Erasmus Universiteit Rotterdam

Faculty of History and Arts

Conference Paper for the Congress of the Society for Economic Research on Copyright Issues 2007

Copyright and Subsidies

Paul Stepan

stepan@fhk.eur.nl

Comments are welcome!

Copyright, Subsidies and other Incentives

Economics of copyright and cultural economics are two areas of economics that to a large extent cover common ground. Both disciplines are interested in content creation and both deal with cultural goods. In the past few years the fields of interests in cultural economics have broadened from the "high arts" to the creative industries that cover more or less all industries that are protected by or built on copyright. Nevertheless the two disciplines hardly mix and results in one area of economics are barely recognised in the other. This paper aims to relate economics of copyright and cultural economics with in their respective ways of searching for a second best solution.

Introduction

The basic economic rationale for copyright is, that it provides an incentive to create. If copyright did not provide this incentive there would be no economic justification for a legal market intervention. Copyright allows the creator to charge a price that is higher than the market price for a limited period of time in order to recoup the invested money which otherwise would be difficult due to free riders. In that sense copyright is an attempt to overcome one market failure with another. Therefore economics of copyright deals to a large extent with the search of a second best solution since a first best one is not available. The main problems arise from monopoly power, transaction costs, optimising the duration, issues of property and alternative ways of compensation.

Even though most economists would agree that copyright does provide an incentive to create, there is still some ambiguity. Arnold Plant (1934) doubted that copyright does provide a sufficient incentive to create and stated his belief that creators respond to incentives other than monetary ones. Kenneth Arrow (1962) did not question if copyright provides an incentive to create or not, he addressed the subject from a more general perspective and suggested that

information in general features the characteristics of a public good thus making the case for public finance. On the contrary to the authors mentioned above Boldrin and Levine (2002, 2005) argue against copyright from a completely different angle. They state that copyright leaves too much control to the authors and hence it slows innovation down. They find that the free rider problem is overrated and the problems can be resolved through the means of freedom of contract and the first mover's advantage.

Nevertheless, assuming that copyright does provide an incentive to create, at least sufficient to raise social welfare compared to having no protection at all, there are also other incentives for creation in the cultural sector, such as subsidies and donations or any other kind of related income that have to be considered. For full disclosure one should also mention social incentives such as fame, but in this paper the focus lies only on financial incentives. If we search for measures that lead to a second best solution we cannot optimise the duration of copyright without considering subsidies nor can we find a useful subsidy mechanism or amount without considering copyright.

Subsidies have been neglected in economics of copyright (except by Plant (1934), Hurt and Schuchman (1996) and Breyer (1970) who saw a limited role for them) but they had been in the core of cultural economics for a long time. Based on Baumol and Bowen's book (1966) and a number of subsequent publications cultural economics was formed. From the beginning on the discipline dealt to a large extent with welfare economic justifications for subsidies. Similarly in economics of copyright, cultural economists searched for a second best solution since various reasons of market failure do not allow to achieve a first best solution. Unlike in economics of copyright, the arguments were not only based on free riding and public good characteristics, but also for example on spill over benefits, national prestige, option demand, future generations or merit goods.

In this paper these to approaches are combined as they are in place in the policies in most countries (even if not coordinated). Direct subsidies are much more important in (continental) Europe than in the United States or Japan but nevertheless all countries do distribute public money for the arts and culture to some extent. In addition some countries (e.g. the United States) grant indirect subsidies and accept tax-breaks, which is a waiver of tax money and hence also provides an incentive to create. Other than that there are donations and sponsorship which in turn respond to the existence of tax breaks, and last but not least patronage. All these measures provide an incentive to create and hence change the objective function of a profit maximising creator.

… other incentives to create

The main difference between the European and the US-American system is the role the state and public money plays for artists and creators in the creative industries. In (continental) Europe subsidies are extremely relevant for the creator's income and hence the incentives to create deriving from them interfere with the incentives deriving from copyright. When the discussion on creative industries hit most European governments and local governments, they started to launch public funding bodies for creative businesses, to establish "creative clusters" in the manner of real estate developers and started initiatives to support export and trade. The European film industry is highly subsidised in all EU-member states and subsidies add more to the income of creators than copyright based profits. In Austria, for example, an average film costs 1.5 million Euro and the producers equity ranges between 2 and 5 percent. The rest of the money is raised from public funding bodies and from public broadcasters. Nevertheless the producer receives full copyright protection until 70 years after the death of the last author (script, music, director). The film industry is probably the strongest example since it is

considered to be a for-profit industry. In practice it has one of the highest subsidy ratios of all cultural industries.

In the European film industry there are subsidies for each step in the production and value chain. For script writing, for pre-production, production, post-production, cinema release and last but not least the cinemas themselves.

Ways of subsidising the cultural sector

In the following different ways of subsidising culture are sketched in order to point out that the incentives can be very different depending on the way they are implemented. The main distinction can be made between direct and indirect subsidies and subsidies that affect the supply in relation to the demand side. Most subsidies for the cultural sector in Europe are direct ones that shift the supply curve out to the right. Cultural funding can be spent in the form of lump sum subsidies, matching grants, public financing, and repayable on success subsidies, whereas the last two are subcategorised into subsidies that only cover the costs and those, which additionally allow for honoraria for the creators.

The first one is a frequently used way of subsidising in all artistic branches where in response to an application for subsidy a lump sum is granted. The lump sum is used as a drop in the costs of development and hence lowers the quantity needed to be sold in order to break even. Even though the investment is partly public money, there is no mitigation in copyright in order to lower the social costs that it causes. A simple lump sum subsidy that leaves a significant share of the investment to the creator does not interfere with the incentives provided by copyright since producer is better off selling the creation in every way but nevertheless a combination bears welfare implications.

The second one, matching grants, shift the demand curve out to the right since the subsidy can be pictured as a decrease in price, which triggers the opposite effect to rights protection. If copyright prices are higher than market prices, matching grants can keep the price down to a competitive level so that the deadweight loss could be minimised.

The third case is not a subsidy in the usual sense of the word but full public coverage of the costs. This is true for most experimental artistic projects and projects in the public sphere. The costs are covered and the copyright remains with the authors and therefore it is not work for hire or equal to rewards in the sense of Shavell and Ypersele. If the subsidy exactly covers costs, the incentives to distribute are not changed as in the case of the lump sum subsidy. In some cases in addition to the coverage of the costs funding bodies also tolerate payments to the creator. In that case it depends whether the expected returns from copyright based exploitation are higher or lower than the expected payment of the next project. If the expected payment of a future project is higher than the expected copyright royalties of the previous ones, the creator is better off committing himself to a new project than exploiting one from the past. In that case, the incentives to work on a new project are stronger than those to exploit past projects and therefore publicly funded creations disappear from the market for two reasons. First, the creator is not interested in the exploitation of his work and therefore he shows no interest in the distribution and hence will take the creation off the market. Second, the creator is not willing to put the creation in public domain, since it might become valuable in the future. Even if the probability is very, low the private costs of keeping the rights are zero and therefore it is the dominant strategy for the creator to take the product off the market and keep the rights.

The fourth case is subsidies that are repayable on success that are often used in the European film industry. Again it is not a subsidy in the sense of the word –

it is state-financed investment. If a such a subsidy is granted, money gets transferred to the producer in order to produce the film but if the film turns out to be a success the money must be paid back in the following way: from every cinema ticket, the cinema keeps 50% and gives 50% to the distributor. The distributor keeps the money as long as it is needed to cover the costs of marketing. After that she has to split her share equally with the producer. The producer in turn keeps his share until the invested money is recouped and then shares with the public funding body according to its investment. As mentioned above, the equity ratio of producers in Austria ranges between 2% and 5% which gives the producer a share of 0.005 to 0.0125 percent of a cinema ticket or 3 to 7.5 cent at an average ticket price of 6 Euro. Additionally, it must be mentioned that there is also a producer's fee, a lump sum subsidy that is given to the producer as a kind of income. This subsidy has a double impact. On the one hand it is a subsidy to cover their work (at least partly) and on the other hand it is accepted as a part of the equity that is invested in the project and hence raises the equity ratio of the producer. Consequently, the lump-sum subsidy enters the basis of calculation for the equity ratio. And again, if the producer's fee of the next project is higher than the expected returns of the past ones, he makes more money producing a new film than exploiting an old one. That means that copyright on the one hand provides an incentive to exploit old projects, which is neutralised by the incentives given through the subsidies that favour the production of a new project. Since the funding bodies show an interest in distributing the movies, an additional incentive for distribution and exploitation was implemented. In addition to the copyright, the funding bodies offer to match every Euro that is paid back by a factor of four.

In that particular case, which is quite common for the European film industry, copyright does not only provide an insufficient incentive to create, also it does not even provide an incentive to exploit publicly financed projects. In order to

avoid the movies disappearing from the market, the funding bodies introduced an additional incentive to copyright to market the projects.

Economic effects of subsidies

Shavell and Ypersele (2001) built a model to compare intellectual property rights with a reward scheme and an optional reward scheme where creators can choose between rights protection and rewards. They found that an optional reward scheme is Pareto superior to only intellectual property rights because even if patents provide the stronger incentives to create there is a free choice between rights protection and the reward. In case the reward is chosen, monopoly pricing can be avoided and the innovation is free for derivative works. As outlined above there is a third option that is very common for the cultural sector and that is a model that features intellectual property rights as well as public money (subsidies). For reasons of simplicity the model, will be adapted for the case of lump-sum subsidies. The analyses of other forms of subsidies would make the model much more complex and the subsidy mechanisms described above are partly inefficient in themselves such as the example from the film industry, where additional subsidies were implemented to correct the failures of other subsidies.

The basic rationale is, that a subsidy increases the money invested in the sector and the simplest case that fulfils the criterion is the one of a lump-sum.

The model

To avoid confusion, I use the same the notation as Shavell and Ypersele (2001)

k = investment for the creation and
$p(k)$ = probability of an creation; $p'(k) > 0$; $p''(k) < 0$
c = unit costs of producing copies of the creation

q = quantity of copies

d(q;t) = inverse demand; $d_q(q;t) < 0$

t = parameter in $[t_a, t_b]$

s* = social surplus (= social welfare exlusive research investment)

The model

First-best solution

First I introduce Shavell and Ypersele's model (equations 1-4) for the first-best outcome featuring neither copyright nor subsidies nor rewards.

$$s*(t) = \int_0^{q(t)} (d(q,t) - c)dq \tag{1}$$

The first best investment into creation would than be

$$p(k)s*(t) - k \tag{2}$$

and consequently the first derivate

$$p'(k)s*(t) = 1 \tag{3}$$

From which we get the optimal investment k(s*).
The first-best social welfare W*(t) is

$$W*(t) = p(k(s*(t)))s*(t) - k(s*(t)) \tag{4}$$

Subsidies

Adding a lump-sum subsidy to this model would only affect the investment k directly. Let x denote the share of public money in the investment. The case

9

for subsidies without copyright would not change s* and the welfare function derives from

$$p(k)s*(t) - (1-x)k \qquad (5)$$

for all $0 \le x \le 1$ so that

$$p'(k)s*(t) = 1 - x \qquad (6)$$

which leads us to the optimal investment for a given share x of subsidies:

$$k(x, s*(t)) = k_{privat} + k_{subsidy}$$

with

$$k_{private} = (1-x)\, k(x, s*(t))$$
$$k_{subsidy} = x\, k(x, s*(t))$$

and

$$W_x*(t) = p(k(x, s*(t)))s*(t) - k(x, s*(t)) \qquad (7)$$

Since p(k) follows the properties that p'(k) > 0 and p''(k) < 0, k(x,s*(t)) increases faster than the first term of equation (7). Ergo the investment rises with the subsidies but the total welfare W_x* is smaller than the first best welfare W*. x and k correlate positively, so that an increase in subsidies results not only in an higher level of total investment but also in private investment.

$$k_{private} \ge k(s*(t))$$

and

$$W * x(t) \leq W * (t)$$

Intellectual Property Rights

The second case (equations 8-11) Shavell and Ypersele modelled, is for an intellectual property rights regime, denoting $q_m(t)$ the monopoly quantity and $\pi(t)$ the monopoly profit.

$$p(k)\pi(t) - k \tag{8}$$

so that the first derivative is

$$p'(k)\pi(t) = 1 \tag{9}$$

Since the monopoly price is higher than the first-best price the monopoly quantity is lower so that a dead weight loss can be expressed as

$$l(t) = \int_{q_m(t)}^{q(t)} (d(q;t) - c)dq \tag{10}$$

so that the social welfare under a IPR-regime for a given (t) is

$$W_c(t) = p(k(\pi(t)))\left[s * (t) - l(t)\right] - k(\pi(t)) \tag{11}$$

Copyright and Subsidies

In the following case, which is very common in the European cultural sector where copyright and subsidies coexist, a lump sum subsidy is added to the model so that

$$p(k)\pi(t) - (1-x)k \qquad (12)$$

and the first derivative is

$$p'(k)\pi(t) = 1 - x, \qquad (13)$$

which leads us now to the optimal investment if copy rights are allowed and a given share x of subsidies:

k(x, π(t)) = k(π(t))privat + k(π(t))subsidy

with

k(π(t)) privat = (1-x) k(x, π(t))

k(π(t)) subsidy = x k(x, π (t))

Since a lump-sum subsidy does not affect the dead-weight loss as expressed above the social welfare can be expresses as

$$W_{c,x}(t) = p(k(x,\pi(t)))\big[s*(t) - l(t)\big] - k(x,\pi(t)) \qquad (14)$$

Comparison between W_c and $W_{c,x}$

For the same reason why W_x is smaller than W^*, $W_{c,x}$ is smaller than W_c. Even tough subsidies could compensate the dead weight loss copyright generates through underinvestment, the total welfare decreases.

From Shavell and Ypersele analysed that the welfare under intellectual property rights is inferior to the first best welfare. There for we can summarise that

$$W^* > W_c > W_{c,x}$$

and that

$$W^* > W_x > W_{c,x}$$

Copyright versus subsidies

The question that is left is the relation between W_c and W_x which would result from

$$\frac{p(k(x,s^*(t)))\left[s^*(t) - l(t)\right]}{p(k(\pi(t)))\left[s^*(t) - l(t)\right]} = \frac{k(x,s^*(t))}{k(\pi(t))}$$

If the right side of the equation is larger than the left side that would mean that the investment under subsidies has increased faster in relation to the investment under copyright than $p(k(x,s^*(t)))$ has in relation to $p(k(\pi(t)))$. Hence subsidies would be Pareto superior to copyright - vice versa. (proof is forthcoming.)

Conclusions

Economics of copyright and cultural economics are two areas of economics that to a large extent cover the same industrial sectors but are barely linked to each other. While cultural economists argue for or against subsidies they hardly take the effects of copyright into account and vice versa. Also on a political level, these two fields are barely related to each other and if they coexist the effects of the two measures are not coordinated. In this paper, I showed that the incentives and effects deriving from both measures, subsidies and copyright, conflict with one another and that a combination of both leads to a welfare level that is inferior to either of the two options. It is evident that either one of the measures is superior to the combination of both.

References

Arrow, Kenneth J. (1962), 'Economic welfare and the allocation of resources for invention', in National Bureau of Economic Research (ed), *The Rate and Direction of Inventive Activit*y, Princeton: Princeton University Press, pp.609-625.

Baumol, William and W. Bowen (1965), On the performing arts: The Anatomy of their economic problems, *American Economic Review*, **55** (2), p495.

Boldrin, Michele and David Levine, (2002), 'The case against intellectual property', *American Economic Review, Papers and Proceeding*s, **9 (**2), 209-12(4).

Boldrin, Michele and David Levine (2005), 'Intellectual property and the efficient allocation of social surplus from creation', *Review of Economic Research in Copyright Issues*, **2** (1), 45-67.

Breyer, Stephen (1970) 'The uneasy case for copyright: A study of copyright in books, photocopies and computer programs' *Harvard Law Review* **84,** 281-351.

Hurt, Robert M., and Robert M. Shuchman (1966), 'The economic rationale of copyright.' *American Economic Review - Papers and Proceedings* **56**, 421-432.

Plant, Arnold (1934), 'The economic aspects of copyright in books', *Economica*, **1**(2), 167-195.

Shavell, Steven and Tanguy van Ypersele (2001), 'Rewards versus intellectual property rights', *Journal of Law and Economics*, **44,** 525–548.