Information externality in the arts and the public intervention: a brief note

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October 2007

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Abstract

The presence of information externality, and the consequent necessity of public intervention to amend the effect of market failure, has been deeply analysed in the case of scientific research. In this Note we argue that the same point is particularly appropriate also in the case of arts: the presence of information externality concerning the personal skills of artists can represent a valid reason to believe that purely private funding of arts is inefficient, and to call for public intervention in this sector.

KEYWORDS. Arts, Experimentation, Financing, Incomplete Information, Bayes theorem.

JEL CLASSIFICATION. C72, Z10.

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Abstract - The presence of information externality, and the consequent necessity of public intervention to amend the effect of market failure, has been deeply analysed in the case of scientific research. In this Note we argue that the same point is particularly appropriate also in the case of arts: the presence of information externality concerning the personal skills of artists can represent a valid reason to believe that purely private funding of arts is inefficient, and to call for public intervention in this sector.

I. Introduction

In this Letter we suggest that information externality concerning the personal skills of individuals is important not only within scientific research –as it is documented by a large body of theoretical and empirical literature– but also in the arts sector.

The peculiar information externality, which we are focusing on, derives from the fact that the personal skills of an individual are shown by the results obtained when he/she receives funds for developing and accomplishing projects: Callon (1994), and more specifically Arora and Gambardella (1997) suggest that the results obtained by a scientist are, at least partially, a public good. The obtained results can contribute to detect the personal skills of a scientist, and to update the probability that he/she is more or less talented. Hence, when a subject (and specifically a private institution) decides to finance a scientific project, it also contributes to a public good, namely, the information about the skills of the selected scientists. This (positive) externality leads to a market failure, so that public intervention is necessary to amend the allocation inefficiency. Thus, among many other reasons, the public support of scientific research can be motivated by the fact that the private support to scientific research is smaller than the social optimal level, since private financiers do not take into account the information externality provided by the result obtained by scientists, concerning their different abilities and skills. Consistently, there is empirical evidence that private financing institutions prefer to engage well-known scientists, the personal skills of whom are known, rather than young researchers; moreover, the publicly financed programmes involve a wider range of scientists and research lines (Merton, 1988, Dasgupta and David, 1994, *inter alia*).

Here we argue that the same points can apply to the case of artists. When an appointment is given to an artist (as well as to a scientist), his/her results provide information about personal skills. This piece of information is a public good, so that, especially at the first

stages of the professional activity, financing artistic (as well as scientific) activities also produces a public good. For this reason, the public intervention can be necessary to overcome the inefficiency generated by a purely private financing of arts. As a matter of fact, private corporations generally prefer to support activity of well-known artists (Throsby, 1994, 2001; Frey, 1997); this is inefficient from a social welfare perspective, since it does not provide information about the skills of younger artists, and limits the variety of artistic expressions receiving financial support.

The interaction between financiers and artists is a crucial issue in cultural economics; this issue is investigated in a number of contributions; see, e.g., Caves (2000), Throsby (2001), Cellini and Cuccia (2003). In the present paper we make the specific point that the presence of information externality in financing the arts represents a valid reason to invoke the public intervention in these markets. Section 2 provides a formal model which strictly follows the paper of Arora and Gambardella (1997) on scientific research. Section 3 comments and concludes.

II. The model

The relationships between artists and private financiers take place over time (more precisely, are dynamic) and are characterised by asymmetric information. We take into account these two aspects, by considering a two-stage set-up with incomplete information.

In each stage, any artist proposes to a financier one project. The artistic project entails a cost C, $0<C<1$, and –if funded– can be successful (S) or not (F). The economic return of a successful project is 1, while the economic return to a failure is 0.

We assume that any artist can be "talented" (T) or "talentless" (U). The ex-ante probability that an artist is talented is equal to x, with $0<x<1$.

Let $Prob(S,x)$ be the probability of success of an artist who is believed to be talented with probability x. Hence, in a one-shot framework, the expected return associated to the financing of a project would be $Prob(S,x)-C$.

It is obvious to assume that $Prob(S \mid T)>Prob(S \mid U)$, that is, the probability of successful project is higher for talented artists.

In a dynamic framework, financiers can update the probability about the real skill of an artist, by looking at her/his past results. The Bayes rule can be used to this end. In

particular it is obvious to assume: $Prob\ (T \mid S)=y>x$, that is, the observation of a success obtained by a given artist leads to increase the probability that he/she is talented.

Let us focus on the two-stage framework. Denote by S' the success in the second stage, provided that success occurred in the first stage.

The total expected payoff of funding today present and future artistic projects:

$$Prob(S,x)\text{-}C+[Prob\ (S',y)\text{-}C][Prob(S,x)]$$

(This derives from the facts that no funds are given in the second stage, if the artists failed in the first stage, which happens with probability 1-*Prob(S,x)*).

It is simple to prove that this expression is increasing in x (see Arora and Gambardella, 1994, footnote 8): the higher the subjective probability to be a talented artist, the higher the expected payoff from funding him/her. Moreover, a threshold level x^* exists, such that the expected payoff is positive. Only the artists for which $x>x^*$ will be funded, provided that the financier behaves on the basis of the expected profit.

So far, we have assumed that the artist who receives funds in the first period, applies also for funds in the second period to the same financier. This assumption can be appropriate if one thinks that the financiers is a "planner", taking a social perspective. However, if the financier is a private subject, it can not be sure of hiring the artist also in the second stage, provided that it funded the artist in the first stage and the result was successful.

Again following Arora and Gambardella (1997), we assume that in period 2 the private financier can hire the same successful artist funded in period 1, with probability q. Hence, the total expected payoff for a private financier from funding an artist is in this case

$$Prob(S,x)\text{-}C+q[Prob(S',y)\text{-}C][Prob(S,x)]$$

This function increases with x, and a threshold level of x exist, $x^\wedge$, above which the expected payoff is positive. However, $0<q<1$ implies $x^\wedge>x^*$. This means that a private financing subject chooses artists to be funded, with higher prior probability of being talented, as compared to financing subject taking a social perspective. In other words, private financiers are more likely to hire "stars". Thus, the existence of the information

incompleteness is among the reasons of the existence of "superstar" phenomena (Rosen, 1981; Adler, 1985).

The intuition behind the model is very simple: the financial support to artist creates an information externality problem. The private financier is not sure of being able to hire the artist again in the future. Provided that the result obtained in the first period is public knowledge, with probability (1-*q*) the financier produces an information useful for a different subject, and specifically for the financier that will hire the artist in the subsequent stage. Hence, private financiers have smaller incentives that public agencies to fund artistic projects, especially when the skills of an artist are unknown: private financier have more incentive to fund well-established artists than young artists.

The same argument used by Dasgupta and David (1994) and more specifically by Arora and Gambardella (1997) to invoke public patronage of scientific research can be used to provide a rational basis for public support to artistic activities: there is a social value in financing artistic projects, to generate more information about artists' skills.

III. Concluding remarks

We are aware that a large set of different motivations play a role in shaping the relationship between artists and financiers. A wide body of literature focuses on the choice of funding arts (Throsby, 2001, Towse, 2001). A different research line deals with the choice of artists about the experimentation content of their works, and the consequences in terms of economic returns for the financiers (Mc Cain, 1979, Frey, 1997, Cowen and Tabarrock, 2000, Cellini and Cuccia, 2003). Finally, several contributions provide support to the necessity of public intervention in the arts, basing on the story of Baumol's cost disease (Baumol and Bowen, 1965, 1966; for a review, see Throsby, 1994 or more recently Heilbrun, 2003). We have not dealt with these points in the present Note.

Simply, we have shown that the information externality can be an important phenomenon in the choice of financing arts projects. Its presence can help explain the superstar phenomenon, and, more importantly, can represent a rationale for asking for public support of artistic activities.

A purely private funding of the arts gives rise to self-reinforcing mechanisms: private financiers have incentives to fund only well-known artists; they builds up and strengthen their personal reputation, which increases their probability of receiving funds in subsequent stages.

Moreover, private funding of arts gives rise to a sub-optimal level of investment in exploring the skills of younger artists, precisely because the information externality is not properly taken into account by private financing institutions.

References

Adler, M. (1985) "Stardom and Talents" *American Economic Review* **75**, 208-212.

Arora, A., and A. Gambardella (1997) "Public Policy Toward Science: Picking Stars or Spreading the Wealth?" *Revue d'economie industrialle* **79**, 63-75.

Baumol, W. J., and W. G. Bowen (1965) "On the Performing Arts: the Anatomy of their Problems" *American Economic Review Papers and Proceedings* **55**, 495-502.

Baumol, W. J., and W. G. Bowen (1966) *Performing Art - The Economic Dilemma*, Twentieth Century Fund: Cambridge, Ma, USA.

Callon, M. (1994), "Is Science a public good?" *Science Technology and Human Values* **19**, 395-424.

Caves R. E. (2000) *Creative Industries : Contracts between Art and Commerce*, Harvard University Press: Cambridge, Ma, USA.

Cellini, R., and T. Cuccia (2003) "Experimentation in the Arts: A Game Theory Approach" *Economia Politica* **20**, 21-34.

Cowen, T., and A. Tabarrok (2000) "An Economic Theory of Avant-Garde and Popular Art, or High and Low Culture" *Southern Economic Journal* **67**, 232-253.

Dasgupta, P., and P. David (1994) "Towards a New Economics of Science" *Research Policy* **23**, 487-521.

Frey, B. S. (1997) *Not Just for the Money*, Edward Edgar: Cheltenham, UK.

Heilbrun, J. (2003) "Baumol's cost disease" in *A Handbook of Cultural Economics* by R. Towse, Ed., Edward Elgar: Cheltenham, UK, 91-101.

Mc Caine, R (1979) "Reflections on the Cultivation of Taste" *Journal of Cultural Economics* **3**, 30-52.

Mc Caine, R (1986) "Game Theory and Cultivation of Taste" *Journal of Cultural Economics* **10**, 1-15.

Merton, R. (1988) "The Matthew Effect in Science: Cumulative Advantage and the Symbolism of Intellectual property" *Isis* **79**, 606-23.

Rosen, S. (1981), "The Economics of Superstar" *American Economic Review* **71**, 845-858.

Towse, R. (2001), "Partly for the Money: Rewards and Incentives to Artists" *Kyklos* **54**, 473-490.

Throsby, D. (1994) "The Production and Consumption of the Arts: a View of Cultural Economics" *Journal of Economic Literature* **32**, 1-29.

Throsby, D. (2001), *Economics and Culture*, Cambridge University Press: Cambridge, UK.