Organizational Governance: Alternative Models and Some Considerations for Ethics in Organizations

Maria Alessandra Antonelli
School of Law
Sapienza University of Rome
Italy

Abstract

This paper reviews and discusses alternative models of organizational governance. To this purpose we follow the Milgrom's model (1988) defining a principal-agent framework where the principal can implement a decision according two possible alternative methods: the application of rules or the managerial discretion. The paper points out that managerial discretion always result in improved firm's performance with a principal complying with the organizational goals. Nevertheless, some reforms, especially in the public organizations, have been addressed to limit managerial discretion introducing more rules to template the managers' behavior. Disappointing results for some national reforms suggest-as policy implication- to invest in a greater development of ethical culture within organizations.

Keywords: organizations, influence activities, managerial discretion, principal-agent

JEL classification codes: D23; L2

1. Introduction

The decision-making structure of an organization defines how it organizes its authority. This authority tends to be more or less centralized according to the "hierarchical" dimension of the organization. Centralized decision structures mainly characterize vertical organizations where important decisions are taken at a high level and permeate down through several channels until they reach the lower end of the hierarchy. Decentralized decision-making structures are a characteristic of flat organizations with few hierarchical levels. Such organizations are noted for their philosophies of employee empowerment and individual autonomy. In both cases, two different decision-making approaches are possible: decisions taken by the application of automatic rules (for instance promotion by age or equal distribution of financial resources) and decisions based on managerial discretion.

In the first case, rules and procedures represent a template for the managers' behavior to avoid choices totally inconsistent with the organizations' goals.

In general, rules and procedures are widely used within public bureaucracies. However, when the bureaucratic activity is driven largely by rules, red tape can impose negative effects on citizens' welfare.

On the contrary, decisional discretion can give more flexibility to the organization, making it more responsive to changes or to unexpected states not regulated by the procedures.

In this economic debate, Milgrom (1988) and Milgrom and Roberts (1992, 2009) have pointed the benefits and the costs of discretion within organizations when some decisions have distributive effects among the working agents (promotion to a key role, distribution of funds among offices, etc.).

It is well known (Milgrom 1988) that when organizational decisions with distributive effects are discretionary, the agents working in the organization will undertake "influence activities" to obtain the benefits of the decision. To this purpose, they invest resources, such as working time, at the expense of productive activities.

Nevertheless, when distributive benefits are endogenous,- i.e., the premium assigned is calculated as a part of total organizational output,- influence activities are self-limited (Antonelli 2003).

This paper analyzes from a cost-benefit perspective, the effects of decisional discretion on organizational efficiency, considering a principal-agent relationship, where the principal's decisions concern the distribution of an exogenous premium to an agent. The case of exogenous premium is considered in Milgrom (1988). In particular, Milgrom considers the case of a benevolent principal, maximizing a social objective function given by a weighted combination of the firm's profit and the employee's utility. The overall goal of the principal is to limit influence activities, thus enforcing productive activities, since high productivity increases the probability to obtain an extra profit for the organization. Milgrom's model shows that, under some conditions, it is efficient for the organization to eliminate managerial discretion rather than to provide incentives to limit the influence activities.

Following the Milgrom's model (1988), this paper defines a basic framework characterized by the following two points: first, we consider a self-interested principal maximizing the profit and, second, the extra profit for the organization does not depend on the productivity of the agents but from the "fairness" of the principal's decision. Considering a decision-maker complying with the institutional goals, the analysis shows that managerial discretion always results in improved organization's performance.

The paper is structured as follows. Sections 1-5 propose a simple principal-agent model incorporating the informative effects of influence activities. Section 6 points out a comparative analysis of alternative decision-making processes: the application of rules versus decisional discretion. Section 7 draws some conclusions and policy implications.

2. The Production Function

We consider a stochastic production function, dependent on one input (time devoted to labor) and a random variable. The relationship between input and output is represented by $x_i = x(t_i, \varepsilon)$ where:

- x_i is the monetary value of the output (price is set equal to one) produced by the agent *i*,
- $t_i \in [0;T]$ is the time that the agent devotes to its productive activity within the organization, i.e., the "productive" time and T is the total available time,
- ε is a random variable with density function $f(\varepsilon)$ inducing a probability distribution on x_i. Therefore, x_i is a random variable $\in [0, \bar{x}]$ with density function $p(t_i, x_i) > 0 \quad \forall t_i \in [0;T]$. For the cumulative distribution $P(t_i, x_i)$, the standard characteristics of cumulative distributions hold: $P(t_i, 0) = 0$ and $P(t_i, \bar{x}) = 1$.

We pose the following additional assumption[1]:

A1. $P'_{t_i}(t_i, x_i) < 0$ and $P''_{t_i}(t_i, x_i) > 0$

Assumption 1 means that the cumulative distribution is a decreasing and convex function with respect to t_i. We are assuming that as the productive time (t_i) increases, the probability for the output to take values smaller than or equal to a given x_i decreases (i.e., the probability that the output is greater than a given x_i increases) more than proportionally.

The expected production value of n agents is:

$$nE(x_i) = n\int_0^{\bar{x}} x_i \, p(t_i, x_i) dx_i$$

3. Managerial Decisions and Organizational Efficiency

We summarize the fairness of managerial decisions with the parameter π_0, representing the additional profit earned by the organization when managerial decisions implement an efficient allocation of organizational resources. In a symmetrical way, the organization will have a loss equal to $-\pi_0$ when an inefficient allocation of resources is realized within the organization. The value of π_0 (or $-\pi_0$) not only depends on the productive activity of the agents but also on the fairness of the managerial decisions.
Two possible decisional processes are considered.

[1] Assumption 1 is a standard assumption of principal-agent models with continuous variables and first-order approach.

3.1 Rules

When the decision-maker has to implement an organizational distribution policy following given, fixed rules (e.g. promotion by age), the probability to implement a right decision (providing an additional profit equal to π_0) is exogenous, and equal to *d*. The probability that the managerial decision negatively affects organizational performance, - with a decrease in profit equal to $-\pi_0$ -, is equal to $(1-d)$.

Therefore, the expected additional profit stemming from a rigid bureaucratic decision- making process is $E(\pi_0) = d\pi_0 + (1-d)(-\pi_0) = (2d-1)\pi_0$

3.2 Discretionary Decision-Making Process

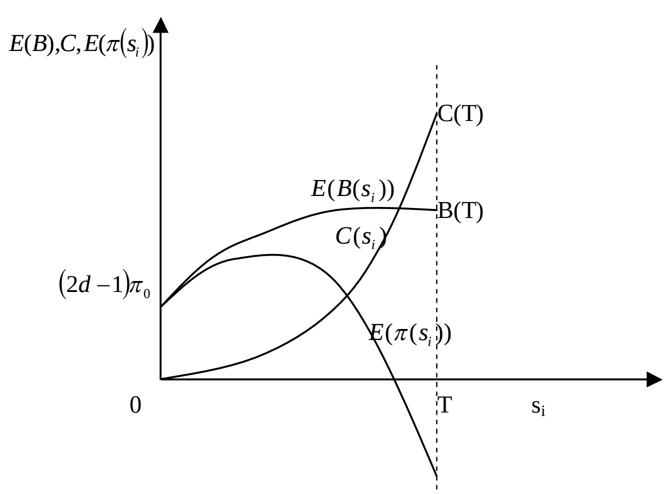
When decision-making is discretionary, the agents working in the organization invest their working time to gather and disseminate information for decision-makers such that the agent might obtain a favorable decision (in terms of promotions, monetary resources, prestigious assignment, etc.). These types of activities are called "influence activities" (Milgrom, 1988). We consider a positive correlation between time devoted to influence activities and information passed down to the decision-maker so that as the time devoted to influence activities (s_i) increases, the information available to the decisional authority also increases. The probability of a positive impact of the decision on organizational performance (in terms of additional profit π_0) is an increasing (and concave) function with respect to the time devoted to the influence activities: $p(s_i)$. For the organization, the expected gain stemming from additional information provided by influence activities of the agent *i* is:

$$E(B(s_i)) = \pi_0 p(s_i) \quad \text{with} \quad \frac{dE(B(s_i))}{ds_i} > 0 \ ; \ \frac{d^2E(B(s_i))}{ds^2{}_i} < 0 \quad \text{and} \quad E(B(0)) = (2d-1)\pi_0 .$$

The last condition simply means that without additional information $(s_i = 0)$, managerial decisions follow the application of rules. To simplify the analysis, we assume that information is verifiable at a given cost. The benefits of information have to be compared with the costs to verify that information. These costs are an increasing and convex function of the influence activity $C(s_i)$ with $C(0) = 0, C'_{s_i} > 0, C''_{s_i} > 0 \ \ \forall i$ and $C(T) > B(T)$[2].

Graphically (assuming $d > \frac{1}{2}$ implying $(2d-1) > 0$)[3] we have:

Fig. 1: The Informative Profit



[2] This condition assures that the cost and benefit functions intersect in $[0;T]$. In the contrary case, no trade-off between productive and influence activities exists for the principal.

[3] For low values of *d* $\left(d < \frac{1}{2}\right)$, such as (2*d*-1)<0, the vertical intercept for the informative profit is negative.

The total expected informative profit (considering n agents) is $nE(\pi(s_i)) = n[\pi_0 p(s_i) - C(s_i)]$

4. The Agent's Problem

As in Milgrom (1988), the agent has to decide on the allocation of their available time T between time (t_i), devoted to the productive activity, and time $(s_i = T - t_i)$, devoted to the influence activity.

Influence activity implies benefits and costs for the agents. As the influence activity increases, the probability to have a favorable decision for the agent also increases. To simplify the analytical framework of the model, we identify the "favorable decision for the agent" with an exogenous monetary benefit equal to *k*. In addition, the probability to have this distributive advantage deriving from a favorable decision is a linear increasing function with respect to s_i:

$f(s_i) = a_i + bs_i$ or $f(T - t_i) = a_i + b(T - t_i)$

where a_i is a given exogenous probability for the agent *i* of a favorable decision when he does not engage in influence activities (s_i=0). The parameter *b* represents the expected marginal benefit of influence activities for the agent.

Nevertheless, influence activity implies costs for the agent. The time devoted to the organizational activities (productive as well as influence activities) produces disutility summarized by the following function:

$C(t_i + s_i) = C(t_i + T - t_i) = C(T)$.

Moreover, the wage of the agent is a function of the output, which is directly correlated to the productive time of the agent (and inversely correlated to the unproductive time devoted to the influence activities). The agent's utility function is the following increasing, concave and smooth function:

$u(w(x(t_i)))$ with $u'_w > 0$, $u''_w < 0$.

In conclusion, the agent's total expected net utility is given by:

$$E(U_i) = E(u(w_i)) + f(T - t_i)k - C(T) = \int_0^{\bar{x}} u(w(x_i))p(t_i, x_i)dx_i + f(T - t_i)k - C(T) \qquad (1)$$

and the agent's problem is:

$$\max_{t_i} E(U_i)$$

subject to:

$$t_i \in [0, T]$$

Since the objective function is strictly concave[4] and the constraints are linear, the Kuhn- Tucker conditions are sufficient to identify an optimum.

Forming the Lagrangian function:

$$L = \int_0^{\bar{x}} u(w(x_i))p(t_i, x_i)dx_i + f(T - t_i)k - C(T) + \mu_1 t_i + \mu_2 (T - t_i)$$

and calculating the first order-conditions, we have:

$$\frac{\partial L}{\partial t_i} = \int_0^{\bar{x}} u(w(x_i))\, p'(t_i, x_i)dx_i - f'_{(T-t_i)}k + \mu_1 - \mu_2 = 0 \qquad (2)$$

$$\frac{\partial L}{\partial \mu_1} = t_i \geq 0 \qquad \mu_1 \frac{\partial L}{\partial \mu_1} = 0 \qquad (3)$$

$$\frac{\partial L}{\partial \mu_2} = T - t_i \geq 0 \qquad \mu_2 \frac{\partial L}{\partial \mu_2} = 0 \qquad (4)$$

[4] See Appendix.

Searching for an interior solution (with $\mu_1 = \mu_2 = 0$), the optimal condition [from Eq. (2)] is:

$$\int_0^{\bar{x}} u(w(x_i))\, p'(t_i, x_i)\, dx_i = f'_{(T-t_i)} k \qquad (5)$$

5. The Optimal Contract

The principal wants to maximize the total expected profit given by the sum of the expected "productive" profit and the expected "informative" profit:

$$E(\Pi_i) = E(\pi(t_i)) + E(\pi(s_i))$$

or, in extensive form:

$$E(\Pi_i) = E(\pi(t_i)) + E(\pi(s_i)) = \int_0^{\bar{x}} [x_i - w(x_i)]\, p(t_i, x_i)\, dx_i + E(\pi(T - t_i))$$

Since the distribution of the time between productive activity and influence activity is unobservable to the principal, the framework defines a moral hazard problem.

The optimal contract defines the values of $t_i, s_i, w(x_i)$, maximizing the profit. The principal solves the following problem:

$$\max_{t_i, s_i, w(x_i)} E(\Pi_i) = \int_0^{\bar{x}} [x_i - w(x_i)]\, p(t_i, x_i)\, dx_i + E(\pi(T - t_i)) - k$$

subject to:

$$\int_0^{\bar{x}} u(w(x_i))\, p(t_i, x_i)\, dx_i + f(T - t_i)k - C(T) \geq \bar{u} \qquad \text{participation constraint}$$

and

$$t_i \in \arg\max \int_0^{\bar{x}} u(w(x_i))\, p(t_i, x_i)\, dx_i + f(T - t_i)k - C(T) \qquad \text{incentive compatibility constraint}$$

The participation constraint assures the acceptance of the contract by the agent, whereas the incentive compatibility constraint enforces the agent to choose the action representing the optimal solution for the principal. Following Grossman and Hart (1983), we solve the problem in two steps.

First of all, we calculate the optimal wage rule $w(\cdot)$, minimizing the principal's expected costs $\forall t_i$ given that the minimization of $E(w(x_i))$ is equivalent to the maximization of - $E(w(x_i))$

$$\max_{w(x_i)} - E(w(x_i)) = -\int_0^{\bar{x}} w(x_i)\, p(t_t, x_i)\, dx_i$$

subject to

$$\int_0^{\bar{x}} u(w(x_i))\, p(t_i, x_i)\, dx_i + f(T - t_i)k - C(T) \geq \bar{u} \qquad \text{participation constraint}$$

and

$$\int_0^{\bar{x}} u(w(x_i))\, p'(t_i, x_i)\, dx_i = f'_{(T-t_i)} k \qquad \text{incentive compatibility constraint}$$

The last condition simply represents the first-order condition of the agent's problem.

The objective function is linear in $w(\cdot)$, whereas the constraints are not linear[5]. We pose $u(w(x_i)) = z_i$ and let $v(\cdot)$ be the inverse function of $u(\cdot)$. This implies that $v(z_i) = w(x_i)$. Since $u(\cdot)$ is concave, the inverse function $v(\cdot)$ is convex.

[5] To solve the problem calculating the first-order conditions of the Lagrangian function, we need a concave objective function and linear constraints.

Therefore, the maximization problem becomes:

$$\max_{z_i} -\int_0^{\bar{x}} v(z_i)p(t_i,x_i)dx_i$$

subject to

$$\int_0^{\bar{x}} z_i p(t_i,x_i)dx_i + f(T-t_i)k - C(T) \geq \bar{u}$$

and

$$\int_0^{\bar{x}} z_i p'(t_i,x_i)dx_i = f'_{(T-t_i)}k$$

Forming the Lagrangian function and calculating the first order conditions, we have:

$$L = -\int_0^{\bar{x}} v(z_i)p(t_i,x_i)dx_i + \hat{\lambda}_1\left[\int_0^{\bar{x}} z_i p(t_i,x_i)dx_i + f(T-t_i)k - C(T) - \bar{u}\right] + \hat{\lambda}_2\left[\int_0^{\bar{x}} z_i p'(t_i,x_i)dx_i - f'_{(T-t_i)}k\right]$$

$$\frac{\partial L}{\partial z_i} = -v_i'(z_i)p(t_i,x_i) + \hat{\lambda}_1 p(t_i,x_i) + \hat{\lambda}_2 p'(t_i,x_i) = 0 \qquad (6)$$

$$\frac{\partial L}{\partial \hat{\lambda}_1} = \int_0^{\bar{x}} z_i p(t_i,x_i)dx_i + f(T-t_i)k - C(T) \geq \bar{u} \qquad \hat{\lambda}_1 \frac{\partial L}{\partial \hat{\lambda}_1} = 0 \qquad (7)$$

$$\frac{\partial L}{\partial \hat{\lambda}_2} = \int_0^{\bar{x}} z_i p'(t_i,x_i)dx_i - f'_{(T-t_i)}k = 0 \qquad (8)$$

From (6) we have:

$$v_i'(z_i) = \hat{\lambda}_1 + \hat{\lambda}_2 \frac{p'(t_i,x_i)}{p(t_i,x_i)}$$

which can be rewritten[6] as:

$$u'(w_i) = \frac{1}{\hat{\lambda}_1 + \hat{\lambda}_2 \dfrac{p'(t_i,x_i)}{p(t_i,x_i)}} \qquad (9)$$

The previous expression represents the agent's remuneration rule $\tilde{w}$, minimizing the principal's costs.

The second step of the principal's problem is to determine the optimal t_i, maximizing the profit. In analytical terms:

$$\max_{t_i} E(\Pi_i) = \int_0^{\bar{x}} [x_i - \tilde{w}(x_i)]p(t_i,x_i)dx_i + E(\pi(T-t_i)) - k \qquad (10)$$

subject to

$t_i \in [0,T]$.

Considering $\tilde{w}' < 1$, the previous problem can be solved with Kuhn-Tucker conditions[7]. Integrating by parts, the profit function can be written as follows:

---

[6] Since $u(w_i) = z_i$ and $v(z_i) = w_i$, we can write: $v'(z_i) = \frac{dw_i}{dz_i} = \frac{dw_i}{du}$

[7] For $\tilde{w}' < 1$, the objective function is strictly concave (see Appendix) and the constraints are linear. The opposite case ($\tilde{w}' > 1$) is not considered because it should be an irrational case for the principal (as the output increases, the agent's wage increases more than proportionally, providing a loss for the principal).

$$E(\Pi_i) = \left[(x_i - \tilde{w}(x_i))P(t_i, x_i)\right]_0^{\bar{x}} - \int_0^{\bar{x}} P(t_i, x_i)(1 - \tilde{w}_i')dx_i + E(\pi(T - t_i)) - k$$

since $P(t_i, \bar{x}) = 1$ and $P(t_i, 0) = 0$, we have:

$$E(\Pi_i) = (\bar{x} - \tilde{w}(\bar{x})) - \int_0^{\bar{x}} P(t_i, x_i)(1 - \tilde{w}_i')dx_i + E(\pi(T - t_i)) - k \qquad (11)$$

Using Equation (11), the Lagrangian function is given by:

$$L = [\bar{x} - \tilde{w}(\bar{x})] - \int_0^{\bar{x}} P(t_i, x_i)(1 - \tilde{w}_i')dx_i + E(\pi(T - t_i)) - k + \gamma_1 t_i + \gamma_2 (T - t_i)$$

The first-order conditions are:

$$\frac{dL}{dt_i} = -\int_0^{\bar{x}} P_{t_i}'(1 - \tilde{w}')dx_i - \frac{dE(\pi(T - t_i))}{d(T - t_i)} + \gamma_1 - \gamma_2 = 0$$

$$\frac{\partial L}{\partial \gamma_1} = t_i \geq 0 \qquad \gamma_1 \frac{\partial L}{\partial \gamma_1} = 0$$

$$\frac{\partial L}{\partial \gamma_2} = T - t_i \geq 0 \qquad \gamma_2 \frac{\partial L}{\partial \gamma_2} = 0$$

The optimal t_i will be an interior solution[8] such that $t^* \in (0, T)$ and $s^* \in (0, T)$ with $(t^* + s^*) = T$.

6. Comparative Results

The economics literature (Milgrom 1988) points out that influence costs can be interpreted as rent seeking costs. When decision-making is based on the application of automatic rules (such as promotion by age), no influence activities take place. The principal offers a contract enforcing the agents to devote all their available working time (T) to formal organizational tasks.

When managerial discretion characterizes the organizational decision-making process, the optimal contract is such that the agents are induced to perform multiple task: a part of their working time $(t_i < T)$ is designated to the productive activity, while the remaining time $(s_i = T - t_i)$ is invested in influence activities providing information to the decision-maker.

Both institutional decision-making frameworks are characterized by benefits and costs from an organizational viewpoint. In general, the productive profit is greater under a rigid bureaucratic organization, where the agents are induced to devote all their available time to the productive activity. Nevertheless, when managerial discretion characterizes organizational decisions, the informative benefits due to the agents' influence activities can be high (with a high extra efficiency gain for the organization), as seen in Table 1.

Table 1: Decision Making Process and Organizational Outcomes

	Expected Productive Profit	Expected Extra Net Gain	Expected Total Profit
Rules	$\pi(T)$	$(2d-1)\pi_0$	$\pi(T) + (2d-1)\pi_0$
Discretion	$\pi(t_i)$	$\pi(s_i)$	$\pi(t_i) + \pi(s_i)$

Considering the two institutional frameworks from a cost-benefit perspective, the expected costs of the managerial discretion (*E(C)*) is summarized by the loss of total expected productive profit (Milgrom 1988), while the expected net benefits (*E(B)*) are represented by the total expected informative benefits due to the influence activities ($nE(\pi(s_i))$).

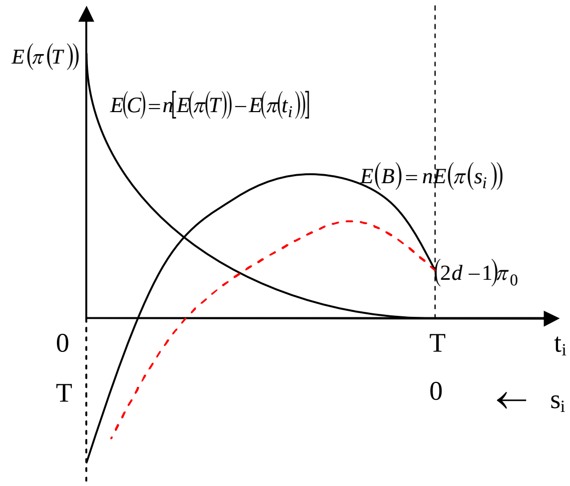
$$\text{E(C)} = n[E(\pi(T)) - E(\pi(t_i))]$$

Graphically[9]

[8] Corner solutions are not feasible since the total profit function is not monotonically increasing (see the Appendix).

[9] The cost function is a decreasing convex function. For $t_i = 0$ we have $E(C) = E(\pi(T)) + (2d-1)\pi_0$, while for $t_i = T$ we have $E(C) = (2d-1)\pi_0$.

Fig. 2: Benefits and Costs of Influence Activities



Basically, the analysis points out that discretion always produces net benefits[10], even when the information value represented by the dotted curve is low[11].

Since the value of information changes depending on the type of decision being made, organizational policy should be characterized by flexibility with respect to the use of authority. Nevertheless, flexibility is only a feasible solution for small organizations, where the agents can rather easily learn about the decisional rule characterizing the organization.

This is a possible motivation for maintaining great steadiness with respect to the decisional rules characterizing the public sector and, as a consequence, one argument in favor of local governments with smaller bureaucracies is their characteristic of greater flexibility.

7. Conclusions and Policy Implications

Private firms are usually characterized by worker incentives, correlated to their productivity. Monetary premiums, or in-kind bonuses (such as promotion), are generally assigned on the basis of individual agent productivity within the organization. Exogenous premiums or bonuses are mainly diffused in public sector, whose particular characteristics (output-measurement problems, multiple-principals, and multiple objectives) make it difficult to implement endogenous incentives schemes.

Nevertheless, some attempts have been made to introduce performance-related pay (PRP) into the public sector (Burgess and Ratto 2003). Hasnain et al. (2012) supply an extensive review of theory and evidence pointing out that approximately two-thirds of OECD countries have introduced PRP in some sectors. In particular, the United Kingdom[12], Switzerland, Denmark, and Finland extensively apply performance-related pay. Nevertheless, there is not consensus on the effectiveness of PRP in the public sector (Hasnain et al. 2012, Frey et al. 2013, McDonald 2014).

In Italy, the reform of public management (D.Lgs. 29/1993 e D. Lgs. 80/1998) introduced greater responsibility for public managers with premium correlated to the achievement degree of some given goals. Recently the so called "Riforma Gelmini" (L 240/2014) has introduced some productivity evaluation mechanisms for teachers and academic researchers (such as bibliometric index for advancement of academic researchers).

[10] The expected informative benefit is always above the expected cost for some s_i>0. The optimal contract will be such that the agents are induced to choose the mix of productive and influence activities (t_i^*, s_i^*) maximizing the difference between the *E(B)* and *E(C)*.

[11] With a function of *E(B)* very low (i.e. crossing the horizontal axis for $s \to 0$), there exists some *s* >0 such that *E(B)>E(C)*.

[12] In 1999, performance pay for teachers was introduced in UK based on professional development and pupils' attainments, as shown in national test scores. Incentive schemes also characterize the UK health service.

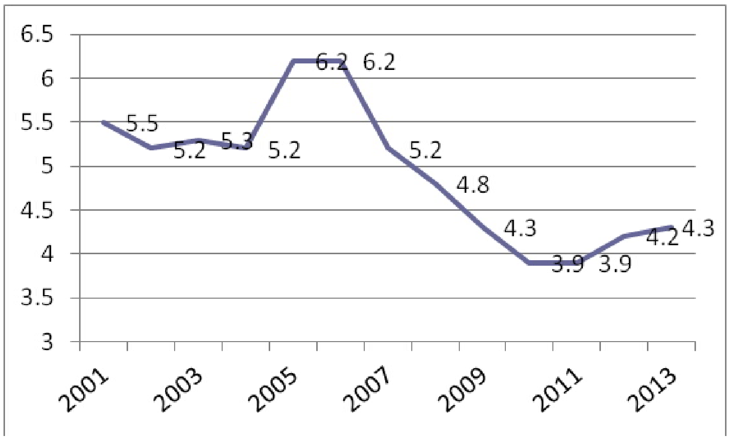
PRP as well as the use of rules for promotion represent an attempt[13]to contain the public firm decision maker's discretion.

However, the Italian socio-political debate is dominated by two opposite ideas: in some cases, such as for Italian public bureaucracy, Italy is considered a country regulated by too many rules.

At the same time, there is a wide range of illegality due to lack of respect for rules or, if possible, to an opportunistic use of those rules to reach personal goals.

Corruption is an example of individual opportunism realized through the use of discretion or the avoidance of rules for the achievement of personal goals[14]. In spite of reforms that addressed the decreased range of discretion for public operators' decisions, the Corruption Perceptions Index (CPI) for Italy shows an increase of the perceived corruption[15] by citizens for the period 2001-2011 with a small improvement for 2012-2013 (Fig. 3) .

Fig. 3: The Corruption Perception Index for Italy (2001-2013)



Source: Transparency International

Actually, the trade-off between rules and discretion is rather complex. Rules can be, in short, divided into two sets: "signalling rules" or "informative rules" (such as promotion by some productivity index), and "not signalling rules" (such as promotion by age).

The first set of rules is characterized by a greater probability to improve the organizational efficiency. However, their informative value is based on objective information also available to the decision-maker (curricula, absenteeism of workers, offices' expenditures, offices' productivity etc.). In principle, the informative set of a decision-maker can be greater than or at least equal to the informative set of a signaling rule.

As a consequence, decisional discretion can always result in improved efficiency for the organization if the decision-maker complies with the institutional goals.

In this sense, the problem cannot be to establish an optimal threshold of discretion but to promote an organizational environment where agents' behavior in is inspired by the institutional goals. The increasing diffusion of ethical codes within organizations can be interpreted in this perspective.
Victor and Cullen (1987) point out, three different ethical environments can characterize the organizations: egoistic, benevolent and principled.

---

[13] Policy intervention can only be addressed to limit the range of discretion, since the incomplete contracts and asymmetric information characterizing public as well as private relationships do not allow the total removal of discretionary decisions in economic systems.

[14] Klitgaard et al. (2000) points out that corruption is, in general, positively correlated to monopoly position and discretion and inversely correlated to the accountability.

[15] The Corruption Perceptions Index (CPI) is a subjective index, based on survey data, which summarizes how corrupt a public sector is perceived to be. A country's score indicates the perceived level of public sector corruption on a scale of 0-10, where 0 means that a country is perceived as highly corrupt and 10 means that a country is perceived as very honest (Transparency International, 2013, available at http://www.transparency.org/cpi2010/results).

In the first case, the agents' behavior is self-interest, in the second case the cooperation among agents is dominant within organizations, while in a principled environment, organizational members follow universal principles summarized in accepted ethical codes summarizing standard of behavior promoting the institutional organizational goals.

The effectiveness degree of such ethical codes basically depends on the moral intensity of organizational environment consistent in the perception of social pressure for the harm that a given behavior (or decision) will have on others. As a consequence, creating an organizational environment with high moral intensity enhances ethical decisions making and the perception by others of ethicality (Seals 2013).

Appendix

First of all, we show that $w'(x_i) > 0$. To this purpose, we assume the monotone likelihood ratio property that is

$$\frac{d\left(\frac{p'(t_i, x_i)}{p(t_i, x_i)}\right)}{dx_i} > 0$$

From the agent's maximization problem we have:

$$u'(w(x_i)) = \frac{1}{\hat{\lambda}_1 + \hat{\lambda}_2 f(t_i, x_i)} \quad \text{with} \quad f(t_i, x_i) = \frac{p'(t_i, x_i)}{p(t_i, x_i)}$$

Calculating the derivative with respect to x_i:

$$w'(x_i) = \frac{-\hat{\lambda}_2 f'_{x_i}}{\left(\hat{\lambda}_1 + \hat{\lambda}_2 f\right)^2} \frac{1}{u''} > 0 \quad \text{since} \quad u'' < 0, f'_{x_i} > 0 .$$

Now we show the strictly concavity of the agent's objective function.
The agent's expected utility is:

$$E(U) = \int_0^{\bar{x}} u(w(x_i)) p(t_i, x_i) dx_i + f(T - t_i)k - C(T)$$

Integrating by parts, we can rewrite the previous expression as:

$$E(U) = \left[u(w(x_i)) P(t_i, x_i)\right]_0^{\bar{x}} - \int_0^{\bar{x}} P(t_i, x_i) u'(w) w'(x_i) dx_i + f(T - t_i)k - C(T)$$

Deriving with respect to t_i:

$$\frac{dE(U)}{dt_i} = -\int_0^{\bar{x}} P'_{t_i} u'(w) w'(x_i) dx_i - f'_{(T-t_i)} \qquad \frac{d^2 E(U)}{dt_i^2} = -\int_0^{\bar{x}} P''_{t_i} u'(w) w'(x_i) dx_i < 0 ;$$

In the following part of Appendix we show the concavity of the profit function.

From (10) we have the expected profit function:

$$E[\Pi_i] = \int_0^{\bar{x}} [x_i - \tilde{w}(x_i)] p(t_i, x_i) dx_i + E(\pi(T - t_i))$$

Integrating by parts the previous expression, we have:

$$\left[(x_i - \tilde{w}(x_i)) P(t_i, x_i)\right]_0^{\bar{x}} - \int_0^{\bar{x}} P(t_i, x_i)(1 - \tilde{w}') dx_i + E(\pi(T - t_i)) - k$$

Deriving with respect to t_i:

$\frac{dE(\Pi)}{dt_i} = -\int_0^{\bar{x}} P'_{t_i}(1 - \tilde{w}') dx_i - \frac{dE(\Pi(T - t_i))}{d(T - t_i)} > 0$ or <0 (not monotonically increasing since the informative profit is first increasing and then decreasing).

$$\frac{d^2 E(\Pi)}{dt_i^2} = -\int_0^{\bar{x}} P''_{t_i}(1 - \tilde{w}') dx_i + \frac{d^2 E(\Pi(T - t_i))}{d(T - t_i)} < 0$$

for $\tilde{w}' < 1$.

References

Antonelli, M. A. (2003). Efficient Influence Activities with Endogenous Rent. Public Choice, 114 (1-2), 219-236.

Burgess, S., and Ratto, M. (2003). The Role of Incentives in the Public Sector: Issues and Evidence, Oxford Review of Economic Policy, 19 (2), 285-300.

Hasnain, Z., N. Manning and J. H. Perskalla (2012). Performance-related Pay in the Public Sector, Policy Research Papers n. 6043, The World Bank.

Holmstrom, B., and Milgrom P., (1991). Multitask principal-agent analysis: incentive contracts, asset ownership, and job design, Journal of Law, Economics and Organization 7 Special Issue, 24-52.

Frey, B. Homberg F., and Osterloh M., (2013). Organizational Control Systems and Pay-for Performance in the Public Service, CREMA Working Papers Series, n.11. http://www.crema-research.ch/papers/2013-11.pdf

Grossman, S. J., and Hart O., (1983). An analysis of the principal- agent problem, Econometrica, 51(1), 7-45.

Klitgaard, R., MacLean-Abaroa R., and H. L. Parris; (2000). Corrupt Cities. A pratical guide to cure and prevention, ICS Press and World Bank.

Mc Donald, R. (2014). Paying for performance in healthcare organizations, International Journal of Health Policy and Management, 2(2), 59-60.

Milgrom, P. (1988). Employment contracts, influence activities and efficient organization design, Journal of Political Economy, 96(1), 42-60.

Milgrom P., and Roberts J. (1988). An Economic Approach to Influence Activities in Organizations, American Journal of Sociology, 94 Supplement, 154-179.

Milgrom P., and Roberts J. (1992). Economics, Organization and Management, Prentice Hall International, 206-279.

Milgrom P., and Roberts J. (2009). Bargaining costs, influence costs and the organization of economic activity, in R. S. Kroszner and L. Putterman (eds.) The economic nature of the firm: a reader, Cambridge University Press, 143-155.

Seals, G. (2013). An Ethics Paradigm for the Service Organization, American International Journal of Social Science, 2 (3), 1-9.

Victor, B., and J. B. Cullen (1987). A theory and measure of ethical climate in organizations, in W. C. Frederik (ed.) Research in corporate social performance, Greenwich, CT: JAI Press, 57-71.