Artistic Markets and Intellectual Property Rights*

Francisco Alcalá and Miguel González-Maestre†
Universidad de Murcia
PRELIMINARY
March, 2006

Abstract

This paper discusses the role of copying and intellectual property rights in the context of artistic markets. Based on the distinction between stars and modest artists and on the use of advertising, we show in a static model that, under reasonable conditions, weakening intellectual property rights reduces stars’ rents but widens the market for modest artists and increases their number. We then extend our setting to an overlapping-generations model of artists. We assume that only a given proportion of young artists come out with talent and become stars in their second life-period. We show that weakening intellectual property rights increases the number of both young artists and stars in the long run. Since the average price of artistic goods is also lower, consumers’ welfare rises.

Keywords: intellectual property, promotion costs, superstars, copying.

JEL Classification: L10, L13

*We gratefully acknowledge financial support from the Spanish Ministry of Education and Science under projects SEJ2005-07200 (F. Alcalá and M. González-Maestre) and BEC2003-01132 (M. González-Maestre), and BBVA under project 02255 (M. González-Maestre).

†Departamento de Fundamentos del Análisis Económico, Universidad de Murcia, 30100 Murcia, Spain. E-mails: falcala@um.es, mmaestre@um.es.
1 Introduction

The debate on intellectual property rights protection has attracted much attention in recent years. On the one hand, innovators and artists are asking for extra protection. In the technological markets this is reflected in many new patents covering a wide range of applications, while in the artistic markets creators and firms are demanding the extension of copyright protection and tougher restrictions on the use of copying devices (including Internet, CD and DVD recording tools). On the other hand, many people, including reputed economists, think that the current intellectual property protection is excessive in both the US and Europe (See The Economist, Jun. 21st 2001, Nov. 11th 2004 and Jan. 6th 2005 and the recent surveys by Peitz and Waelbroeck, 2003a, and Varian, 2005).

In this paper we contribute to the current debate on intellectual property, focusing on artistic markets. Artistic production (music, movies, books, etc.) has some distinctive features that make specific the debate on their associated intellectual property rights. In particular, artistic production differs from other goods in that it is intensive in an innate input that we may call talent. In a celebrated article, Rosen (1981) showed how this characteristic combined with some circumstances commonly involved in the consumption of artistic goods (such as the scale economies arising from joint consumption), lead to the superstar phenomenon: concentration of output on those few sellers who have the most talent, marked skewness in the associated distribution of income and very large rewards at the top. Moreover, as pointed out by Rosen, the development of modern (recording, communication, etc.) technologies has amplified the scale economies of joint consumption associated to artistic goods which tend to concentrate market shares and earnings on top talented artists. In contrast, most recent copying and communication technologies may reduce this concentration.

Rather surprisingly, the debate on the optimal protection of artistic property-rights has not paid much attention to Rosen’s insights on the special features of artistic markets. Our goal in this paper is to investigate the effects that a permissive policy on copying may have on artistic markets
taking into account those features. Our analysis starts by considering the
cited key characteristic of these markets; namely, the sharp economic dis-
tance between a small number of stars that concentrate a hefty share of the
market, and the rest of professionals. We do so by making an explicit disti-
tinction between the market for stars or famous artists and the market for
modest or not so famous artists. The model can be reinterpreted in different
ways: stars can be viewed as consecrated artists, while modest artists may
be young (and therefore unknown) singers or actors who may not even know
whether they are talented or not. In fact, this is the interpretation we follow
in our dynamic model in the second part of the paper. Nevertheless, it is
not necessary to think of stars as being better than modest artists according
to any artistic criterion. It is popular preferences that are relevant in our
model, regardless of artistic qualifications made by experts.\footnote{In fact, the
analysis by Adler (1985, 2005) suggests that stardom involves a random
process with almost no connection with real talent. This author shows that huge
differences in income may exist even when no differences in talent exist at all.}

Furthermore, we also stress another two important features of most artis-
tic markets: the endogeneity of demand and the economic-rent nature of
most income accruing to stars. Promotion costs play a key role in the de-
mand for artistic products and greatly affects the division of market shares
between stars and modest artists. The large expenditures in the promotion
of stars reduce the market for modest artists and newcomers, and tend to
work as a barrier to entry. On the other hand, the fact that the key input
in artistic markets is innate talent together with the strong concentration
of large revenues at the top, confers the character of economic rent to most
income obtained by top singers, actors, writers, professional athletes, etc.
Put it in other words: the opportunity costs of top artistic productions are
low compared with their value. Moreover, it is the special characteristics
of these markets as stressed by Rosen that cause these rents to be greatly
affected by the emergence of new communication and copying technologies,
and the globalization of markets.

In this context, we show that the legal and physical availability of copying
original artistic productions may increase not only consumer surplus but
also the number of new or modest artists, while stars’ rents are reduced but not eliminated. This result contrasts with the conventional wisdom that a permissive copying policy discourages artistic creation and the promotion of new artists.

From a dynamic perspective, a further feature of artistic markets is that the abundance of young artists (most of which will not succeed) is a precondition for a large number of high quality artists in the future. Talent and charisma are rare and not easily detected. Young artists need time and some share of the market to be able to test themselves and to show to promotion firms they do have these characteristics (MacDonald, 1988). High protection to artistic intellectual property rights, though profitable to the already successful senior artists and their heirs, may reduce the market for young artists thereby reducing in the long run the number and quality of stars. This issue is addressed in the second part of the paper by means of a model of overlapping generations of artists. In this dynamic setting we show that easier copying may be positive for consumers’ welfare not only because it provides lower prices and more consumption diversity in the low-type market, but because it also fuels the future supply of high-quality artists.

There is by now a series of papers showing that the optimal regulation of copying is not as obvious as some conventional wisdom might suggest (see Peitz and Waelbroeck, 2003a, for a survey). Some authors have emphasized the role of network effects. In particular, Conner and Rumelt (1991) and Takeyama (1994) show that copying can increase not only consumers’ welfare but also producers’ profits in the case of network effects. The basic intuition is that copying helps the dissemination of products, which, under network effects, increase the consumers’ willingness to pay. Another line of research considers the informative role of copying for consumers. In particular, Peitz and Waelbroeck (2003b) show that firms can benefit from the informational role of digital copies. Intuitively, copying provides information to consumers that increases the willingness to pay for the original product. In a similar spirit, Zhang (2002) analyzes a duopoly model where digital copies help to reduce the distortionary effects of persuasive advertising by the large audience artist (the star), which increases both overall
welfare and marginal artist’s profits. Boldrin and Levine (2004) show that, contrary to conventional wisdom, if the technology allowing free copying of original "idea-goods" is improved, then the argument in favor of intellectual monopoly is weakened. This result relies on the assumption that the original creator of a new "idea-good" is able to capture all the future profits of copying by deciding the price of the first copy of the good. None of these papers deal, however, with the points emphasized in the present paper: that copying lowers top artists’ incentives to spend in promotion, which in turn facilitates entry in artistic markets thereby increasing artistic diversity in the low-type market and also raising the number of high quality artists in the long run.

The rest of the paper is organized as follows: in Section 2 we develop the static model under the assumption of complete prohibition of copying. In Section 3 we analyze the case where copying is permitted. In Section 4 we extend the model to a dynamic setting by considering an infinite flow of overlapping generations of artists. Finally, Section 5 gathers our conclusions.

2 The Static Model without Copying

In the formulation of our model we try to capture two important aspects of artistic markets. First, there is a distinction between high-type artists, which are highly valued in the market and have a high market share, and low-type artists which are less valued by the public and have a lower market share. And second, promotion costs - which are handled by artistic promotion firms - are a crucial element explaining the behavior of these mar-

\footnote{Although Zhang (2002) considers the role of promotion costs and copying in artistic markets, in his model there is no room for endogenous entry in the marginal artistic market which is crucial in our analysis.}

\footnote{However it is usually the case that, in order to promote the knowledge of the new good, his/her creator should provide initial copies at low price. Under this conditions, if copying becomes easier (and it is allowed) then the creator’s ability to recover his/her creation effort may be lower, which agrees with the conventional argument in favor of intellectual property protection. This criticism to Boldrin and Levine’s work may be particularly relevant in the case of artistic productions, where copying original works is relatively easy to undertake and the promotion involves the previous distribution of original copies.}
kets. For simplicity, we assume that each artist produces a single artistic
good, that only high-type artists enjoy promotion costs, and that there is a
one-to-one correspondence between high-type artists and promotion firms.\footnote{The assumption that promotion campaigns are only spent in case of popular artists with large market shares may be motivated by fixed costs. In the context of the dynamic model of Section 4, we argue that it is also the consequence of the high risk involved in investing in young artists whose talent and charisma is not yet well-established. These characteristics are uncovered only after a period in the (low-type) market. Moreover, the proportion of population with the talent and charisma needed to become an artist is very low, and uncovering these characteristics by those who have them requires a large personal effort during the low-type period. As a result, young artists (who do not really know the actual value of their talent) are not interested in investing large amounts in the promotion of their own careers (which would be too risky), and firms are not interested in pooling the risks of potential artists whose effort may be very difficult to monitor, before they market has sorted the true artists.}

This last assumption implies that there is some sort of vertical integration
between each high-type artist and his/her attached firm, so that the profits
of this vertical structure are shared according to the bargaining power of
each part. We ignore this bargaining problem and just focus on the forces
explaining the profits of the integrated structure which is the essential prob-
lem we are dealing with. Nevertheless, our basic results will remain under
more general conditions, as explained in the conclusions.

In our static model we assume the number of high-type artists (and
associated firms) is exogenous. However, the number of active low-type
artists is endogenous and determined by a free entry condition in the sub-
market of low-type goods. This may reflect the idea that the set of low-type
and young artists keeps changing with higher frequency than the set of
stars (which is fixed in the short run and corresponds to an unusual level of
talent and charisma). Furthermore, in this section we assume that copying
is not permitted, so that the artistic firm owning the copyright of a particular
artistic good is the only one able to sell this good.

Based on the previous considerations our model is specified according to
the following assumptions:

A.1: There is a representative consumer that spends a fixed amount of
money $S$ to buy copies of artistic goods. There are two types of artistic
goods: high-type and low-type. The consumer solves the following maximization problem:

$$\max U = a \ln x + (1 - a) \ln y,$$

s.t. $$px + py = S$$

where $$x$$ and $$y$$ are, respectively the total number of copies of high-type and low-type production and $$px$$ and $$py$$ are the corresponding prices and $$0 < a < 1$$. We will refer to $$S$$ as the size of the market.

A.2: Parameter $$a$$ is endogenous and depends on total promotion costs of high-type firms according to the following equations:

$$a = \alpha - \beta e^{-(\gamma/S)A}, \quad A = \sum_{i}^{n} A_i, \quad A_i \geq 0, \quad i = 1, 2, ..., n$$

where $$\alpha$$, $$\beta$$ and $$\gamma$$ are exogenous parameters, $$1 > \alpha > \beta > 0$$, $$\gamma > 1$$, $$A_i$$ is the promotion cost paid by firm $$i$$, and $$n > 1$$ is the number of high-type artists (and firms). We are therefore assuming that the promotion costs needed to obtain a given share of the market are proportional to the size of the market $$S$$. \(^5\)

A.3: Competition takes place according to the following multistage game:

Stage 1: Each high-type firm chooses simultaneously, and independently, its level of $$A_i$$.

Stage 2: Each potential low-type artist decides whether or not to enter in the artistic low-type market. Entry involves a fixed entry (or opportunity)

\(^5\)A firm’s advertising tends to increase both the demand for the firm’s specific good and the overall demand for the type of good being advertised. As a result, advertising increases the share of this type of good in consumers’ expenditure (see Sutton, 1991). In our formulation we model advertising as a public good for high-type firms, ignoring the competitive effects of advertising among high-type firms and focussing on the aggregate interactions between the low and the high submarkets.

Note also that we are ignoring the existence of horizontal differentiation among artists belonging to the same submarket. Preferences for diversity could be easily introduced, however, by assuming that variables $$x$$ and $$y$$ are aggregates of the type assumed by Spence (1976) and Dixit and Stiglitz (1977), which tends to produce results equivalent to models of homogeneous products (see Yarrow, 1985).
cost $F$.

Stage 3: Firms compete à la Cournot.

Let us consider the Cournot-Nash equilibrium at Stage 3. Standard calculations show that the demand functions for each good are given by:

\[
p_x = \frac{aS}{x}; \quad \text{and} \quad p_y = \frac{(1-a)S}{y}.
\]  

(1)

Thus, the profit function of each high-type firm is given by

\[
\pi_i(x_i; x) = \frac{aSx_i}{x} - cx_i - A_i, \quad i = 1, 2, ..., n.
\]  

(2)

where $x_i$ is the production of firm $i$ and $c$ is the constant marginal cost, assumed identical for all firms. The first order conditions of a Cournot equilibrium give the equations

\[
\frac{aS}{x} - c - \frac{aSx_i}{x^2} = 0, \quad i = 1, 2, ..., n.
\]  

(3)

By solving the previous system we get the Cournot equilibrium levels of price, output per firm and profits:

\[
p_{x}(n) = \frac{n}{(n-1)c}; \quad x_{i}(n) = \frac{(n-1)aS}{n^2c}; \quad \pi_{i}(n) = \frac{aS}{n^2} - A_i.
\]  

(4)

Now, let us solve for the first stage to obtain the subgame perfect Nash equilibrium of the game. We can write the profit function of each high-type firm as

\[
\pi_i(A_i, A) = \left(\frac{\alpha - \beta e^{-(\gamma/S^{A})}}{n^2}\right)S - A_i, \quad i = 1, 2, ..., n.
\]  

(5)

The first order conditions for a SPNE of the game yield the SPNE level for $\alpha$:

\[
\frac{\beta e^{-(\gamma/S^{A})}}{n^2} - (1/\gamma) = 0 \rightarrow \alpha^{*}(n) = \alpha - \frac{n^2}{\gamma}.
\]  

(6)
The inequality \( n^2 < \beta \gamma \) must hold to have \( A_i > 0 \). We assume \( \gamma \) is always high enough to guarantee this condition.\(^6\) It is easy to see that under this condition, high-type firms always obtain positive profits.

The profit of each active artist in the low-type market is given by

\[
\pi_i(y_i, y) = \frac{(1 - a)Sy_i}{y} - cy_i - F \quad i = 1, 2, ..., m.
\]

Where \( y_i \) is the production by firm \( i \). By using the Cournot equilibrium conditions at the low-type market we can write the SPNE level for the price and output per firm as

\[
p^*_y(n) = \frac{m^*(n)}{(m^*(n) - 1)c}, \quad y^*_i(n) = \frac{(m^*(n) - 1) (1 - a)S}{c}; \tag{7}
\]

where \( m^*(n) \) is the SPNE number of active low-type artists, determined by the free entry condition:

\[
\pi_i = \frac{(1 - a^*(n))S}{m^2} - F = 0 \quad i = 1, 2, ..., m \tag{8}
\]

\[\rightarrow \quad m^*(n) = \left( \frac{(1 - \alpha + n^2/\gamma)S}{F} \right)^{\frac{1}{2}}. \tag{9}\]

Note that the price \( p^*_y(n) \) above depends on the promotion costs indirectly through its influence on entry. However the SPNE level for the price in the high-type market is independent of promotion costs (see (4)).

In the following section, we consider the effect of a permissive policy about copying on prices, high-type profits and the number of low-type active artists.

\(^6\)The model is not very interesting when \( A = 0 \) since in that case, high and low type artistic markets lose their connection. In the models that follow, we will need large enough markets (large \( S \)) and productive enough advertising (high \( \gamma \)) to have positive advertising expenditure (\( A > 0 \)) in equilibrium.
3 The Static Model with Copying

In this section, we assume that there is a perfectly competitive industry devoted to make copies only of the original high-type goods. Consumers can obtain these copies at an exogenous price $p'$, $p' > c$. This price is the opportunity cost of the copying industry. Consumers are not completely indifferent between an original and a copy, however. Quality, guarantee and some other characteristics of the copy may be not exactly the same as the original’s. We thus consider the following consumer problem:

$$
\text{Max} U = a \ln(x + vz) + (1 - a) \ln y,
$$

subject to

$$
p_x x + p' z + p_y y = S;
$$

where $z$ is consumption of copies and $v$ is the marginal rate of substitution between copies and originals. Assuming that $v$ is uniformly distributed across individuals in the interval $[0, 1]$, we have that the fraction $\delta$ of consumers of high-type products that buy originals is given by $\delta = p'/p_x(n)$ ($p' < p_x(n)$; otherwise, $\delta = 1$). The remaining fraction $(1 - \delta)$ buy imita-

---

7 Copying tends to concentrate on stars’ work for several reasons: stars’ work is more expensive and their market is larger, while copying and selling each artistic good may be subject to some fixed costs in addition to positive marginal costs. Moreover, the work of stars is more easily available for copying and sellers of copies can only have a limited variety of products for sale (in many countries, they just sell the copies on the streets), concentrating therefore on those with easier sale. Even if copying modest artists is equally costly and available, if artist are ranked by quality (as may occur for example with classical music orchestras and soloists) only the best artists will be copied.

On the other hand, our model may justify taxing some copying inputs so that $p_y(n) < p'$ is ensured and the opportunity cost of modest artists is recovered. Shavell and van Ypersele (2001), and Romer (2002) have advocated exploring other kinds of mechanisms such as these as a potentially more efficient way to incentivate and finance creation than granting the monopoly of reproduction.

8 Live performances and record selling provide a very different share of their income for music stars and modest artists. In fact, some stars tend to use live performances mostly as a way to promote record sales, while for some modest artist the opposite is true: the diffusion of their music by means of record copying is the way to increase the demand for their live performances. Although taking these facts into account will reinforce the arguments in this paper, we have not pursued this line of argument in the model.
tions. These conditions imply a more elastic demand for original high-type goods \( x = p'aS/p_x^2 \).

Now, the Cournot equilibrium for price and output per firm are, respectively, \( p_x(n) = \frac{2n}{2n-1}c \) and \( x_i(n) = \frac{(2n-1)^2 p'aS}{c} \), provided \( p' < p_x(n) \). Thus, profits of each high-type firm at Stage 1 of the game are given by

\[
\pi_i(n) = \frac{(2n - 1) p'aS}{4n^3} - A_i. \tag{10}
\]

We can write the profit function of each high-type firm as

\[
\pi_i(A_i, A) = \frac{(2n - 1) p'S}{4n^3} \frac{\beta e^{-(\gamma/S)A}}{c} - \frac{\alpha - \beta e^{-(\gamma/S)A}}{\gamma p'(2n - 1)} - A_i, \quad i = 1, 2, ..., n. \tag{11}
\]

The first order conditions for a SPNE of the game yield the new SPNE level for \( a \):

\[
\frac{(2n - 1) p'S}{4n^3} \frac{\beta e^{-(\gamma/S)A}}{c} - \frac{\alpha - \beta e^{-(\gamma/S)A}}{\gamma p'(2n - 1)} = 0 \quad \Rightarrow \quad a'(n) = \alpha - \frac{c4n^3}{\gamma p'(2n - 1)} < a^*(n) = \alpha - n^2/\gamma. \tag{12}
\]

Where the inequality comes from noticing that \( c/p' > c/p_x(n) = \frac{2n-1}{2n} > \frac{1}{2} \).

By using the previous expression and the free-entry condition in the low-type market, we obtain the SPNE number \( m' \) of low-type artists in a market with copying

\[
m'(n) = \left( \frac{(1 - \alpha + \frac{c4n^3}{\gamma p'(2n-1)})S}{F} \right)^{\frac{1}{2}} > m^*(n) = \left( \frac{(1 - \alpha + n^2/\gamma)S}{F} \right)^{\frac{1}{2}} \tag{13}
\]

Therefore, we have the following

**Proposition 1** In the model with copying, the number of active artists in the low-type market is greater than without copying. Moreover, the number of active artists under imitation increases as copying becomes cheaper.

\(^9\)Again, \( \gamma \) must be high enough to guarantee \( A > 0 \).
According to the previous result, free imitation increases the variety of artistic products. Stars’ promotion expenditure acts as a barrier to entry by modest artists since it narrows the lower artistic market (and since, to be active, artists must secure a minimum market share to cover the opportunity cost). Copying reduces the profitability of stars’ promotion expenditure thereby leaving more market room for low-type artists. High-type artists (or, more exactly, the integrated structure between each high-type artist and her firm) obtain lower rents under imitation, but they are still positive. In consequence our result runs against the conventional view that imitation harms the incentives for original creation. Moreover it also runs against the extended belief that the more sophisticated the copying technology is, the lower are the incentives to create new artistic goods. Our previous proposition shows that those incentives may increase when copying becomes cheaper.

4 The Dynamics: Overlapping Generations of Artists

In the previous Section we assumed the number of high-type artists is exogenous. However, the number of high quality talented artists is usually the consequence of the former abundance of young artists, most of which do not succeed. The question then is whether a very strong protection of intellectual (artistic) property rights, though profitable to the already successful senior artists, may reduce the market for young artists thereby harming in the long run the production of both high and low quality art. To address this issue, in this Section we endogenize the number of stars in a dynamic model of overlapping generations of artists.

Our setting is the following.\textsuperscript{10} Agents live for two periods. Every period, there is an infinite pool of potential young artists among the population. Agents entering the artistic profession do so in their first period of life and

\textsuperscript{10}See MacDonald (1988) for a similar setting with a more detailed analysis of young artists’ choices about whether to continue in the artistic market in the second period of life. MacDonald does not analyze however the determinants of the number of artists in equilibrium, nor the impact of advertising.
are called young artists. Young artists are talented with probability \( \rho \) but neither them nor artistic firms can observe this characteristic but after an artist has completed her first life period. Talent and advertising are complements. Moreover, we make the simplifying assumption that only when an artist has shown she has talent, it is profitable for artistic firms to invest in promoting her.\(^\text{11}\) Hence, in the second period, only young artists that have revealed themselves as talented receive advertising and become stars, and non-talented ones go back to the pool of non-artists (the rest of population). Thus in this Section \( n_t \) and \( m_t \) are interpreted, respectively, as the number of stars and young artists in period \( t \). Therefore we have

\[
 n_{t+1} = \rho m_t, \tag{14}
\]

As already noted, the potential market for high-type artists \( (1 - \alpha)S \) needs to be large enough and advertising has to be productive enough (high \( \gamma \)) to have positive advertising expenditure in equilibrium \( (A > 0) \). In this Section we assume the following sufficient condition for the existence of a stable equilibrium with positive advertising expenditures: \( (1 - \alpha)S \rho^2 > 1 > 4S \rho^2 / \gamma \).

Again, the number of young artists is determined by the free entry condition \( (8) \) where we normalize \( F \) to be equal to one:\(^\text{12}\)

\[
 m_t = ((1 - a_t)S_t)^{1/2}. \tag{15}
\]

Since equation \( (6) \) still holds without copying, and using the previous expressions we obtain the following difference equation:

\[
 n_t^2 = (1 - \alpha + n_{t-1}^2 / \gamma) S \rho^2. \tag{16}
\]

\(^{11}\)If there is a small fixed cost of advertising and the probability of having talent is low enough, young artists would not get any advertising.

\(^{12}\)We are ignoring the young artist’s expected second-period profits in the formulation of the free entry condition. One possible motivation is \( \rho \) (times a discount factor) being small. Young artists may also be liquidity-constrained. Insurance and borrowing may be not a possibility since the career as a young artist may be long and involving large uncertainties and moral hazard problems.
The steady state value for \( n \) is given by the value \( n^* \) satisfying the following condition:

\[
(n^*)^2 = \frac{(1 - \alpha) S \rho^2}{1 - S \rho^2 / \gamma}.
\] (17)

The condition \( 4S \rho^2 / \gamma < 1 \) above is sufficient for both existence of a positive real \( n^* \) and the stability of equation (16). To see this, note that stability requires \( 2n > 2nS \rho^2 / \gamma \leftrightarrow S \rho^2 / \gamma < 1.13 \)

Similarly, in the dynamic model with copying \( a_t \) is given again by equation (12). Hence, the number of stars evolves according to the following difference equation:

\[
n_t^2 = \left(1 - \alpha + \frac{c4n_{t-1}^3}{p'(2n - 1)}\right) S \rho^2.
\] (18)

Therefore, the steady state number of stars is given by the value of \( n' \) solving the following expression:

\[
(n')^2 = \frac{(1 - \alpha) S \rho^2}{1 - \frac{c4n'}{\gamma p'(2n - 1)} S \rho^2}.
\] (19)

Since \( \frac{c4n'}{\gamma p'(2n - 1)} S \rho^2 = \frac{2p_c S \rho^2}{\gamma^2} \leq \frac{2p_c S \rho^2}{\gamma c} S \rho^2 < 4S \rho^2 / \gamma \), the aforementioned assumption \( 4S \rho^2 / \gamma < 1 \) is a sufficient condition to guarantee both existence and stability of a positive real solution \( n' \) for any \( p' \geq c \). Moreover, we also have \( n' > n^* \). To see this, let us define the functions \( f(n) \) and \( g(n) \) from

\[13\] Not only copying technologies but also new communication technologies can have a large impact on the competition between high and low type artists. For example, the emergence of radio and, subsequently, TV broadcasting of artistic performances, strongly reduced the demand for live performances and had a negative impact on some low-type markets of artists such as comedians and musicians. In the model, the impact of communication technologies may be captured by the rise in the parameters \( \alpha \) and \( \gamma \) (with better communication technologies, stars may reach larger audiences and promotion becomes more productive). This would lower \( n^* \): communication technology improvements that raise stars’ market share may reduce the number of all types of artists in the long run.

14
(16) and (18), as

\[ f(n) \equiv (1 - \alpha + n^2/\gamma) S\rho^2; \]
\[ g(n) \equiv \left(1 - \alpha + \frac{c4n^3}{\gamma(p'(2n-1))}\right) S\rho^2. \]

These two functions are continuous and increasing for \( n > 1 \). Moreover, \( g(n) > f(n) \) for any \( n \):\(^{14}\)

\[ g(n) \equiv \left(1 - \alpha + \frac{c4n^3}{\gamma(p'(2n-1))}\right) S\rho^2 = \left(1 - \alpha + \frac{\rho 2n^2}{\gamma p'}\right) S\rho^2 > (1 - \alpha + 2n^2/\gamma) S\rho^2 = (1 - \alpha + n^2/\gamma) S\rho^2 \equiv f(n). \]

Under the assumptions \( (1 - \alpha) S\rho^2 > 1 > 4S\rho^2/\gamma \), \( f(n) \) and \( g(n) \) are above \( n^2 \) for \( n = 1 \). And for \( n > 1 \), we have

\[
\frac{dg(n)}{dn} = \frac{c}{\gamma p'} S\rho^2 \left[\frac{2n}{2n-1}\right]^2 (4n-3) \leq (1/\gamma) S\rho^2 \left[\frac{2n}{2n-1}\right]^2 4(n-3/4)
\]

\[
< \left[\frac{2n}{2n-1}\right]^2 (n-3/4) < 2n = \frac{d(n^2)}{dn}
\]

(we are again using the fact that \( 4S\rho^2/\gamma < 1 \)). Therefore both functions \( f(n) \) and \( g(n) \) must cross \( n^2 \) only once and from above for some \( n > 1 \). Hence the steady states exist, and are unique and stable. Furthermore, since \( (n^*)^2 = f(n^*) < g(n^*) \), the \( n' \) satisfying \( (n')^2 = g(n') \) must be higher than \( n^* \). See Figure 1.

**INSERT FIGURE 1 ABOUT HERE**

Finally, differentiating (19) we can see that \( n' \) is strictly decreasing in \( p' \):

\[
\frac{dn'}{dp'} = -\frac{2n - 4cS\rho^2 n (4n-3) \left[\frac{n}{(2n-1)}\right]^2 \gamma p'}{\gamma(p')^2 (2n'-1)} S\rho^2 < 0.
\]

We can summarize our results in this Section as follows:

\(^{14}\)We only consider the case that \( p' \) is lower than the price of originals; in particular, we assume \( p' < p_x(n') = 2n'/(2n' - 1) \). Otherwise, in equilibrium everybody would only buy originals.
Proposition 2 In the dynamic model with feasible copying, the number of active artists in both the low-type market and in the high-type market is greater than without copying. Moreover, the number of active artists under imitation increases in both markets as copying becomes cheaper.

Therefore, the basic conclusions obtained in the static model are reinforced under dynamic considerations: copying increases not only the number of low type artists but also the number of high-type artists. The driving force behind this result comes from the incentives of copying on advertising and the long run positive effect of the abundance of young artists on the number of high quality artists. As the promotion expenditure in the high-type market decreases, the market share of low-type artists increases which in turn increases the number of high-type artists in the long run.

5 Conclusions

The recent rapid technological improvements in the methods of copying and disseminating original artistic goods have prompted claims from creators and their associated firms to increase protection against copying. The conventional argument relies on the idea that incentives to produce new artistic goods decrease if creators’ expected profits are reduced as a result of imitation. Our model provides an argument against this conventional belief stressing three distinctive aspects of artistic markets: first, the special characteristics of these markets put forward by Rosen (1981) create a crucial distinction between high-type or popular artists (stars) and low-type or less popular artists; second, high-type artists are endowed with a natural non-reproducible talent which allows them to obtain economic rents (which increase with the size of markets and with some communication technologies), and third, promotion costs are essential in the shaping of these artistic markets, particularly in industries such as music or cinema.

Our first conclusion is that, under reasonable conditions, the possibility of copying increases the promotion of new talents without reducing the incentives to production by high-type artists (though their rents become smaller). Moreover, the lower is the marginal cost of copying the greater is
entry by new artists in case of free copying. This unconventional and apparently counterintuitive results rely, basically, on the fact that by discouraging advertising or promotion expenditure on high-type artists, consumers will spend a greater fraction of their income on low-type artists, which stimulates entry in this low-type market without reducing the number of high-type artists. Furthermore, in our dynamic extension to overlapping generations of artists we have shown that in the long run copying stimulates the number of artists in both the low-type (young artists) and the high-type (stars) market; i.e., a lower protection of artistic property rights increases the market for young artists which in turn gives rise to a larger number of high quality artists in the long run. Our conclusions are robust to alternative formulations of market competition. The crucial element behind our results is that promotion costs increases the market share of top artists at the expense of low-type artists, which is consistent with a wide variety of oligopoly models.

From the social welfare point of view, there might be some additional positive effect of imitation. First, some high-type firms’ advertising expenditures may be socially wasteful. In such cases, the lower private incentives to advertise (as a result of imitation) are welfare improving.\(^{15}\) Moreover, for simplicity, we have not taken into account the possibility of horizontal product differentiation. This could be easily introduced in our model following the settings by Spence (1976) and Dixit and Stiglitz (1977) (see footnote 4). Explicitly introducing preferences for variety would increase the arguments in favor of copying since, in addition to lowering prices, copying increases the number of artists in equilibrium.

Finally, it may be interesting to remind the diverse consequences of technological progress on top artists’ revenues. As emphasized in this paper, pro-

\(^{15}\) As pointed out by Sutton (1991), it is not obvious at all that advertising expenditures are informative rather than persuasive. Moreover, as suggested by Zhang (2002) in the case of artistic goods, the asymmetry between stars and marginal artists provides extra arguments in favor of considering advertising as persuasive and distorsinary. The same author justifies a permissive policy about the use of P2P copying technology as a way of restoring symmetric information. In a similar spirit, Peitz and Waelbroeck (2003b) have analyzed the role of copying as an efficient device to obtain precise information within a multi-product environment.
ducers’ revenue and opportunity costs do not necessarily equalize in artistic markets due to the importance there of inelastic innate endowments (or luck). Progress in communication technologies may have different consequences on the balance between those two magnitudes. The conventional approach to intellectual property regulation has emphasized the negative consequences of recent copying technologies on revenues. However, this approach has often overlooked that some of the progress in communication technologies during the last century favored the concentration of some artistic markets in fewer number of artists who would obtain increasingly larger economic rents, and that it may have made more difficult competition by young and modest artists.\textsuperscript{16} It is far from clear that any of these consequences can be ignored in the debate on the optimal regulation of property rights on artistic goods.

\textsuperscript{16} These effects are even stronger with art globalization. As pointed out by Adler (2005) it is possible that a single global culture will destroy local cultures not because is better but simply because it is global.
References


Figure 1: