INCENTIVES AND ANONYMITY PRINCIPLE: CROWDING OUT TOWARD USERS

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CESIFO WORKING PAPER NO. 1316
CATEGORY 4: LABOUR MARKETS
OCTOBER 2004

PRESENTED AT CESIFO VENICE SUMMER INSTITUTE, WORKSHOP ON BEHAVIORAL PUBLIC ECONOMICS, JULY 2004

CESifo *Working Paper No. 1316*

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Abstract

In our model, an agent produces an outcome by a costly effort and then distributes it among heterogeneous users. The agent's payoff is the weighted sum of the users' shares and the coefficient reflecting their heterogeneity. When the agent neglects users' heterogeneity the game leads to an anonymous allocation. Otherwise, the equilibrium distribution is non-egalitarian but more efficient. Low performing agents reduce inequality among users by delivering an egalitarian service, while intermediate or high performing agents tend to prefer (but not always) delivering an unequal service, thereby breaking the anonymity principle. Incentives do matter regarding the crowding effect toward users.

JEL Code: C9, J33, J45, L32, M5.

Keywords: incentives, anonymity principle, egalitarian tasks allocation, principal agent user relationship, crowding-out effect.

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1. Introduction.

In any classroom, each teacher or professor is bound to wonder whether she should make more effort toward the most able, more effort toward the least able, or to teach without any consideration about the specific characteristics of her pupils. In the first case, the teacher wishes to value at best her individual effort (the most able, the most valuable). At the opposite, the teacher wishes to reduce unequal abilities among pupils. In the last case, the teacher delivers a anonymous course to pupils (the course is not based on the distribution of ability among pupils).

Such a concern is more generally inherent to any form of public service, since each user must be equal (i.e. anonymous) in front of the civil servant. Apart from the example of the teacher (civil servant) and her pupils (users), regarding other public services, users' heterogeneity may lie in any other individual characteristics interfering in the co-production of the service.

The way by which the teacher delivers a course deeply depends on the level of the costly effort oriented toward pupils. It is doubtful that the teacher will choose her effort level independently of her opinion regarding the anonymity principle. As the effort also depends on the compensation scheme including or not incentives, this paper deals with the reliability of the anonymity principle to the power of incentives.

For Laffont (1999), the French public service system is characterized by the absence of monetary incentives and sanctions, a permanent relying on the benevolence of civil servants and an independence between wage variability and performance. In particular, with an almost fixed wage, there are no incentives to take into account users' heterogeneity, especially if there little or no concern about joint production maximization between users and civil servants.

However, introducing incentives into any form of organization is not always the best way to induce the highest effort from agent or to maximize the value of the outcome. The motivation crowding theory explores the psychological effects of monetary rewards and effort. Deci and Ryan (1985) showed that where individuals perceive an external intervention to be controlling, their intrinsic motivation to perform the task diminish. Introducing such kind of considerations within principal-agent models then induces a classical perverse effect of incentives on motivation, highlighted as a motivation crowding-out effect (see among others Gneezy and Rustichini, 2004; Frey and Jegen, 2001; Frey and Oberholzer-Gee, 1997). This hidden costs of incentives induces a trade-off between motivation and incentives but as pointed out by Akerlof and Kranton (2003), a source of motivation is missing from current models of organization. Akerlof and Kranton characterize this missing source as identity, that is a person's self image. And interestingly, they indicate that *"In the Army as well as in civilian* *organizations, such identification – or lack of it – plays a critical role in the determination of work effort, incentive schemes, and organizational design".*

Besides, as highlighted by Dixit (2002), it is conventional wisdom to attribute many perceived ills of public sector services, like high costs for poor quality of products or lack of attention to users, to the absence of competition and consequent weakness of incentives. In such a context, civil servants are usually assimilated to pencil pushers who deliver an equally low service toward anonymous users.

However, in the public as well as in the private sector, the power of incentives and competition cannot be considered in isolation to ethical considerations. In particular, using the examples of "excessive" executive pay, corporate earnings manipulation, and commercial activities by universities, Shleifer (2004) shows that when unethical behavior cuts costs, competition drives down prices and entrepreneurs' incomes, and thereby reduces their willingness to pay for ethical conduct. Competition then induces a crowding-out effect on the ethical behavioral of agents. In the long run however, competition may induce crowding in effects on ethical behaviors because it promotes growth and raises incomes, and higher incomes raise the willingness to pay for ethical behavior, but may also change what people believe to be ethical for the better.

Our paper contributes to this debate on crowding effects and incentives by considering a principal agent user model in which if the agent makes a high level of effort and selects or ranks users, we can establish that incentives induce a crowding out effect on users.

More precisely, we consider a principal agent user model in which agents make a two-step decision: the production of an outcome by a costly effort and the distribution of this outcome among heterogeneous individual users. In the first step, we allow for two possibilities : the principal can reward the agent either by a fixed wage or by a performance based compensation. In the second step, the agent allocates the outcome among users in order to co produce with them. The reward of the agent depends positively on the global value of this joint production and negatively on the dispersion of the distribution of the outcome among users.

The larger the size of the outcome obtained by an individual performance based compensation, the greater the level of inequality among users. By contrast, the low outcome resulting from a fixed wage incites the agent to offer an anonymous allocation among users; that is behave like a pencil pusher. We therefore obtain an endogenous relationship between incentives for the agents and crowding effects toward users, thereby departing from the classical trade-off between incentives *versus* motivation crowding-out for the agents.

This paper is organized as follows. Section 2 develops the theoretical model of the Pencil-Pusher Game. Section 3 presents the main results of the model. Section 4 develops some calibration exercises carried out to illustrate the results and discusses the relationship between incentives and crowding effects. Section 5 concludes the paper.

2. The Pencil-Pusher Game

Our game-theoretic model involves three kinds of players: a principal, a group of agents $i = 1,...,n$ who make decisions either independently from one another or within a team, and a group of users $j = 1,...,m$, where $n > 1$, $m > 1$. The game is a two-stage game : a first stage between the principal and each agent or the team of agents; and a second stage between each agent and the users.

The payoff of each agent corresponds to the sum of the payment obtained in each stage of the game, w_i^1 in the first stage and w_i^2 in the second stage. Hence, the overall reward of each agent *i* is given by: $w_i = w_i^1 + w_i^2$.

2.1. The first stage of the game

During the first stage, we consider a simple agency relationship between a principal and *n* identical agents (with the same utility function). In the most simplified form, each agent performs an unobservable effort e_i, $\left(e_i \in \{0,1\}\right)$, at the expense of a disutility $v(e_i)$, where $v'(\cdot) \geq 0$ and $v''(\cdot) \geq 0$. The effort of each agent *i* generates an observable individual outcome a_i, $\left(a_i \in \mathbb{R}^+, \text{indexed by } h\right)$. Let $p^h(e_i)$ denote the conditional probability of observing the outcome a_i^h, $p^h(e_i)$ is defined as follows:

$$p^h(e_i) = p\left(a_i = a_i^h \middle| e_i\right), \quad \forall h,\, p^h(e_i) > 0 \quad \text{and} \quad \sum_h p^h(e_i) = 1$$

The agent's utility function is of the form $u(w_i^1) - v(e_i)$, where $u'(\cdot) \geq 0$ and $u''(\cdot) \leq 0$. The principal is risk neutral and is interested only in his expected outcome

$$\sum_{i=1}^{n} \left(a_i - w_i^1\right)$$

- If the principal demands the low effort to agent i $(e_i = 0)$, it is enough to pay her a fixed amount equivalent to the amount she would be paid under the assumption of verifiable effort. The principal then offers the agent a compensation based on the agent's reservation utility and on the disutility of the low effort. In this case, $w_i^1 = u^{-1}(\underline{U} + v(e_i))$, with $e_i = 0$. If we assume $v(0) = 0$ then $w_i^1 = u^{-1}(\underline{U}) = F$.
- If the principal wishes to obtain from the agent the high level of effort $(e_i = 1)$, and if we assume that $p\left(a_i \middle| e_i = 1\right) > p\left(a_i \middle| e_i = 0\right)$, then the principal offers a compensation w_i^1 such that $w_i^1 > F = u^{-1}(\underline{U})$.

2.2. The second stage of the game

The objective of the second stage consists in a co-production between each agent and the group of users. Each user j is characterized by a level of productivity ρ_j. The agent has to choose a distribution of her outcome a_i for the users $\left(a_{ij}\right)_{j=1\ldots m}$ (so that $\sum_{j=1}^{m} a_{ij} \leq a_i$).

The output q_i of this co-production between the agent i and the users is given as follows: $q_i = \sum_{j=1}^{m} \rho_j \cdot a_{ij}$. The individual payoff w_i^2 at the end of the second stage depends positively on q_i and negatively on the dispersion σ_i of the distribution chosen by the agent defined by $\sigma_i = \sum_{j=1}^{m} \left(a_{ij} - \overline{a_i} \right)^2$ where $\overline{a_i} = \frac{1}{m} \left(\sum_{j=1}^{m} a_{ij} \right)$. Hence we have:

$$w_i^2 = q_i - \sigma_i = \sum_{j=1}^{m} \rho_j \cdot a_{ij} - \sum_{j=1}^{m} \left(a_{ij} - \overline{a_i} \right)^2 \qquad (1)$$

Such a measure of the dispersion of the distribution represents the agent's disutility of choosing a distribution $\left(a_{ij} \right)_{j=1...m}$. Intuitively, what is costly for the agent in the second stage is to allocate the first-stage outcome a_i among the users, and the disutility of this allocation is given by the measure of its dispersion. In fact, the agent is committed by the labor contract to deliver a collective service as in any public organization.

The definition of w_i^2 captures the following trade-off. Either the agent chooses to deliver an anonymous service (without taking into account the users' heterogeneity in terms of productivity), or she searches to maximize the output of the co-production on the basis of the users' heterogeneity in order to counter-balance the negative effect associated with the dispersion of $\left(a_{ij} \right)_{j=1...m}$.

In turn, the agent determines the equilibrium distribution of the first stage outcome $\left(a_{ij} \right)_{j=1...m}$ according to the following program:

$$\begin{aligned} &\max_{\left(a_{ij} \right)_{j=1...m}} \quad w_i^2 = \sum_{j=1}^{m} \rho_j \cdot a_{ij} - \sum_{j=1}^{m} \left(a_{ij} - \overline{a_i} \right)^2 \\ &s.t. \qquad \sum_{j=1}^{m} a_{ij} \le a_i \end{aligned} \qquad (2)$$

The first order conditions of this program with respect to $a_{ij}, \quad j=1...m$ and λ, the Lagrange multiplier associated with the constraint write [1] :

$$\begin{cases} \rho_j - 2\cdot\left(a_{ij} - \overline{a_i}\right) - \lambda = 0, \quad j=1...m \\ \sum_{j=1}^{m} a_{ij} = a_i \end{cases}$$

We have a system of *m+1* equations, with *m+1* unknown variables: λ and $\left(a_{ij}\right)_{j=1...m}$. After some simple algebra, we finally obtain:

$$a_{ij} = \frac{a_i}{m} + \frac{1}{2m}\sum_{k=1}^{m}\left(\rho_j - \rho_k\right), \quad j=1...m \qquad (3)$$

2.3. The no-corner condition

Two assumptions are made with respect to the equilibrium distribution chosen by the agent.

Assumption 1: The service allocated to users must be positive

$$a_{ij} \geq 0, \quad \forall j=1...m \qquad (A1)$$

Substituting for (2) into (A1) implies in turn the following condition:

$$a_i \geq \frac{1}{2}\sum_{k=1}^{m}\left(\rho_k - \rho_j\right), \quad j=1...m \qquad (C1)$$

Condition (C1) is standard since it simply assumes that public services cannot be strictly null for any user.

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[1] There are two ways to solve the program : either the agent considers $\overline{a_i}$ as given when choosing her allocation distribution among users, or she takes into account the cross-effects among users, that is , she does not take $\overline{a_i}$ as given. Both methods yields to the same analytical results. The former is the simplest to present, therefore it is the one detailed in the paper.

Assumption 2. When the outcome of the first stage of the game a_i is very high, the agent should not allocate the entire outcome to the highest productive user.

Let $\hat{\rho}$ denote the highest level of productivity among users, $\hat{\rho} = \max_j (\rho_j)$, and let $\widehat{a_i}$ denote the public service provided by the agent to the highest productivity user, $\widehat{a_i} = a_i$ for $\hat{\rho} = \max_j (\rho_j)$. A degenerate distribution such that $\widehat{a_i} = a_i$ and $a_{ij} = 0 \quad \forall j = 1...m$ such that $\rho_j \neq \hat{\rho}$ is ruled out when the outcome of the agent is negative or null. Using equation (1), such an assumption writes:

$$w_i^2\left(\widehat{a_i} = a_i, 0, ..., 0\right) \leq 0 \Leftrightarrow \hat{\rho} \cdot a_i - \left(a_i - \overline{a_i}\right)^2 - (m-1) \cdot \left(\overline{a_i}\right)^2 \leq 0 \qquad \text{(A2)}$$

Assumption (A2) is more restrictive than (A1) since it imposes another restriction on the equilibrium allocation of public service, according to which inequality of treatment (allocating the entire public service to one user only - the highest productive one) is ruled out.

Using the fact that in this case $\overline{a_i} = \frac{1}{m}\left(\sum_{j=1}^{m} a_{ij}\right) = \frac{a_i}{m}$, and substituting it into assumption (A2), leads to the following condition on the first stage outcome:

$$a_i > \hat{a} \equiv \frac{m}{m-1} \cdot \hat{\rho} \qquad \text{(C2)}$$

3. Anonymity Principle within Public Services

Given the equilibrium distribution (equations (3)) and provided that condition (C1) holds, the theoretical model leads to the following results, depending on whether condition (C2) holds or not.

3.1. Public Service when condition (C2) is satisfied

In this case, the first-stage outcome of the Pencil-Pusher Game is high enough for the agent to face a trade-off between the anonymity principle and the efficiency of the co-production. We therefore have the following result.

Result 1. Anonymous versus efficient public services.

When condition (C2) is fulfilled and under (C1), the Pencil-Pusher Game leads to a unique equilibrium distribution which is egalitarian when the minimizing dispersion effect compensates the co-production's equilibrium efficiency effect, that is when:

$$\underbrace{\frac{1}{m}\cdot\sum_{j=1}^{m}\left(\frac{m-1}{m}\cdot\left\{a^{*}_{i}+\sum_{k=1}^{m}\frac{\rho_j-\rho_k}{2}\right\}\right)^{2}}_{\text{Dispersion Effect}} > \underbrace{\sum_{j=1}^{m}\left\{\rho_j\cdot\sum_{k=1}^{m}\frac{\rho_j-\rho_k}{2}\right\}}_{\text{Efficiency Effect}} \qquad (4)$$

Proof.

When (C2) holds, the agent's payoffs when the distribution of public service among users by the agent is either the equilibrium one (equations (3)) or the egalitarian one $\left(a_{ij} = \frac{a_i}{m}, \quad \forall j = 1...m \right)$ are given by:

$$w_i^2\left(\frac{a_i}{m},....,\frac{a_i}{m}\right) = \frac{a_i}{m} \cdot \sum_{j=1}^{m} \rho_j \quad \text{, and}$$

$$w_i^2\left(a_{i1},....,a_{im}\right) = \sum_{j=1}^{m} \rho_j \cdot \left\{ \frac{a_i}{m} + \frac{1}{2m} \cdot \sum_{k=1}^{m} (\rho_j - \rho_k) \right\}$$
$$-\sum_{j=1}^{m} \left(\frac{a_i}{m} + \frac{1}{2m} \cdot \sum_{k=1}^{m} (\rho_j - \rho_k) - \frac{1}{m} \cdot \left\{ \frac{a_i}{m} + \frac{1}{2m} \cdot \sum_{k=1}^{m} (\rho_j - \rho_k) \right\} \right)^2$$

Result 1 then is obtained after some simple algebra.

□

Result 1 exhibits a trade-off for the agent between two kind of effects:

- on the one hand, **a minimizing dispersion effect in favor of the anonymity principle**, that is independently of the nature of the co-production relationship between the agent and the users, since the dispersion is minimized (and null) when users are treated equally, that is when the distribution is egalitarian: $a_{ij} = \frac{a_i}{m}, \quad \forall j = 1...m$;

- and on the other hand, **a co-production efficiency effect inducing the agent to take into account users' productive heterogeneity**, since maximizing the output of the co-production relationship between the agent and the users leads to the maximum efficient outcome, as in any standard concave optimization program.

In other words, when the minimizing dispersion effect dominates the co-production efficiency one, the agent's behavior is driven by the anonymity principle. Otherwise, the equilibrium allocation is driven by the users' heterogeneity.

Let consider now the situation when condition (C2) is not fulfilled, that is, when the first-stage outcome is below the threshold level $\hat{a}$.

3.2. Public Service when condition (C2) is violated

When condition (C2) is violated, we have

$$a_i \leq \hat{a} \equiv \frac{m}{m-1} \cdot \hat{\rho}.$$

In other words, the agent has to allocate a "small service" (which we will call a "minimum public service") a_i toward users. Besides, we cannot apply the standard optimization program to determine the agent's equilibrium distribution's decision. Indeed, condition (C2) is required for equations (3) to be considered as equilibrium distributions.

However, since condition (C2) is violated, the agent may in this case allocate the entire outcome to the highest productive user. We therefore have to determine whether there exists a unique distribution in this case, or whether distributions other than the most unequal one (allocating the entire first-stage outcome to the most productive user) exist or not.

In particular, we will compare the unequal distribution with the egalitarian one $a_{ij} = \frac{a_i}{m}, \quad \forall j = 1...m$, since it is the distribution that minimizes the agent's disutility (dispersion).

Result 2. Anonymity but minimum public service.

When condition (C2) does not hold and under (C1), the Pencil-Pusher Game leads to a unique equilibrium allocation which is always anonymous:

$$w_i^2\left(\frac{a_i}{m},...,\frac{a_i}{m}\right) > w_i^2\left(\widehat{a_i} = a_i, 0,...,0\right) \tag{4}$$

$$\Leftrightarrow \quad \underbrace{\sum_{k=1}^{m}\rho_k}_{\text{Egalitarian productive effect}} \quad > \quad \underbrace{-\frac{m-1}{m}\cdot a^*_i\cdot\left(a^*_i+\widehat{\rho}\right)}_{\text{Inequitable dispersion effect}}$$

Proof.

When (C2) does not hold, the agent's second-stage rewards when the distribution of public service among users is either the unequal one, or the egalitarian one ($a_{ij} = {}^{a_i}\!\!/_{m}, \quad \forall j = 1...m$) are such that:

$$w_i^2\left(\frac{a_i}{m},...,\frac{a_i}{m}\right) = \sum_{j=1}^{m}\rho_j\cdot\frac{a_i}{m} - \sum_{j=1}^{m}\left(\frac{a_i}{m}-\frac{1}{m}\sum_{j=1}^{m}\frac{a_i}{m}\right)^2 = \frac{a_i}{m}\cdot\sum_{j=1}^{m}\rho_j = \frac{a_i}{m}\cdot\widehat{\rho}+\sum_{k=1}^{m}\rho_k, \quad \forall\rho_k \neq \widehat{\rho}$$

$$w_i^2\left(\widehat{a_i} = a_i, 0,...,0\right) = \widehat{\rho}\cdot a_i - \sum_{j=1}^{m}\left(a_{ij}-\frac{1}{m}\sum_{j=1}^{m}a_{ij}\right)^2 = \widehat{\rho}\cdot a_i - \left(a_i-\frac{a_i}{m}\right)^2 - (m-1)\cdot\left(\frac{a_i}{m}\right)^2$$

Therefore, comparing both rewards, results 2 is easily obtained. □

Result 2 establishes that when condition (C2) does not hold, the agent faces a trade-off exhibiting two kinds of effects:

- on the one hand, **a minimizing dispersion effect in favor of an equality of treatment independently of users' heterogeneity**, that is independently of the nature of the co-production relationship between the agent and the users, since the dispersion is minimized (and null) when users are treated equally, that is when the distribution is egalitarian: $a^*_{ij} = \frac{a_i}{m}, \quad \forall j = 1...m$;

- and on the other hand, **a co-production efficiency effect between the agent and the most productive user only, in favor of the most inequitable distribution,** since violating condition (C2) implies delivering a null service to all users except the highest productive one.

When condition (C2) does not hold, the first-stage outcome is so low (below the threshold value $\hat{a}$) that the minimizing dispersion effect is always dominating, the Pencil-Pusher game then leads to an anonymous allocation. In other words, whatever the heterogeneity among users, that is whatever the nature of the co-production relationship between the agent and the users (even though it may be high), the agent always prefers to deliver an anonymous (i.e. egalitarian) public service and does not take into account the productivity differentials that may exist within the group of users when she has to allocate low levels of service.

4. Incentives for agents with crowding-out toward users

An important result in our model is that the larger the size of the outcome obtained by an individual performance based compensation, the greater the level of inequality among users. By contrast, the small outcome resulting from a fixed wage incites the agent to deliver an anonymous service to users. We therefore obtain an endogenous relationship between incentives for the agents and crowding effects toward users.

In this section, we provide some calibration exercises to illustrate these links between incentives and crowding effects.

4.1. Calibration and simulation results

To calibrate the model, we restrict the number of users to *m=3*. In this case, the equilibrium distribution then writes: $a^*_{ij} = \frac{a^*_i}{3} + \frac{2\rho_j - \sum_{k=2}^{3} \rho_k}{6}, \quad j = 1, 2, 3$

Condition (C2) is also given by: $a^*_i > \frac{3}{2} \cdot \hat{\rho}$

The model is calibrated and simulated [2] considering two alternative cases: a low and high heterogeneity among users. The parameter values are set as follows.

	Low heterogeneity	**High heterogeneity**
Users' ability levels	$\rho_1 = 18, \quad \rho_2 = 24, \quad \rho_3 = 30$	$\rho_1 = 6, \quad \rho_2 = 18, \quad \rho_3 = 24$
Condition (C2) holds	$a^*_i \in [45, 100]$	$a^*_i \in [36, 100]$
Condition (C2) does not hold	$a^*_i \in [1, 44]$	$a^*_i \in [1, 35]$

In the four cases considered (low and high heterogeneity among users and (C2) holds or does not hold), the *dashed line* represents the *equilibrium dispersion function whereas* the *solid line* represents the *equilibrium co-production function*.

[2] The model has been calibrated using the Mathematica 4.0 software. Programs are available upon request.

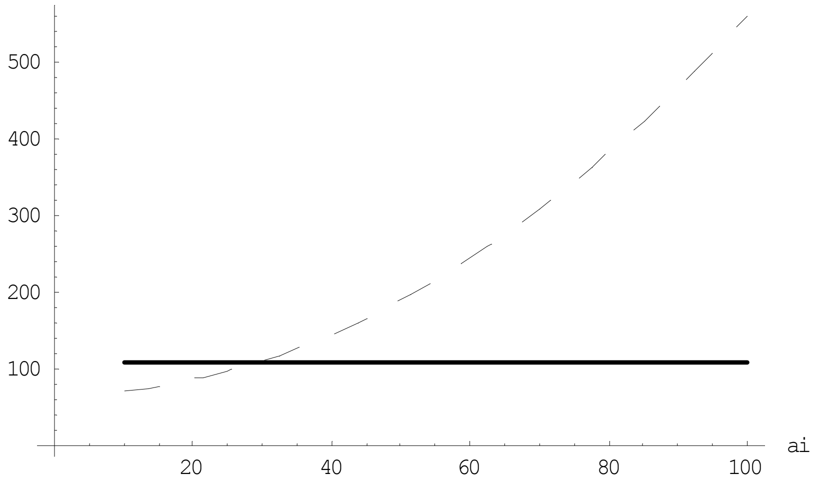

Figure 1: Low heterogeneity among users, (C2) holds

Figure 1 illustrates that when heterogeneity among users is low, the dispersion function is increasing in a_i and always above the co-production function. Hence, for low levels of heterogeneity among users, result 1 holds, that is, the agent prefers to treat users anonymously, that is without taking into account their heterogeneity in terms of productivity, whatever the value of a_i.

In other words, when users are weakly heterogeneous, the minimizing dispersion effect in favor of an equality of treatment independently of users' heterogeneity dominates the co-production efficiency effect (which would induce the agent to take into account users' productive heterogeneity).

This suggests that when (C2) holds, low levels of heterogeneity among users, independently of the level of a_i (but below $\hat{a}$), always favors the anonymity principle.

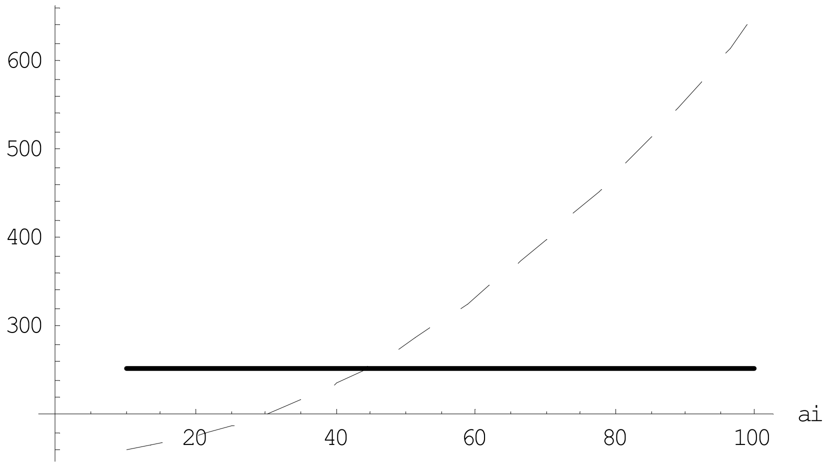

Figure 2: High heterogeneity among users, (C2) holds

Figure 2 illustrates the trade-off between the minimizing dispersion effect in favor of an equality of treatment independently of users' heterogeneity and the co-production efficiency effect inducing the agent to take into account users' productive heterogeneity depends on the level of a_i.

Figures 1 and 2 also illustrate result 2, that is the anonymous minimum public service effect. Indeed, when condition (C2) is violated, this effect always holds whatever the level of heterogeneity among users, a result indeed exhibited by our simulations when a_i is low ($a^*_i \leq \hat{a} = 45$ for low heterogeneity among users and $a^*_i \leq \hat{a} = 36$ for a high heterogeneity among users), the most inequitable distribution (delivering all the public service to the highest productive user) is never an equilibrium outcome: the equilibrium dispersion function is always below the equilibrium co-production function.

4.2. At which level does the crowding-out effect occurs?

We have shown that the nature of incentives offered to agents (fixed versus performance based pay) influences their egalitarian behavior toward users.

This effect induces a positive link between incentives at the agents' level and motivation crowding-out effects toward users.

Hence, where the standard literature finds crowding-out effects among agents, we provide a theoretical model with a three-layer hierarchy (principal agent user) where incentives are associated with crowding-out effects among users.

In other words, what we show is that incentives-based pay induces a second order incentive to break users' anonymity. When users' heterogeneity is taken into account, crowding-out indeed increases : the agent's performance affects positively differences among users.

A low performing agent, like a Pencil-Pusher, in the first stage of the game chooses to reduce inequality among users by delivering an egalitarian service. On the contrary, an intermediate or a high performing agent tends to prefer but not always, delivering an unequal service.

5. Conclusion.

The principal-agents-users model considered in this paper, the Pencil-Pusher Game, shows that compensation schemes affects agents' egalitarian behaviors within public organizations. We show that there exists a trade-off for the agent between the anonymity principle and the efficiency of the co-production. When the former dominates the latter, the Pencil-Pusher game leads to an egalitarian outcome. Otherwise, the equilibrium distribution contradicts the anonymity principle, thereby inducing crowding out effects from agents toward users.

The agent's performance in the first stage affects inequality in the distribution of users' ability. A low performing agent, like a Pencil-Pusher, chooses to reduce inequality among users by delivering an egalitarian service. On the contrary, an intermediate or a high performing agent tends to prefer but not always, delivering an unequal service. In other words, incentives do matter not only regarding the agents behavior but also regarding the egalitarian nature, of the public service delivered. Therefore we characterize an endogenous link between incentives and crowding effect toward users.

Since the power of incentives and competition cannot be considered in isolation to ethical considerations, as pointed out by Shleifer (2004), our model suggests a more general interpretation of the relationship between incentives and crowding effects. Indeed, in our model, the relationship between the agent and the users can be viewed as specific dictator game with two variants : first, the agent –the dictator- chooses an allocation of a pie between heterogeneous responders – the users; and second, the dictator's payoff is defined as the weighted sum of the individual shares among users by the coefficient reflecting the heterogeneity of the responders. The literature on dictator games and their experimental applications constitute a fruitful area of application for our theoretical model.

We will therefore test our theoretical predictions by running experiments, in particular to determine to which extent the link between incentives for the agents and an crowding effects toward users suggest that incentive labor contracts within public organizations need a preliminary sorting among users in order to induce performance and reduce crowding-out effects on users.

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