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# *Public intervention to counter the relocation of production abroad: efficiency issues*

**di**
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**Abstract**
*The economic and financial crisis that has hit the most traditionally industrialized countries has developed into the scope of a process of progressive change in the international specialization of labor that favors emerging countries. These countries, by virtue of different inputs, have gradually withdrawn shares of world production of the most industrialized European countries, who responded to the delocalization process with improper use of financial engineering instruments, adding to their instability. In such a scenario, the recovery of competitiveness can be facilitated by policies of reflation, together with incentives provided by public authorities to businesses to enable them to maintain production activities in the country. In this paper we call theory of incentives – which has developed models of the recent report "principal- agent" a useful guide for public policy interventions that aim to counter, in countries with older industrialization, the process of relocation of their industrial production and employment with them.*

La crisi economico-finanziaria che ha investito i Paesi tradizionalmente più industrializzati si è sviluppata nell'alveo di un processo di progressiva modifica della specializzazione internazionale del lavoro che favorisce i Paesi emergenti. Questi ultimi, in virtù del differenziale dei fattori produttivi, hanno man mano sottratto quote della produzione mondiale ai Paesi europei più industrializzati, che hanno reagito al processo di delocalizzazione produttiva con l'utilizzo improprio di strumenti di ingegneria finanziaria, aggravando la loro situazione di instabilità. In questo scenario il recupero di competitività può essere favorito da politiche di reflazione, unitamente a incentivi forniti dall'Autorità pubblica alle imprese per consentire loro di mantenere le attività produttive nel territorio nazionale. Nel presente contributo si chiedono alla teoria degli incentivi - che ha elaborato modelli recenti del rapporto "principale-agente" - indicazioni utili per le politiche di intervento pubblico che si propongono di contrastare, nei Paesi di più antica industrializzazione, i processi di delocalizzazione delle loro produzioni industriali e con esse dell'occupazione.

Multidimensional asymmetric information; 3. Model with participation constraints dependent on the type of agent; 4. The efficiency of public intervention to counter offshoring; 5. Indications for policy measures to counter offshoring.

## 1. Offshoring of productive activities.

The economic crisis that hit the world economy – a crisis whose lingering effects the traditional industrial countries in particular are still struggling to overcome in order to regain satisfactory rates of growth – had an evident financial expression [1].
However, the financial crisis developed in the context of an ongoing modification of the international division of labor. In a process begun some thirty years ago, the so-called emerging countries [2] have steadily wrested shares of world output from the older industrial powers thanks to the differential in labor costs (gauged by monetary costs in relation to productivity) but also by virtue of the differentials in other direct and indirect costs that burden firms (taxes and the like; costs due to inefficiencies in other sectors, especially government and distribution; costs stemming from legislation and regulations restricting firms' choices regarding the use of territorial and environmental resources, production inputs, etc.) [3].
The simultaneous specialization of finance in the industrial countries in new products of financial engineering represented an "improper" (and disequilibrating) response to the migration of production towards the emerging countries [4].
Today and in the future, the economic policies of reflation proposed in the older industrial countries (with a return to the teachings of Keynes) risk having effects of only limited magnitude and duration on those countries' growth rates and, especially, their employment levels. Reflation alone cannot remedy their deficient competitiveness vis-à-vis the emerging countries; and the new balance-of-payments deficits incurred in order to finance reflation fuel renewed global financial and exchange-rate instability, thus spawning risks of new crises.
If a return to historical forms of protectionism is no longer a practicable solution today, then other strategies and instruments of policy have to be developed and made operational. A good starting-point for the study of such intervention is analysis of the agency relationship between government, which intends to give incentives to firms to retain production within the home country, and firms, which in the market economy make decisions based on their calculations of economic advantage. It appears legitimate to ask incentives theory, which has developed the most recent models of the principal-agent relationship, to provide useful indications for public policies, in the older industrial countries, aimed at countering the

transfer of industrial activities to emerging countries and the associated migration of jobs [5].

## 2. An application of incentives theory under asymmetric information.

In the market economy, public intervention to influence firms' choices – in the case considered here, in order to discourage them from relocating production abroad (where production costs are lower) – encounters the difficulties posed by informational asymmetries (which can generate adverse selection and moral hazard).
Modern incentives theory, which has developed since the 1970s, has through multiple contributions [6], constructed a basic model of the principal (P) – agent (A) relationship under asymmetric information. The model permits investigation of the conditions for efficient public intervention with the incorporation of distributive evaluation, expressed by the regulator's different social interest in the consumer's surplus vis-à-vis business profits [7].
In the case examined here – public intervention to deter the migration of production abroad – seeking the conditions for efficient public intervention is necessary not only because of the general objective of efficient resource allocation but also in light of the budget constraint (which "rations" the uses of public funds) and for reasons of "political economy", i.e. in order to demonstrate (to the taxpayers and trade unions) that the measure is intended to avoid awarding superfluous "premia" (with public money) to efficient firms and subsidies to less efficient ones.

### 2.1. The basic model.

The basic model assumes that the principal (P) delegates to the agent (A) the production of q units of a good; for P, the value of q is S(q), where $S' > 0$ and $S(0) = 0$. P cannot observe the production costs incurred by A, but he knows that the marginal costs $\alpha$ belong to a set $[\underline{\alpha}, \overline{\alpha}]$, and that A can be efficient ($\underline{\alpha}$) or inefficient ($\overline{\alpha}$), with probabilities of $\beta$ and $1-\beta$ respectively, so that the cost function C is:

$C(q, \underline{\alpha}) = \underline{\alpha} q + F$ with probability $\beta$ (1)

$C(q, \overline{\alpha}) = \overline{\alpha} q + F$ with probability $1-\beta$ (2)

Let us consider as economic variables of the contract the quantity produced q and the transfer T that P offers to A. If there were no

informational asymmetries, the first-best production levels would be given by the first-order conditions:

$$S'(q^*) = \underline{\alpha} \; ; \; S'(q^*) = \overline{\alpha}$$

The production orders are carried out provided their social values V are non-negative [8]. Assuming that the marginal value of the output for P is decreasing, the optimal production of an efficient agent is greater than that of an inefficient agent ($\underline{q}^* > \overline{q}^*$). For A to be willing to accept the task, P must offer a level of utility at least as high as the level of utility that A can obtain outside their relationship: this is the "participation constraint". If we normalize to zero the agent's outside opportunities (we drop this assumption in the next section), the participation constraints are given by:

$$\underline{T} - \underline{\alpha}\,\underline{q} \geq 0 \quad (3)$$

$$\overline{T} - \overline{\alpha}\,\overline{q} \geq 0 \quad (4)$$

Furthermore, A's decisions are also subject to the "incentive compatibility constraint":

$$\underline{T} - \underline{\alpha}\,\underline{q} \geq \overline{T} - \underline{\alpha}\,\overline{q} \quad (5)$$

$$\overline{T} - \overline{\alpha}\,\overline{q} \geq \underline{T} - \overline{\alpha}\,\underline{q} \quad (6)$$

That is, the contracts offered are incentive-compatible" when $(\underline{T}, \underline{q})$ is weakly preferred [9] to $(\overline{T}, \overline{q})$ by the $\underline{\alpha}$ agent, and $(\overline{T} - \overline{q})$ is weakly preferred to $(\underline{T} - \underline{q})$ by the $\overline{\alpha}$ agent.
A set of contracts is accepted if it offers each agent at least his outside utility level. Accordingly, the two participation constraints set out below must be satisfied:

$$\underline{T} - \underline{\alpha}\,\underline{q} \geq 0 \quad (7)$$

$$\overline{T} - \overline{\alpha}\,\overline{q} \geq 0 \quad (8)$$

Therefore, a set of contracts is realizable from the standpoint of incentives if it satisfies both the incentive and the participation constraints (5-8).
Let us take any set of contracts that satisfy the incentive constraints and let us consider the level of utility that an agent of the $\underline{\alpha}$ type can obtain by pretending to be an agent of the $\overline{\alpha}$ type:

$$\overline{T} - \underline{\alpha}\overline{q} = \overline{T} - \overline{\alpha}\,\overline{q} + \Delta\alpha\overline{q} = \overline{U} + \Delta\alpha\overline{q} \quad (9)$$

It can be seen that, even if the level of utility of the $\overline{\alpha}$ agent is reduced to zero $\overline{U} = T - \overline{\alpha}\,\overline{q} = 0$, the $\underline{\alpha}$ agent benefits from an information rent $\Delta\alpha\overline{q}$ determined by his ability to mimic the less efficient agent. If P insists on obtaining a positive output of the less efficient agent, $\overline{q} > 0$, P must grant a positive rent to the $\underline{\alpha}$ agent.
The information rents are: $\underline{U} = \underline{T} - \underline{\alpha}\,\underline{q}$ and $\overline{U} = \overline{T} - \overline{\alpha}\,\overline{q}$, respectively.
While P does know what type of agent ($\underline{\alpha}$ or $\overline{\alpha}$) he is dealing with, he must calculate the benefits (expected values) of each set of contracts $(\underline{T}, \underline{q})$; $(\overline{T}, \overline{q})$. He maximizes: $\max \beta[S(\underline{q}) - \underline{T}] + (1-\beta)[S(\overline{q}) - \overline{T}]$ under the constraints shown in (5-8).
P's objective function can then be written as:

$$\beta[S(\underline{q}) - \underline{\alpha}\underline{q}] + (1-\beta)[S(\overline{q}) - \overline{\alpha}\,\overline{q}] - \beta\underline{U} + (1-\beta)\overline{U} \quad (10)$$

The incentive constraints (5) and (6), taking account of the information rents, are:

$$\underline{U} \geq \overline{U} + \Delta\alpha\overline{q} \quad (11)$$
$$\overline{U} \geq \underline{U} + \Delta\alpha\underline{q} \quad (12)$$

and the participation constraints (7) and (8):

$$\underline{U} \geq 0 \quad (13)$$
$$\overline{U} \geq 0 \quad (14)$$

P must maximize (10) subject to the constraints in (11) to (14), reaching a second-best solution (denoted by the superscript SB).
Determining the optimal contract under asymmetric information requires P to identify which incentive compatible and participation constraints are relevant for the optimal solution. According to the model, these are the constraints represented by (11) – the $\underline{\alpha}$ agent's incentive constraint - and by (14) – the $\overline{\alpha}$ agent's participation constraint [10]. Therefore:

$$\underline{U} = \Delta\alpha\overline{q} \quad (15)$$

$\overline{U} = 0$ (16)

Substituting (15) and (16) in (10), the objective function that P intends to maximize becomes:

$$\max_{\underline{q}, \overline{q}} \beta S(\underline{q}) - \underline{\alpha}\underline{q} + (1-\beta) S(\overline{q}) - \overline{\alpha}\overline{q} - \beta\Delta\alpha\overline{q} \qquad (17)$$

Compared with the context of complete information, the context of asymmetric information modifies P's optimization by subtracting the expected rent that has to be given to the efficient agent. The inefficient agent gets no rent, but the efficient agent, $\underline{\alpha}$, obtains the information rent that he could procure by mimicking the inefficient agent, $\overline{\alpha}$. This rent depends only on the level of production requested of the inefficient agent.
Since the expected rent does not depend on the efficient agent's level of production, the maximization (P') does not entail any distortion away from the first-best production level of the efficient agent:

$$S'(\underline{q}^{SB}) = \underline{\alpha} \text{ or } \underline{q}^{SB} = q^* \qquad (18)$$

And the maximization with respect to $\overline{q}$ is:

$$(1-\beta) S'(\overline{q}^{SB}) - \overline{\alpha} = \beta\Delta\alpha \text{ [11]} \qquad (19)$$

Summing up, under asymmetric information the optimal set of contracts provides that:
- there is no distortion away from the first-best level for the efficient agent's output;
- there is a downward distortion for the inefficient agent's output:

$$S'(\overline{q}^{SB}) = \overline{\alpha} + \frac{\beta}{1-\beta}\Delta\alpha \qquad (20)$$

- only the efficient agent gets a positive information rent:

$$\underline{U}^{SB} = \Delta\alpha\overline{q}^{SB} \qquad (21)$$

The second-best transfers given respectively by:

$\underline{T}^{SB} = \underline{\alpha}\underline{q}^{*} + \Delta\alpha\overline{q}^{SB}$; $\overline{T}^{SB} = \overline{\alpha}\,\overline{q}^{SB}$

## 2.2. Multidimensional asymmetric information.

A deepening of the basic model that is appropriate for analysis of the incentives to keep production in the home country involves recognition that the parameter $\alpha$ of the informational asymmetry ("adverse selection") can take on a multi-dimensional nature. The agent has several pieces of information that are relevant to optimization of the contract.
In order to simplify, let's assume that A performs two activities for P (bi-dimensional asymmetry). A produces two goods in respective quantities $q_1$ and $q_2$ with the utility function $U = T - (\alpha_1 q_2 + \alpha_2 q_2)$ with $\alpha_i$ in $[\underline{\alpha}, \overline{\alpha}]$ for i=1,2. The probability distribution of the vector $\alpha = (\alpha_1, \alpha_2)$ is now defined by

$\underline{\beta} = P_2(\alpha_1 = \underline{\alpha}, \alpha_2 = \underline{\alpha})$, $\frac{\beta}{2} = P_2(\alpha_1 = \underline{\alpha}, \alpha_2 = \overline{\alpha}) = PR(\alpha_1 = \overline{\alpha}, \alpha_2 = \alpha)$

$\overline{\beta} = PR(\alpha_1 = \overline{\alpha}, \alpha_2 = \overline{\alpha})$

We denote: $q_{11} = q$; $q_{12} = \hat{q}_2$; $q_{21} = \hat{q}_1$; $q_{22} = \overline{q}$; e $T_{11} = \underline{T}$; $T_{21} = T_{12} = \hat{T}$; $T_{22} = \overline{T}$

Following the logic of the uni-dimensional model, the following incentive constraints become relevant [12]:

$\underline{U} = \underline{T} - 2\underline{\alpha}\underline{q} \geq \hat{T} - \underline{\alpha}(\hat{q}_1 + \hat{q}_2) = \hat{U} + \Delta\alpha\hat{q}_1$ (22)

$\underline{U} \geq \overline{T} - 2\underline{\alpha}\overline{q} = \hat{U} + 2\Delta\alpha\overline{q}$ (23)

$\hat{U} = \hat{T} - \underline{\alpha}q_2 - \overline{\alpha}\hat{q}_1 \geq \overline{T} - (\underline{\alpha} + \overline{\alpha})\overline{q} = \overline{U} + \Delta\alpha\overline{q}$ (24)

The participation constraint of an agent who is inefficient in both dimensions ( $\alpha_1 = \overline{\alpha}$ e $\alpha_2 = \overline{\alpha}$ ) is also relevant:

$\overline{U} = 0$ (25)

Constraints (24) e (25) are binding at the optimum for the solution of the optimum. Constraints (22) and (23) can be summarized as:

$\underline{U} \geq \Delta\alpha \max\{2\overline{q}, \overline{q} + \hat{q}_1\}$ [13] (26)

## 3. Model with participation constraints dependent on the type of agent

The basic model assumes that the outside opportunities of both types of agent are identical, so that it can be demonstrated that the relevant incentive constraint is always the constraint for the efficient agent. However, in many situations there is a correlation, generally positive, between the agent's productivity in a given P-A relationship and his outside opportunities. Assuming that the efficient agent's outside utility level is $U_0$>0, the participation constraints become respectively:

$\underline{U} \geq U_0$ (27)

$\overline{U} \geq 0$ (28)

When the utility of an efficient agent's opportunity outside the relationship with P rises to a certain level, P finds it is no longer useful to reduce the allocative efficiency in order to diminish the agent's information rent, which is constrained below the outside opportunity. Holding the agent in the P-A relationship can even mean that P must offer A such a high rent that the inefficient agent is induced to pretend to be efficient in order to take the offer. The efficient agent's incentive constraint thereupon become relevant, and this situation is called "countervailing incentives".
P must now optimize (10), subject to the incentive compatible constraints (11) and (12) and to the new agent type-dependent participation constraints (24) and (25).

The solution shows 5 different cases depending on the value of $U_0$ [14]:
1) Irrelevance of outside opportunity.
When $U_0 \leq \Delta\alpha\overline{q}^{SB}$, the second-best solutions (18), (20) and (21) – discussed above – remain valid. When the outside solution does not provide a sufficiently high level of utility to the efficient agent, it does not affect the second-best contract.
2) The incentive constraint of the efficient agent and the participation constraints of both agents are relevant.
When $\Delta\alpha\overline{q}^{*} > U_0 > \Delta\alpha\overline{q}^{SB}$, in order to participate the efficient agent wants to receive a higher utility than the information rent obtained in the second-best contract corresponding to $U_0 = 0$. By selecting $\overline{q}$ such that $U_0 = \Delta\alpha\overline{q}$, the distortion of the inefficient agent's output is reduced.
3) The participation constraints of both agents are relevant. When $\Delta\alpha\underline{q}^{*} > U_0 > \Delta\alpha\overline{q}^{*}$, P finds it is no longer optimal to use the inefficient agent's output to raise the efficient agent's information rent in order to induce him to participate. Since this output is already at its first-best level,

the only instrument available to P to raise the agent's rent is the transfer T: $\underline{T} = \underline{\alpha q}^* + U_0$. This solution is valid as long as the inefficient agent's incentive constraint is not relevant, i.e. as long as 0 $= \overline{U} > U_0 - \Delta\alpha \underline{q}^*$.

4) The participation constraints of both agents and the incentive constraint of the inefficient agent are relevant.

When $\Delta\alpha \underline{q}^{CI} > U_0 > \Delta\alpha q^*$ (the superscript CI means countervailing incentives), where $q^{CI}$ is given by:

$$\delta'(\underline{q}^{CI}) = \underline{\alpha} - \frac{1-\beta}{\beta}\Delta\alpha \qquad (29)$$

the efficient agent's output is distorted upward, up to the value $\underline{q}$, defined by $U_0 = \Delta\alpha \underline{q}$.

5) The efficient agent's participation constraint and the inefficient agent's incentive constraint are both relevant.

When $U_0 > \Delta\alpha \underline{q}^{CI}$, there is an upward distortion of the efficient agent's output, $\underline{q}^{CI} > \underline{q}^*$. When $U_0$ becomes $> \Delta\alpha \underline{q}^{CI}$, a rent equal to $U_0 - \Delta\alpha \underline{q}^{CI}$ must be granted to the inefficient agent. For $U_0 > \Delta\alpha \underline{q}^*$, we are in the case of countervailing incentives. To attract the efficient agent, who has more profitable outside opportunities, it is necessary to offer him a very high transfer (T). However, the contract now becomes attractive for the inefficient agent, and the efficient agent's output level is distorted upward to satisfy the inefficient agent's incentive constraint. For $U_0 > \Delta\alpha \underline{q}^{CI}$, it is even necessary to give the inefficient agent a positive rent in order to satisfy that constraint the lowest cost.

## 4. The efficiency of public intervention to counter offshoring.

The efficiency of public intervention to counter firms' decisions to transfer production abroad can be analyzed in the form of regulation by P (public authority) under asymmetric information. Our candidate for this purpose is the analytical method proposed by Baron and Myerson [15] for the case where it is the regulator that maximize a weighted average of the consumer's surplus $S(\underline{q}) - T$ and the profit of a regulated monopolist $U = T - \alpha q \quad con\ un\ peso \quad \phi < 1$ with a weight assigned to the profit of the firm. By assigning a weight of $\phi < 1$ to the firm's profit, the regulator makes

a redistributive choice, i.e. is not concerned solely with efficiency. Giving up a rent to the firm is considered a social cost (the regulator prefers the consumer's surplus). Accordingly, a higher value of $\phi$ reduces the distortion of level of output, because it expresses lesser concern on the part of the regulator with the distribution of rents (for $\phi$=1, rent no longer represents a social cost and the regulator simply maximizes efficiency).
P's objective function is: $S(q)-\alpha q-(1-\phi)U$
Maximizing under the incentive and participation constraints, we get: $q^{SB}=q^{*}$ for the efficient agent and a downward distortion of output for the inefficient agent $q^{SB}=\overline{q}^{*}$, given by:

$$S'(q^{SB})=\overline{\alpha}+\frac{\beta}{1-\beta}(1-\phi)\Delta\alpha \quad (30)$$

The analytical approach proposed by Baron and Myerson, summarized above, can be used, with suitable modifications taken from the basic model of incentives under asymmetric information, to examine the case that interests us here (countering the offshoring of production).
In this case the prime purpose of pubic intervention is to give firms that produce in the home market profit opportunities at least equal to those they expect to gain by shifting production abroad. In addition, the competent authority also pursues the objective of efficient intervention under asymmetric information.
Let the utility function of the domestic firm (meaning it produces inside the country) be represented as:

$$U=T-\alpha C(q)$$

where $C(q)=\frac{q^2}{2}$ [16]

The authority maximizes $S(q+q_f)-p_w q_f-\alpha C(q)-(1-\beta)U$, where $q_f$ is the foreign output imported at the world price $p_w$.
The first-best result is such that the firm produces at the world price and that the residual domestic demand is satisfied by imports at the price $p_w$.
Under asymmetric information, if it is assumed that the firm has no opportunities to transfer production abroad, the second-best policy would be: $q^{SB}=q^{*}$, and $\overline{q}^{SB}$ would be given by:

$$p_W = \left( \overline{\alpha} + \frac{\beta}{1-\beta} \phi \Delta\alpha \right) \overline{q}^{SB} \quad (31)$$

Consider, instead, that a private firm has opportunities to invest in activities abroad.

The participation constraint for the $\underline{\alpha}$ agent and $\overline{\alpha}$ agent become respectively

$$\underline{U} \geq \underline{U}_0 = \max_q \; p_W q - \underline{\alpha} C \left( \underline{q} \right) = \frac{p^2 W}{2\underline{\alpha}} \quad (32)$$

$$\overline{U} \geq \overline{U}_0 = \max_q \; p_W q - \overline{\alpha} C \left( \overline{q} \right) = \frac{p^2 W}{2\overline{\alpha}} \quad (33)$$

Given that $U_0 = \underline{U}_0 - \overline{U}_0 = \frac{p^2 W \Delta\alpha}{2\overline{\alpha}\,\underline{\alpha}}$, the information rents associated with the first-best outputs $\underline{q}^{\alpha}$ and $\overline{q}^{*}$ are now: $\frac{\Delta\alpha \underline{q}^{*2}}{2}$ and $\frac{\Delta\alpha \overline{q}^{*2}}{2}$.

It follows that $\frac{\Delta\alpha \underline{q}^{*2}}{2} > U_0 > \frac{\Delta\alpha \overline{q}^{*2}}{2}$.

Going back to the basic model with agent type-dependent participation constraints, which expresses solutions depending on the value of $U_0$, the above application is one where the participation constraints of both types of agent are relevant (case 3 of the five possible solutions, depending on the value of $U_0$, set out above). In this case, the instrument the authority (P) can use in order to increase the efficient agent's rent is the transfer T: $\underline{T} = \underline{\alpha} q^{*} + U_0$. As long as $0 = \overline{U} > U_0 - \Delta\alpha \underline{q}^{*}$, the inefficient agent's incentive constraint is not relevant (there are no "countervailing incentives").

## 5. Indications for policy measures to counter offshoring.

Like every other economic model, the principal-agent model is based on assumptions that simplify the real complexities and uses stylized facts. Therefore, it offers the competent authorities (the principal) a rational method of facing the difficulties of decisions to be taken under asymmetric information, which it is plausible to suppose characterize the position of authorities setting incentives for certain choices on the part of firms.

The rationality of public intervention under asymmetric information is consistent with the general interest of promoting efficient resource allocation and also satisfies needs of "political economy".
In the real-world debate on proposals for public measures to incentivate certain choices by firms (in the case considered, the decision to keep production at home), a recurring objection is that public support to firms tends to give them unjustified rents [17], which the firms benefiting from public transfers capture by exploiting the informational asymmetry in their favor. When the government is subject to a budget constraint, the transfer of funds for one purpose (transfers to firms) forces it to "ration" the budget resources available for other purposes [18].
From the perspective of political economy [19], the question is posed by the taxpayers, who know that every new public measure requires a greater tax levy on them and/or the reduction of other expenditures to the detriment of those now benefiting from them. And it is posed by workers (and their trade unions), who know that such transfers to firms are alternative (given the government budget constraint) to increases in take-home pay and/or social measures in their favor. Consequently, the commitment of the authorities to make measures in favor of firms compatible with the maximization of social value, even under asymmetric information, helps render such measures politically acceptable.
In the model used above, we concluded that the instrument of intervention available to the authorities in order to counter the incentives to offshoring is the transfer of public funds (T) to the efficient firm [20]. The transfer of funds by the authority (the principle) to the firm (the agent) stylizes a category of interventions that, in actuality, also includes tax and other fiscal variables and public expenditure variables [21], as well as regulations governing business activity, when changes to them redistribute costs from firms to society (or parts of society).
Besides, in practical reality the time factor plays an important role in shaping the strategic decisions of the public authority. The transfer abroad of productive activities is often the outcome of business decisions which in the short term harm employment (both direct and in related activities) in the territories affected, triggering social protest. Policies for infrastructural development and for human capital formation with investment in knowledge (basic and applied research and development, training, etc.) generally take considerable time to produce tangible effects on firms' production costs. By contrast, transfers of public funds (and reductions in taxes and social contributions charged to firms) also respond to the immediate needs of modifying the cost parameters based on which firms decide whether to locate productive activities at home or abroad.

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Notes

[*] This work has been previously subjected to blind refereeing entrusted to a member of the Referee Committee in accordance with the regulations adopted by this Journal.
[1] See Florio (2009, 2010, 2011) and the ample bibliography cited.
[2] China, India and other Asian countries; the countries of eastern Europe that had centrally planned economies until the early 1990s; more recently, South Africa and the countries of South America
[3] On the current difficulties of the industrial countries, see Eichengreen (2008a, 2008b); Hutton (2003); IMF (2004); Kim and Roubini (2004); Krugman (2000); Krueger and Stiglitz (1986); Palmerio (2008); Reich (1984); Roubini and Setser (2004); Stiglitz (2007); and Taccone (2008).
In the debates on the issue, the industrial countries are often urged to compete by adopting more advanced technologies and channeling research in that direction. This position fails to consider, however, that the emerging countries, which have relatively high rates of capital formation, monopoly structures in the basic sectors of the economy and institutional arrangements that favor the allocation of resources to public over private priorities, are able to direct large flows of capital and other forms of support to theoretical and applied research and to the infusion of its results into the productive macinery, so as gradually to close many of the technological gaps with the advanced countries.
[4] By now it is evident that many of the excesses and distortions in the creation and multiplication of "innovative" financial instruments served to disguise adverse developments in production and trade. See Shiller (1999, 2003, 2006); Shleifer (2006); and Manasse, Roubini and Schimmelpfennig (2003).
[5] See Taccone (2008).
[6] See the ample bibliography cited in Laffont and Martimort (2002) and the references therein to individual theoretical developments. See also Laffont and Tirole (1993) and Laffont (2005).
[7] See in particular the model of Baron and Myerson (1982), one of the pioneering contributions in the field.
[8] That is, even for the least efficient agent the social value of the output must have a non-negative social value $\overline{V}^* = S(\overline{q}^*) = \overline{\alpha}\overline{q}^* - F \geq 0$ .
[9] See Laffont and Martimort (2002), pp. 36 ff.
[10] See the demonstration in Laffont and Martimort (2002), pp. 41-43.
[11] At the second-best optimum, P is willing neither to increase nor to decrease the inefficient agent's output; (19) expresses the trade-off between efficiency and rent extraction that arises under asymmetric information.

[12] Laffont and Martimort (2002), pp. 93 ff.
[13] P's optimization program becomes:
$\max_{\underline{q},\hat{q},\overline{q}} \beta\{S(\underline{q}) - 2\alpha\underline{q} - \Delta\alpha \max\{2\overline{q}, \overline{q}, \hat{q}_1\} + \hat{\beta}\{\hat{q}_1 + S(\hat{q}_2) - \underline{\alpha}\hat{q}_2 - \overline{\alpha}\hat{q}_1 - \Delta\alpha\overline{q}\} + \beta\{S(\overline{q}) - 2\alpha\overline{q}\}$. See Laffont and Martimort (2002), pp. 95 ff., who show the solutions of P's optimization program in the cases of weak correlation ($\overline{q} \leq \hat{q}_1$) or strong correlation ($\overline{q} > \hat{q}_1$) between the two dimensions of adverse selection. Perfect correlation, $\hat{\beta}$ = 0, would bring us back to the case of the uni-dimensional model.
[14] See. Laffont and Martimort (2002), pp. 101 ff.
[15] Baron and Myerson (1982).
[16] See Laffont and Martimort (2002), chapter 3, pp. 86 ff.
[17] Such as to increase profits or to enable firms (especially in "group" approach") to make prior-year losses good and tyo reduce debt.
[18] On the government budget constraint in the principal-agent model, see Laffont and Martimort (2002, pp. 84 ff.) and Laffont (2005).
[19] See Padovano and Petretto (2010) and the ample bibliography cited.
[20] In compliance with the inefficient firm's participation constraint, in the model used above.
[21] Tax or social contribution rates; definition sof tax bases; public expenditures that indirectly affect firms' production costs; public spending on infrastructure, research and training and other public expenditures that externalize some business costs; the provision of public guarantees to expand firms' access to credit and direct support to the bankiing system).

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