasks which require the combination of nonoverlapping skills of several workers and possess the intrinsic characteristics of trust games with superadditivity;

- individuals have relational preferences (i.e. a taste for quality of relationships) with working colleagues.

- *AS A RESULT......*

- *The conception of firm activity as a series of trust games in which different tasks and information from various individuals are combined may be, under reasonable parametric assumptions, a sufficient condition for determining the relative inconvenience of single winner tournaments schemes even without considering the crowding out effect on intrinsic motivations and, therefore, purely on extrinsic motivation grounds. We also show that the presence of relational goods introduces a specific crowding out effect of pay for performance schemes on cooperation.*

The relevance of relational goods in the workplace
(twin paper available)

We extract a sample of 82 countries from the World Value Survey and estimate the following ordered logit model to evaluate the impact of different determinants of self declared happiness

$$Happy_i = \alpha_0 + \alpha_1 Eqincome + \alpha_2 [Eqincome]^2 + \alpha_3 Male + \alpha_4 Mideduc + \alpha_4 Upeduc + \alpha_5 Age + \alpha_6 [Age]^2 +$$

$$\alpha_7 Unempl + \alpha_8 Selfempl + \sum_{k=1}^{5} \vartheta_k Timeforrel_k + \sum_{j=1}^{9} \beta_j Drelincome_j + \sum_{i=1}^{n} \gamma_i Marstatus_i + \sum_{l=1}^{m} \delta_l Dcountry_l$$

Comp. Averleisuredue	Male	Female	Hi-oecd	NoHi-oecd	European Union
Timefriends	0.052**	0.053**	0.162**	0.042**	0.056
	[0.023]	[0.021]	[0.048]	[0.016]	[0.113]
Timejobfriends	0.047**	-0.009	0.07**	0.013	0.169**
	[0.016]	[0.016]	[0.032]	[0.012]	[0.077]
Timefamily	0.055**	0.055	0.08**	0.051**	0.055
	[0.022]	[0.022]	[0.039]	[0.017]	[0.113]
Timerelig	0.138**	0.113**	0.155**	0.107**	0.135
	[0.017]	[0.016]	[0.031]	[0.012]	[0.078]
Timesportfriends	0.065**	0.058	0.088**	0.057**	0.14
	[0.017]	[0.019]	[0.03]	[0.014]	[0.078]

Table A1. The effect of relational time on happiness

Innovative elements of the paper

- introduction of relational preferences which are closely related to, but also represent a slight departure from the more traditional and established field of studies on reciprocity (Fehr, Gächter and Kirchsteiger, 1997; Fehr and Gächter, 2000; Bewley, 1995) while being close to the relational good approach Uhlaner (1989) and Gui (2000) Ash, 2000) and Frey (1997) [more personal relationships imply recognition, trust and loyalty which support intrinsic motivation]

- an original virtuous relationship between relational goods and productivity is carefully explained. *In the trust game framework the relational good increases the penalty for a noncooperative attitude (represented by the loss of the accumulated relational stock) and therefore reduces the parametric space of noncooperative equilibria which are supboptimal on the productive point of view*. We therefore identify a positive nexus which goes from the quality of workers relationships to the willingness to share information and cooperate and from the willingness to cooperate to firm productivity.

- Application of the standard trust game approach to the literature of the organisation of the firm.

- Original explanation of the less than expected use of pay for performance schemes. Rationales in the literature: Deci and Ryan (1985) identify a trade-off between monetary compensation and "intrinsic rewards", Slater (1980) argues that money as a motivator has negative effects on product quality. Kohn (1988) argues that monetary rewards "encourage people to focus narrowly on a task, to do it as quickly as possible, and to take few risks." Other potential explanations for this puzzle are horizontal equity concerns, and imperfect performance measurement.

Evidence that we are moving toward "the trust game corporation"

- When we depart from the assembly line perspective and move toward a firm in which workers skills are fundamental to create value and innovate products and processes, corporate activity becomes more complex and requires the sharing and interaction of different nonoverlapping competencies and information.

- Thompson and Wallace (1996) argue that, with the development of lean production and other forms of work organization under advanced manufacturing, teamworking has emerged as a central focus of redesigning production. Katz and Rosemberg (2004) argue that that the productivity of an organization crucially depends on cooperation between workers and highlight the importance of altruistic and cooperative attributes in workers emphasized by the organizational theory (see, for example, Smith et al. (1983), Organ (1988), Organ and Ryan (1995), McNeely and Meglino (1994), Penner et al, (1997) and Podsakoff and Mackenzie (1993)).

Model assumptions

Any complex task consists of a trust game between two firm employees, players A and B, endowed with personal skills (stand alone contributions to final output) that we term, respectively, as $h_{a \in} R^+$ and $h_{b \in} R^+$. The trust game is a sequential game in which one of the two players (player A, the trustor) may decide whether sharing or not skills with the other player. In the second stage of the game the second player (player B, the trustee) may decide to cooperate or abuse.

Sharing ideas, projects, intuitions creates a positive esternality - that we introduce in the model as a superadditive component ($e_{\in} [0,.]$) - generated by the dialogical process of jointly performing the task and by the initial sharing of knowledge.

Dialogue, interaction and information sharing is indispensable to the act of cognition which improves productive knowledge. In particular, superadditivity implies that i) part of productive skills may be acquired only by integrating experiences of different people ii) learning is a process which can be enhanced by explaining and confronting one's own knowledge with that of a workmate.
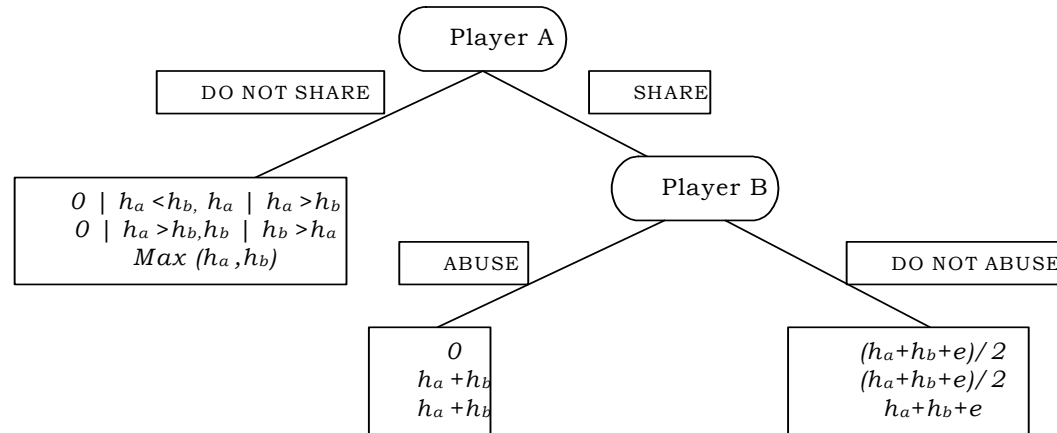
Other assumptions.

some authority external to the two players will pick up the best individual blueprint.We may imagine that, in a competition for a project, the two players, when not agreeing to cooperate, decide to participate separately to the competition.

The two players competencies and skills do not overlap.

The trustee has sufficient skills to be able to manage the contribution provided by the trustor and therefore to abuse of it.

FIGURE 1 THE UNIPERIODAL FULL INFORMATION GAME

Player A

DO NOT SHARE   SHARE

$0 \mid h_a < h_b, \; h_a \mid h_a > h_b$
$0 \mid h_a > h_b, h_b \mid h_b > h_a$
$Max \; (h_a , h_b)$

Player B

ABUSE   DO NOT ABUSE

0
$h_a + h_b$
$h_a + h_b$

$(h_a + h_b + e)/2$
$(h_a + h_b + e)/2$
$h_a + h_b + e$

Proposition 1. The non sharing solution yielding a suboptimal firm output is the SPNE of the uniperiodal full information game when i) the trustor has higher stand alone contribution to output than the trustee and ii) the superadditive component is inferior to the sum of trustee and trustor stand alone contributions.

Under $h_a > h_b$
Under the "abuse condition" $e < (h_a + h_b)$ the trustee will abuse if the trustor shares. Hence the optimal choice of the trustor is not to share.

Under $h_b > h_a$,
The trustor is indifferent between sharing or not when the abuse condition is met. He will share if the abuse condition is not met.

Efficiency paradox
the SPNE yields a firm output - *Max (h_a, h_b)* – which is lower than the one achievable under cooperation *($h_a + h_b + e$)*, and even lower than that obtainable under the (share,abuse) pair of strategies

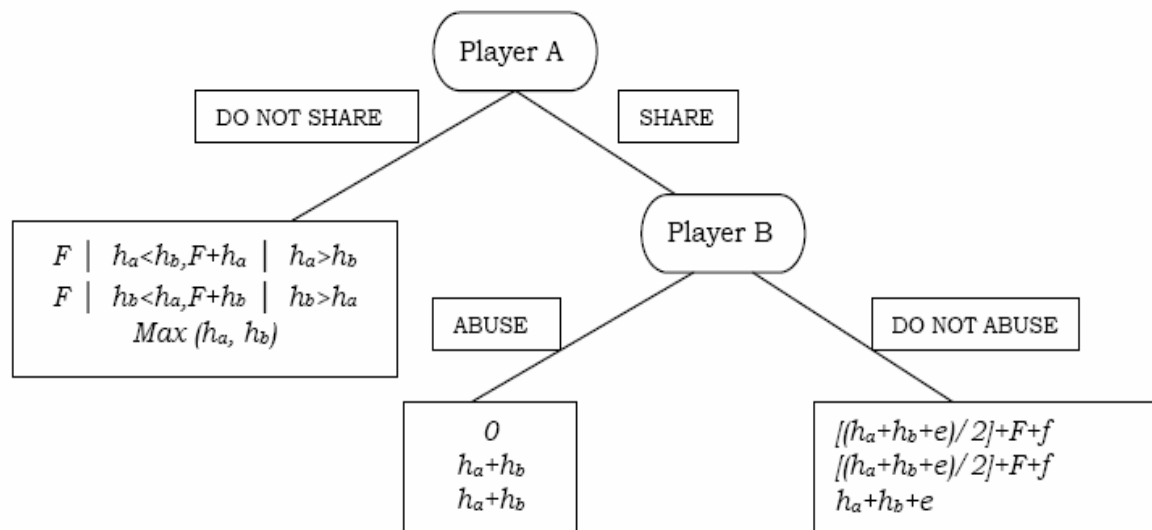Two consequences of the SPNE of the game which are intuitively reasonable are that:

i) the trustor's propensity to share crucially depends on the knowledge that his stand alone contribution to output is lower than that of the trustee;

ii) the likelihood of the occurrence of the (the share, not abuse) solution is higher when the two players stand alone contributions are small with respect to the output they can generate by applying together to the problem (i.e. complex rules of the task that need to be interpreted with the skills of both).
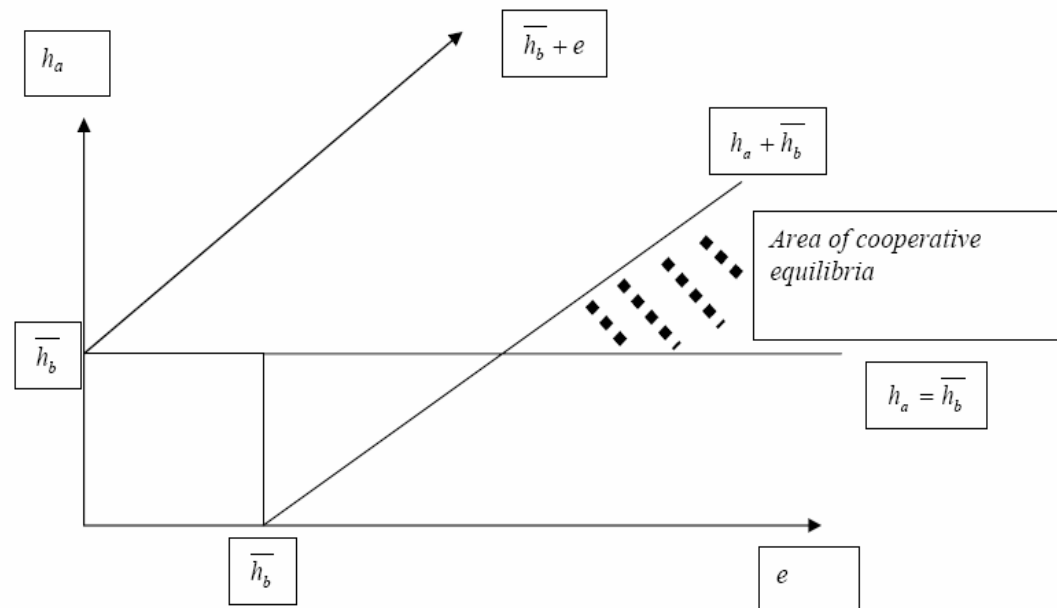
GRAPHIC 2. A GRAPHICAL DESCRIPTION OF PLAYERS' PAYOFFS IN THE UNIPERIODAL FULL INFORMATION GAME WITH RELATIONAL GOODS (FOR A GIVEN h_b LEVEL)

FIGURE 2 THE UNIPERIODAL FULL INFORMATION GAME WITH RELATIONAL GOODS

Player A

DO NOT SHARE   SHARE

$$F \mid h_a < h_b, F + h_a \mid h_a > h_b$$
$$F \mid h_b < h_a, F + h_b \mid h_b > h_a$$
$$Max\ (h_a, h_b)$$

Player B

ABUSE   DO NOT ABUSE

$$0$$
$$h_a + h_b$$
$$h_a + h_b$$

$$[(h_a + h_b + e)/2] + F + f$$
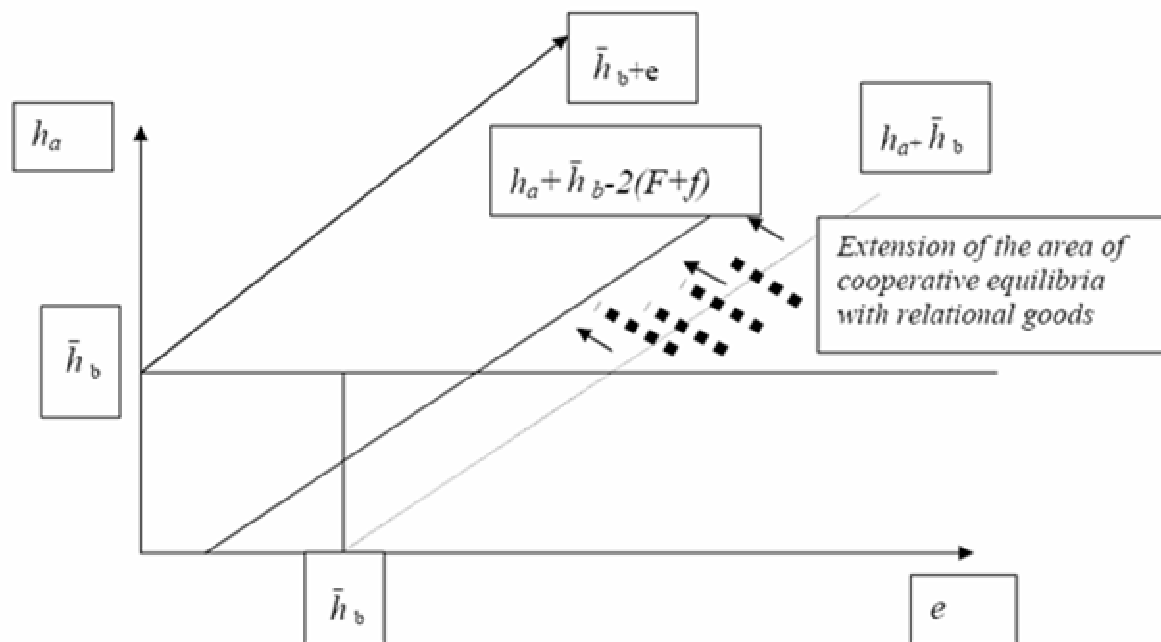$$[(h_a + h_b + e)/2] + F + f$$
$$h_a + h_b + e$$

Proposition 2: In the uniperiodal full information game there exists a threshold value of the relational good in the trustee's utility function (f*) which triggers the switch from the non cooperative to the cooperative (share, not abuse) equilibrium.

New *abuse condition* in presence of value of relational goods $h_a+h_b>e+2(F+f)$

We may identify a threshold f* of the value of the relational goods for the trustee above which the (share,not abuse) couple of strategies becomes the SPNE of the single period full information game. Such threshold is equal to $f^*=-F+(h_a+h_b-e)/2$.
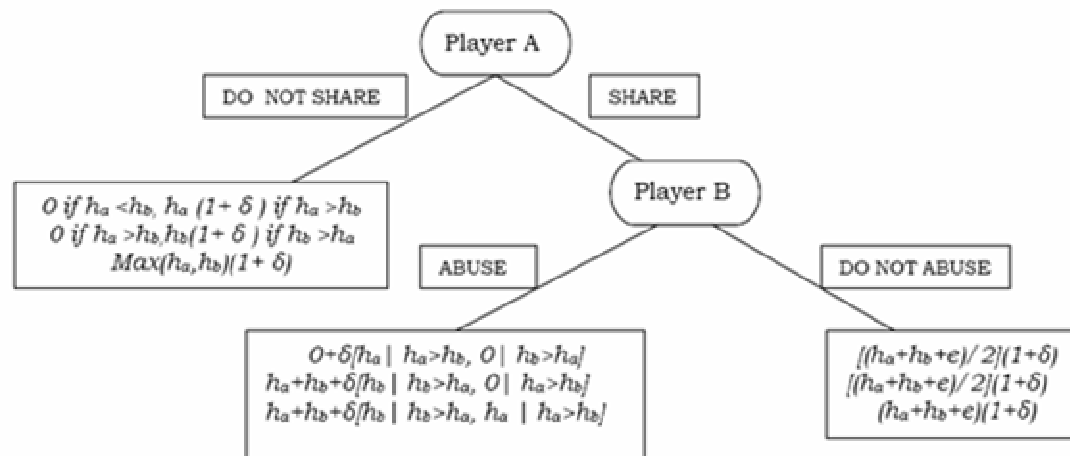
The introduction of relational goods therefore identifies a virtuous circle among quality of workers relationship, decision to cooperate (which further increases the quality of relationships) and firm productivity, or among relational goods, social capital (under the form of trust) and firm productivity.

GRAPHIC 2. A GRAPHICAL DESCRIPTION OF PLAYERS' PAYOFFS IN THE UNIPERIODAL FULL INFORMATION GAME WITH RELATIONAL GOODS (FOR A GIVEN h_b LEVEL)

h_a

$\bar{h}_b + e$

$h_a + \bar{h}_b - 2(F+f)$

$h_a - \bar{h}_b$

Extension of the area of cooperative equilibria with relational goods

$\bar{h}_b$

$\bar{h}_b$

e

The two period full information trust game when the players own the firm.

FIGURE 3 THE TWO PERIOD FULL INFORMATION GAME

Player A

DO NOT SHARE   SHARE

0 if $h_a < h_b$, $h_a (1+\delta)$ if $h_a > h_b$
0 if $h_a > h_b$, $h_b(1+\delta)$ if $h_b > h_a$
$Max(h_a,h_b)/(1+\delta)$

Player B

ABUSE   DO NOT ABUSE

$0+\delta[h_a \mid h_a > h_b, \ 0 \mid h_b > h_a]$
$h_a+h_b+\delta[h_b \mid h_b > h_a, \ 0 \mid h_a > h_b]$
$h_a+h_b+\delta[h_b \mid h_b > h_a, \ h_a \mid h_a > h_b]$

$[(h_a+h_b+e)/2](1+\delta)$
$[(h_a+h_b+e)/2](1+\delta)$
$(h_a+h_b+e)(1+\delta)$

Proposition 3: in the two period full information game the no abuse condition is less binding, but the trustor's threat is not renegotiation proof.

Under the ha > hb hypothesis

the no abuse condition in the first period is $e > (h_a + h_b)[(1 - \delta)/(1 + \delta)]$, or, $\delta > (h_a + h_b - e)/(h_a + h_b + e)$. The condition may be met for reasonable values of $\delta \in [0, 1]$, e and players stand alone contributions. More specifically, with minimum patience, $(\delta = 0)$, we fall back into the no abuse condition of the uniperiodal game $e > h_a + h_b$ while, with maximum patience $(\delta = 1)$, the no abuse condition is much easier to be respected as it just requires a nonzero superadditive component $(e > 0)$. If, on the contrary, $h_a < h_b{}^{23}$, the no abuse condition is $e > h_b + h_a[(1 - \delta)/(1 + \delta)]$.

Again, with minimum patience $(\delta = 0)$, we fall back into the no abuse condition of the uniperiodal game $e > h_a + h_b$ while, with maximum patience $(\delta = 1)$, the no abuse condition reduces to $(e > h_b)^{24}$ (see Figure 3).

Even if the no abuse condition is respected this solution is not renegotiation proof. In fact, the punishment strategy costs in the second period to the trustor $(h_a + h_b + e)/2$, if $h_a < h_b$, and $(h_a + h_b + e)/2 - h_a$, if $h_a > h_b$. Hence, the trustee may propose, after abusing in the first period, a preliminary side payment - in case the trustor decides to share - of ε, when $h_b a < h_b$, or $h_a + \varepsilon$, when $h_a > h_b$. The trustor should strictly prefer the new proposal which may be repeated an infinite number of times after any abuse by the trustee. Hence, the new no abuse condition will be $e > h_a + h_b - \delta\varepsilon/(1 + \delta)$, when $h_a < h_b$, and $e > h_a + h_b - \delta(h_a + \varepsilon)/(1 + \delta)$, when $h_a > h_b$. Renegotiation therefore reduces significantly the parametric space of the no abuse condition. $\square$

The full information infinitely repeated game

Proposition 4: In the full information infinitely repeated trust game, the (share, no abuse) equilibrium may be applied without the need of relational goods for reasonable discount rates, but it may never hold, under given parametric conditions, when the trustee stand alone contribution is higher than that of the trustor. Even when the (share, not abuse) equilibrium applies, it is nonetheless based on a trustor threat which is not renegotiation proof.

Folk Theorem applies to the infinitely repeated game if there exists a $\delta \varepsilon [0,1]$ such that the (share, not abuse) equilibrium is enforceable.

By applying it to our model we get $(1- \tilde{\delta})(h_a+h_b)= (h_a+h_b+e)/2$, if $h_a>h_b$, and $(1-\tilde{\delta})(h_a+h_b)+ \tilde{\delta} h_b = (h_a+h_b+e)/2$, if $h_b>h_a$.

In both cases we may find a $\tilde{\delta}$? 1 such that the equality is met.

The renegotiation argument applies also here.

Imperfect information

Informational asymmetry in the corporate trust game is related to two different aspects: i) the relational attitude of the other player, that is, the presence in his utility function of a positive argument related to the cooperation with his colleague; ii) the stand alone contribution to output of the other player. In this version of the model we deal with the first type of imperfect information.

Case i) each player attaches a probability p to the likelihood that his counterpart gives a value f to the relational good

Case ii) player A assigns a subjective probability p_1 $(p_1 \in [0,1])$ to the $h_a > h_b$ hypothesis, while player B a subjective probability p_2 $(p_2 \in [0,1])$ to the alternative $h_b > h_a$ hypothesis

FIGURE 5 THE UNIPERIODAL FULL INFORMATION GAME UNDER IMPERFECT INFORMATION ON TRUSTEE RELATIONAL PREFERENCES
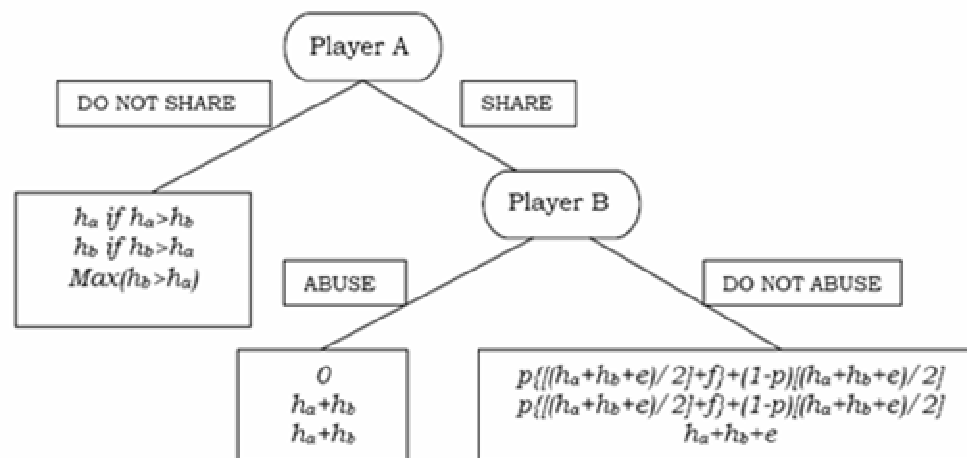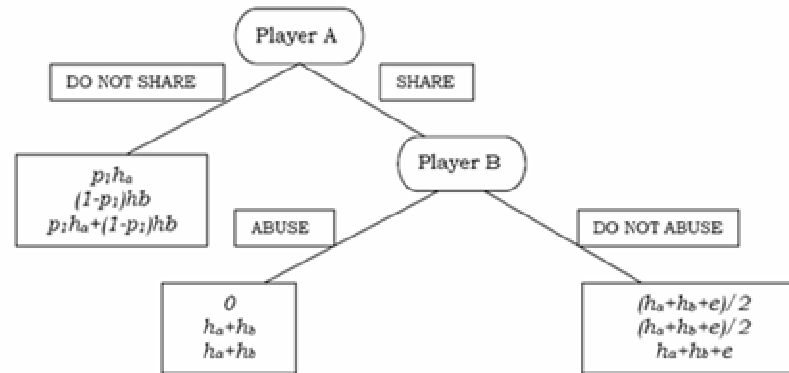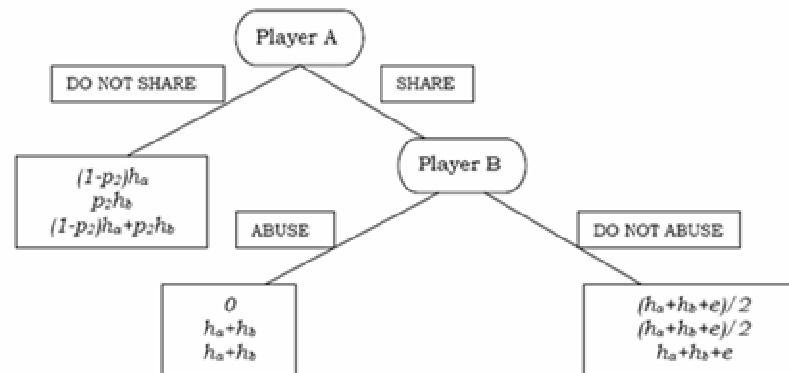
FIGURE 6 THE UNIPERIODAL FULL INFORMATION GAME UNDER IMPERFECT INFORMATION ON PLAYERS STAND ALONE CONTRIBUTIONS

Player A`s point of view

Player B`s point of view

Proposition 5: the trustor imperfect information about the trustee's relational preferences raises the threshold value of the relational good required to ensure the (share, not abuse) equilibrium

Proposition 6: in presence of imperfect information on the other player's stand alone contribution, the "non sharing" solution yielding a suboptimal firm output is the SPNE of the uniperiodal full information game when the superadditive component is inferior to the sum of the trustee and trustor stand alone contributions to output. (The no abuse condition is unaltered with respect to the full information model but the superiority of the trustee stand alone contribution is no more required for the unicity of the (ns,.) equilibrium).

Intuition: the no abuse condition compares two trustee's payoffs (conditional to the abuse and not abuse strategies respectively) under the assumption that the trustor has decided to share information. In both cases the trustee payoff includes the sum of the two players contributions and therefore the relative superiority of one or another stand alone contribution does not matter. For the second part of the proposition consider that, with $p_1 > 0$, when the no abuse condition is not met, the trustor will always choose the (ns,.) equilibrium.

5. Basic Trust Game when Players do not own the Company

5.1 Pay for performance schemes

A fixed remuneration (w_a for player A, and w_b for player B) plus an additional share $s \in [0,1]$ of the employee's performance when it contributes to firm output.

Proposition 7: individual pay for performance schemes are neutral in corporate trust games in which players do not own the firm, as they do not help to widen the parametric space of the cooperative equilibrium. In presence of relational goods <u>pay for performance schemes crowd out cooperation</u> since a steeper pay for performance scheme triggers the switch from a cooperative (productively optimal) to a non cooperative (productively suboptimal) equilibrium. Hence, pay for performance schemes crowd out cooperation.
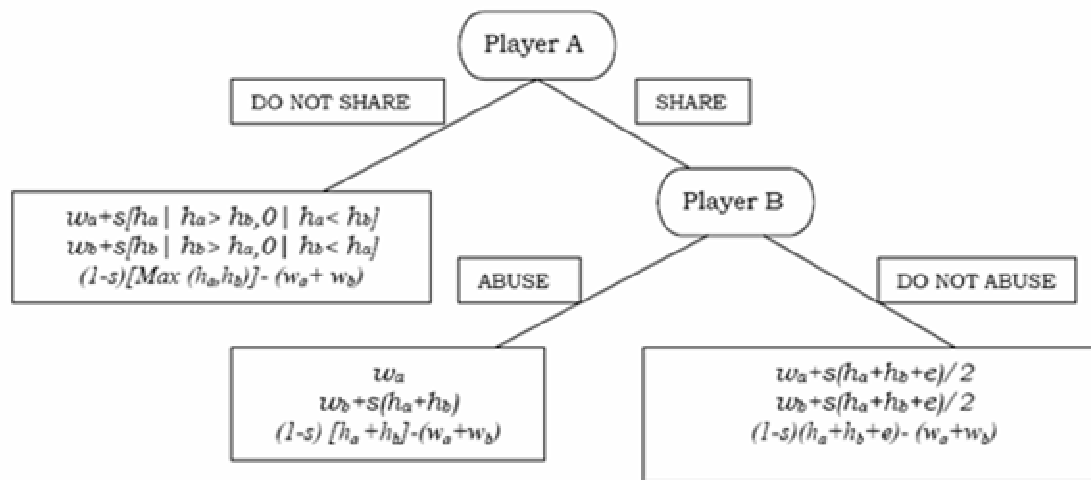
FIGURE 7: THE UNIPERIODAL FULL INFORMATION GAME

Player A

DO NOT SHARE   SHARE

$w_a+s[h_a \mid h_a > h_b, 0 \mid h_a < h_b]$
$w_b+s[h_b \mid h_b > h_a, 0 \mid h_b < h_a]$
$(1-s)[Max (h_a, h_b)] - (w_a + w_b)$

Player B

ABUSE   DO NOT ABUSE

w_a
$w_b+s(h_a+h_b)$
$(1-s)[h_a+h_b]-(w_a+w_b)$

$w_a+s(h_a+h_b+e)/2$
$w_b+s(h_a+h_b+e)/2$
$(1-s)(h_a+h_b+e)-(w_a+w_b)$

FIGURE 8: THE UNIPERIODAL FULL INFORMATION GAME WITH RELATIONAL GOODS AND PAY FOR PERFORMANCE SCHEMES

Player A

DO NOT SHARE   SHARE

$F+w_a+s[h_a \mid h_a > h_b, 0 \mid h_a < h_b]$
$F+w_b+s[h_b \mid h_b > h_a, 0 \mid h_b < h_a]$
$(1-s)[Max\ (h_a, h_b)] - (w_a + w_b)$

Player B

ABUSE   DO NOT ABUSE

w_a
$w_b+s(h_a+h_b)$
$(1-s)\ [h_a +h_b]-(w_a+w_b)$

$F+f+w_a+s(h_a+h_b+e)/2$
$F+f+w_b+s(h_a+h_b+e)/2$
$(1-s)(h_a+h_b+e)- (w_a+w_b)$
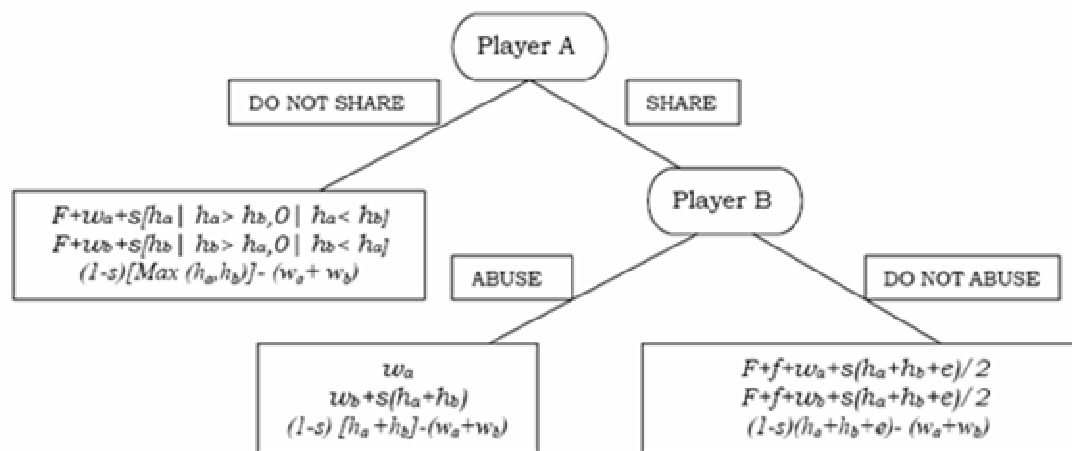
The "no abuse condition" in this case is $e > (h_a + h_b) - 2(F+f)/s$

With s=1, we revert to the situation in which players own the company but, as far as s gets lower (and the pay for performance scheme gets flatter), the effect that preferences and enyojment of relational goods have on making the no abuse condition easier to be met will be enhanced.

This result means that a steeper reward scheme *s* may trigger the switch from the coperative (s,na) to the non cooperative solutions of the game. The intuition is that (s) becomes the relative price of the relational goods in terms of missed outperformance arising from the abuse strategy and this relative price rises as far as the share gets higher. *By considering relational goods as the input of trust and reciprocity we hence show, given the simple structure of corporate trust games, how pay for performance shemes crowd out quality of relationship and trust.* This result provides a simple rationale to the puzzle evidenced, among others, by Baker, Jensen and Murphy (1998) on the relatively low use of individual pay for performance schemes in personnel management.

5.2 Firms with a vertical hierarchical structure

Remuneration schemes in firms with hierarchical structure also depend on the job levels and changes in employee's compensation may be obtained through a promotion. As pointed out by Baker, Jansen and Murphy (1998), promotions have two different purposes: i) they are a way to match individuals to the job for wich they are best suited and ii) they provide incentives for lower level employees that evaluate the opportunity to increase their wage and job position obtaining a better one.

Tournament promotion system, in which the best performer is promoted to the next higher career level.

If the (s,na) equilibrium applies, the winner is randomly selected and each of the two players has a 50 percent chance of getting the promotion.

Proposition 9: with an individual winner tournament structure the no abuse condition never applies.

The no-abuse condition is $(w_b + PR/2) > (w_b + PR)$ and can never hold.

The no abuse condition may therefore be met in presence of players taste for relational goods. This is because, even if an employee will not receive with certainty a promotion when he chooses to cooperate (the probability is 0.5), he may prefer to behave cooperatively if his taste for relational goods is strong enough.

Conclusions and implication for CSR policies

- Microeconomic nexus between social capital and creation of economic value at the firm level.
- Explanation of why individual pay for performance schemes may, under reasonable parametric assumptions, crowd out social capital and cooperation justifying their lower than expected application in the reality.
- Explanation on why single winner tournament schemes are seldom implemented by corporations showing how they crowd out information sharing and leading to suboptimal output even without taking into account workers intrinsic motivations.
- Taste for relational goods significantly affects workers cooperation which, in turn, positively affects firm productivity.
- As expected, our results are much stronger in single period than in repeated games but also in the latter our conclusions hold for relevant parametric spaces and, in those cases in which cooperative equilibria may be attained on the basis of the Folk Theorem, we show that such equilibria are not renegotiation proof.
- **CSR policies which aim at improving working environment and investing on workers relational goods may create a virtuous circle between CSR and performance**