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THE CASE OF COMPLEMENTARY OLIGOPOLY**

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## **THE MARKET FOR INTELLECTUAL PROPERTY: THE CASE OF COMPLEMENTARY OLIGOPOLY**

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## THE MARKET FOR INTELLECTUAL PROPERTY: THE CASE OF COMPLEMENTARY OLIGOPOLY

### **Abstract**

This paper applies a model of complementary oligopoly and anticommons pricing to the market for intellectual property rights. Our model demonstrates a surprising and interesting overlooked result: In the market for complementary goods, price coordination and monopolistic pricing do not necessarily represent inefficient equilibria, when compared to the alternative Nash equilibrium. Due to the peculiar cross-price effects in the supply of complementary goods, price coordination and monopolistic supply often constitute an improvement over the alternative equilibrium outcomes. To be precise, the welfare effects of competition and price coordination depend on the nature of the intellectual product concerned. This has significant and obvious implications for the economic analysis of copyright collectivization, as well as for antitrust regulation in this area.

### **1. Introduction**

Today's market for intellectual property is characterized by an increasing degree of composite creation and innovation. Digital

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technology and ever growing back catalogues have allotted a greater creative role to the combination of intellectual property works in the creative process. Digital production tools enable artists to produce derivative works of art that combine cut and paste processing of samples, images, and sound effects from other creative works. For example, in the case of DJ-mix compilations, artists innovate by combining other artists' tracks in an original version.<sup>3</sup>

Building on Cournot's (1838) intuition on complementary duopoly and the more general framework developed by Buchanan and Yoon (2000), Schulz, Parisi and Depoorter (2000, 2002), we illustrate the economic case of complementary compositions in the context of the market for intellectual property.

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<sup>3</sup>One of the most current Dj-mix albums today, '2 Many DJ's', combines 46 songs of various artists. Reportedly, the clearance of the rights on the songs, featured on the album, lasted three years, involving 865 emails, 160 faxes and hundreds of telephone calls. In the end 72 tracks were omitted from the album because the rights could not be obtained in time for those tracks (see <<http://breedband.telenet.be/muziek/dossiers/2manydjs/>>, last visited, May 12<sup>th</sup>, 2002>).

## **2. Rethinking Complementarities and Competition**

In 1838 Cournot considered the case of complementary duopoly.<sup>4</sup> Cournot's model shows that a single monopolist producing a composite good will charge a price lower than the sum of the prices that would be charged by two complementary duopolists selling the single component parts. Suppose that two separate individuals each hold intellectual property rights over the two rights, A and B, respectively, which are used as inputs of production for a composite good C. Because of their strict complementarity as inputs of production, the demand for each depends on the price of both. A move from complementary duopoly over intellectual property rights to a concentrated monopoly will decrease price and increase output, thereby increasing overall welfare. In the case of complementary duopoly, unlike the traditional case of duopoly over substitute goods, both producer and consumer surplus are diminished compared to the alternative monopoly outcome. In the standard duopoly case for substitute goods, the strategic pricing of the duopolists leads to lower prices, with an increase in consumer surplus and overall welfare. In

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<sup>4</sup> Cournot considered the case of two monopolists producing complementary goods: zinc and copper. These two products can be combined to make brass. A. COURNOT, RESEARCHES INTO THE MATHEMATICAL PRINCIPLES OF THE THEORY OF WEALTH, (Nathaniel Bacon, trans., Macmillan 1927) (1838).

the case of complementary duopoly, the strategic pricing of the duopolists leads instead to higher prices, with a decrease in *both* consumer surplus and overall welfare.

As pointed out by Buchanan and Yoon (2000) and Schulz, Parisi and Depoorter (2000), the intuition behind this result is surprisingly simple. Take the example of two copyright holders who have autonomous exclusion rights over two distinct works (primary works). In our hypothetical, the copyrighted primary works are complementary inputs for the production of a derivative work, such as an anthology or review essay on the topic of the Coase Theorem. Such compilation requires the inclusion of passages from the relevant primary sources on the same subject (e.g., Coase, 1960; Demsetz, 1972; Calabresi-Melamed, 1972, etc.), each of which is essential to the success of the anthology and therefore can be thought of as strict complementary inputs in the production function of the final derivative work (i.e., the anthology). We will refer to these factors of production as non-substitutable inputs.<sup>5</sup> In the absence of a fair use defense, a third party who wishes to utilize passages from the above

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<sup>5</sup>Other primary sources are less essential to the completion of the anthology, since it would be easy to substitute any one of those less essential sources without compromising the quality and success of the final product. We will refer to this category of less essential inputs as substitutable inputs.

mentioned primary sources needs to obtain the consent of all copyright holders. In our example, the editor or author of the derivative work has to purchase copyright licenses from all relevant parties. Because their works are strictly complementary, the demand for each intellectual property right depends not only on the price set for his own license, but also on the price charged by the other property right holders. This implies that any change in the price or quantity supply of the complementary good by one duopolistic intellectual property seller will have external effects for the other intellectual property seller. Each party maximizes his profits, without regard any effect on the profits of other property owners.<sup>6</sup> When one seller decreases output and raises the license price, the demand curve for the other intellectual property owners will be negatively affected, and vice versa. However, a concentrated monopolistic seller of intellectual property rights would internalize these price or output externalities.

A simple illustration is useful. Suppose two firms, A and B, each produce one of two complementary components. Consumers combine the components in a strict one-to-one ratio. Each firm must

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<sup>6</sup> Because the inputs of production are strict complements, there is no offsetting substitution effect; when the price of one component goes up, the consumer purchases fewer units of each of the component goods.

make a decision about price without knowing what the other firm will do. To simplify, suppose there are only three pricing options: the price a single monopoly producer would produce,  $P_M$ , a quantity greater than  $P_M$ , or a quantity smaller than  $P_M$ . The following game matrix in Figure 1 illustrates the incentives facing each firm.

**Figure 1**

		<b>B</b>		
		$P_B < P_M$	$P_B = P_M$	$P_B > P_M$
<b>A</b>	$P_A < P_M$	$P_B < P_M$ (**)	$P_B = P_M$	$P_B > P_M$ →
	$P_A = P_M$	$P_B < P_M$	$P_B = P_M$ (*)	$P_B > P_M$ →
	$P_A > P_M$	$P_B < P_M$ ↓	$P_B = P_M$ ↓	$P_B > P_M$ → ↓



Each cell would contain the payoff (profit) to Firm A and Firm B from the corresponding combination of their pricing decisions. Firm A is a row player, and its Nash strategy given each of Firm B's choices is indicated with the dotted, vertical arrows.<sup>7</sup> Firm B is a column player, and its Nash strategies given each of A's potential choices are indicated with the solid, horizontal arrows.

Here, given the cross-price effects present in this complementary duopoly, both firms would have a dominant strategy, with a single Nash equilibrium, indicated by the shaded areas in Figure 1. The firms will choose to price above  $P_M$  to the detriment of both the producers' profits and the overall (i.e., producers' plus consumers') welfare. The cells corresponding to the profit maximizing prices and the welfare maximizing prices are respectively marked with a single asterisk (\*) and a double asterisk (\*\*), in Figure 1.

It should be noted that in the standard duopoly case, the strategic behavior of the parties leads them to choose pricing

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<sup>7</sup> The same logic would hold if the firms were allowed to control output, rather than price. Here however, there would be a substantial difference, likely to facilitate firms' coordination. Because consumers use one of each component together, neither firm can sell more than the lesser firm's output. Furthermore, neither firm would have an incentive to produce more than the single monopolist's output level. If one firm did produce output greater than the monopolistic output,  $Q_M$ , the other firm would be free of the complementarity constraint, and would also produce at  $Q_M$  to maximize profits. On the other hand, if one firm produces less than  $Q_M$ , the other firm would maximize profits by also producing less than  $Q_M$ .

strategies  $P_A = P_B < P_M$ . This constitutes an improvement over the monopolistic pricing with respect to social welfare, but a Pareto inferior outcome with respect to the firms' profits. In our case of complementary duopoly, instead, another set of strategies  $P_A = P_B > P_M$  obtains in equilibrium. Also in this case, the firms' strategic pricing renders the maximizing monopoly profit unobtainable in equilibrium. The firms' pricing, however, pushes the equilibrium in the opposite direction compared to the standard duopoly case, with the interesting result of generating an equilibrium (i.e., the shaded area in Figure 1) that is inferior both privately and socially to the alternative monopoly outcome (in the standard case, the duopoly outcome is inferior to the monopoly outcome, with respect to the firms' profits, but is superior to the monopoly alternative with respect to social welfare).

The game theory intuition exposes the differences between the standard case of duopoly with substitutable goods and the duopoly model with complements. Where a move from monopoly to duopoly (and from duopoly to oligopoly) leads to more competition when involving substitutes, a similar move creates disincentives to competition when complementary goods are involved. Thus competitive or oligopolistic supply of strict complements would

paradoxically lead to higher prices, smaller output, and reduced welfare, compared to an alternative coordinated monopolistic pricing. The monopolist is no longer an endpoint on the spectrum of market models because complementarity pushes duopoly to higher prices and greater quantity restrictions than monopoly.

### **3. A Model of Complementary Oligopoly**

In the previous section we have illustrated how the independent pricing of intellectual property rights from two complementary duopolists likely results in an equilibrium that is worse for both the private parties, and society at large. We shall illustrate this point for the more general case of  $n$  oligopolists, showing that the extent of the deadweight loss also depends on the number of suppliers of complementary inputs. An increase in the number of copyright holders exercising independent control on the price of their respective licenses exacerbates the degree of underutilization. Suppose that  $n$  individuals hold intellectual property rights over  $n$  components, which can be used as inputs of production for a composite good,  $Q$ . Because of their strict complementarity as inputs of production, the demand for each depends on the price of all others.  $P_Q$  is the sum of

the prices of the  $n$  separate intellectual property rights,  $\mathbf{3}_{i=1 \dots n} P_i$ . Each owner of a specific input of production thus has a profit functions that can be written as:

$$(1) \quad J_j = P_j \cdot D(P_Q) = P_j \cdot D(\sum_{i=1 \dots n} P_i)$$

Differentiating the profit functions with respect to the corresponding price variable yields these first order conditions:

$$(2) \quad MJ_j/MP_j = P_j \cdot D'(P_Q) + D(P_Q) = 0$$

Summing the first order conditions yields the equilibrium price for the composite good when the intellectual property rights are held by separate producers, operating in complementary oligopoly.

$$(3) \quad P_Q \cdot D'(P_Q) + n \cdot D(P_Q) = 0$$

We can now compare these conditions with those that characterize the supply of a single concentrated monopolist (or by separate owners, who can effectively coordinate prices). In the case where a single monopolist produces the composite good, the profit function will take the following form:

$$(4) \quad J = P_Q \cdot D(P_Q)$$

By differentiating this profit function with respect to the price, we determine the first order conditions for the single monopolist:

$$(5) \quad MA/MP_Q = P_Q \cdot D'(P_Q) + D(P_Q) = 0$$

The interesting comparison is between the optimal price in equations (3) and (5). One finds that the optimal price under a single monopolist [Equation (5)] is actually lower than the total price of the composite good under a complementary oligopoly [Equation (3)]. A move from complementary oligopoly over intellectual property rights to a concentrated monopoly will decrease price and increase output, thereby increasing overall welfare. It is also interesting to look at the comparative statics of Equation [3] with respect to the number of oligopolistic firms. By inspection, it is possible to see both the overall price, and overall deadweight loss, increases in  $n$ . This is the inverse of the traditional case of oligopoly over substitute goods, in which the strategic pricing of the oligopolistic sellers leads to lower prices, with an increase in consumer surplus and overall welfare. However, in the case of complementary oligopoly, the strategic pricing of the oligopolists leads to higher prices: Both producer and consumer surplus are diminished compared to the alternative monopoly outcome.

This result is consistent with that of a previous model of anticommons pricing applied to the case of copyright protection

[Depoorter and Parisi, 2002] which demonstrates that the extent of deadweight losses from concurrent copyright protection increases monotonically with the number of independent sellers. The greater the number of individuals who independently price complementary inputs, the higher the equilibrium price that each of these individuals will demand for his own right. At the margin, as the number of intellectual property owners approaches very large numbers (or infinity), complete abandonment of valuable resources will result. Interestingly, the “oligopolistic” supply of intellectual property rights leads to higher prices than those that would be charged by a single concentrated monopolist.

#### **4. Complementarities and Competition in Intellectual Property**

The examples above illustrate how the independent pricing of complements into the production of a final derivative work can result in a sub-optimal equilibrium. We should note that the above equations assume a strict complementarity of the inputs (in our narrative, of the copyright licenses) as factors of production for the final work. A more general model which allows, but does not require,

the strict complementarity of the inputs can be shown to produce qualitatively similar results. The relationship between various factors of production could, indeed, vary. Furthermore, the interconnection between the copyrighted inputs may instead reveal partial (or less-than-perfect) complementarity in the production of the derivative work. The case of strict complementarity thus represents a special case of the more general anticommons problem discussed in Schulz, Parisi and Depoorter (2000).

Cases of less-than-perfect complementarity are more realistic in ordinary copyright situations. Unlike the exceptional cases of essential production inputs, most inputs in the production of derivative work can, with more or less ease, be substituted with other comparable sources. With imperfect complementarity, withholding a copyrighted input reduces, without eliminating, both the ability to produce a derivative work, and its final value.

The cases of strict complementarity and perfect substitutability of the inputs can be seen as the dual end points along a continuum, where the relevant variable captures the cross-price effect between the pricing of the copyrighted material. In the case of strict complementarity, as we have seen above, copyright owners can

impose external costs on the sellers of other complementary inputs, due to the cross-price effects between the goods. Conversely, in the case of perfect substitutability, one copyright owner is unable to impose any external cost on the owners of other copyrighted material, due to the Bertrand-type competition between the various sellers.<sup>8</sup>

We can think of these two hypotheses as the end points around the case of a single owner of all copyrighted inputs. Such a concentrated monopolist fully internalizes the costs and benefits in the pricing and withholding of copyright licenses. The external effects of the decisions of the copyright holders are the root cause of the deadweight losses that increase monotonically with the number of inputs to production.

## **5. Substitutes and Complements Distinguished**

This paper's analysis reveals the surprising result that price coordination and monopolistic pricing do not produce inefficient equilibria in all circumstances. More specifically, the effect of monopolistic price coordination on the efficiency of the equilibrium

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<sup>8</sup> One point worth noting is that the situation in which each of two copyright holders can separately license would create a Bertrand duopoly, unless they can agree to join forces, acting as a monopolist.



pricing depends on the nature of the various copyrights as factors of production.

The failure of the various copyright holders to coordinate prices has ambiguous effects with respect to the resulting social deadweight loss. If the copyrights are in a relationship of complementarity in the production of a derivative work, the competitive Nash equilibrium would generate an anticommons pricing problem, making both society and the individual copyright holders worse off. The anticommons equilibrium pricing is simply the outcome of a prisoner's dilemma that individual copyright sellers face when pricing their copyrights independently. As in a traditional prisoner's dilemma, the inability of copyright holders to coordinate prices produces both private and social inefficiencies. Quite strikingly, in this case the competitive outcome is socially inefficient, even if compared to the alternative monopoly equilibrium. Competitive pricing of complementary goods generates a substantially larger social loss than the monopolistic equilibrium.

If the copyrights are substitutes in the production function of the derivative work, the inability of the copyright sellers to coordinate their prices will also be detrimental for them. As in the previous case,

the independent and uncoordinated pricing of the copyrights renders the monopolistic pricing unsustainable in a Nash equilibrium, with a loss of profit for the various sellers. Unlike the complementarity case considered above, however, the competition among copyright sellers would be beneficial for society at large. In this case, in fact, the substitutability of the copyrights as inputs of production leads to the usual negative price effect. The resulting equilibrium – albeit Pareto inferior for all the players – is socially preferable to the alternative monopoly outcome.

The analysis above applies even when parties can negotiate agreements at no cost concerning the transfer of copyright licenses from authors to users. If strategic behavior is not prevented by the ability of users of copyrighted work to “click and pay” in order to obtain copyright licences, sub-optimal equilibria may still result from the independent pricing of copyright licenses for the production of a final derivative work. In light of this, the defense of fair use retains an important, albeit residual, role in minimizing the deadweight losses, even where the digital market allows individual copyright owners to enter into transactions and to collect licencing fees at low cost.

## **6. The Effect of Price Coordination**

In an ideal world where copyright owners could effectively coordinate on-line licensing efforts, the above result would be considerably changed. If the fragmented group of copyright holders could coordinate the pricing of their licenses – when each copyrighted material serves as complementary input in the production of a final good, such as in our review essay example – they would clearly be able to act as a monopolist, maximizing gains. In fact, one important aspect of many on-line licensing initiatives is the coordination by intermediaries that have collected a broad portfolio of copyrighted works. In this setting, it may be important to consider the impact of copyright databases, such as those held by copyright collectives, rather than that of individual copyright owners, on the two equilibrium hypotheses discussed above.

For this purpose we focus in particular on the two main performance right organizations in music, the American Society of Composers Authors and Publishers (“ASCAP”) and Broadcast Music, Inc. (“BMI”).

## **7. The Role of Copyright Collectives**

An essential consideration in the study of the role of intermediaries is their authority and practical ability to set prices. As a matter of law, copyright collectives, such as ASCAP and BMI do not have exclusivity in the sale of copyright licenses. Potential licensees can choose to contract directly with the author (“direct licences”), with syndicates that secured rights from the author (“source licences”) or copyright collectives (“intermediary licences”). The consent decree in *United States v. ASCAP*<sup>9</sup> explicitly guarantees ASCAP members the authority to issue source licenses for their work.<sup>10</sup> This allows for potential competition between original owners and copyright collectives. The potential competitive supply of “direct licences” or “source licenses” has dual effects in the two cases considered above.

In order to study the impact of copyright collectives and non exclusivity rules on the pricing (and resulting efficiency) of the licenses, we need to proceed in two steps, first considering the dual effect of intermediaries on license prices and subsequently

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<sup>9</sup>*United States v. ASCAP*, 1940-1943 Trade Cas. (CCH) 56, 104 (S.D.N.Y. 1941), superseded by 1950 Trade Cas. (CCH) P 62,595. A similar consent decree was entered into by BMI, 1966 Trade Cas. (CCH) P 71,941 (1966).

<sup>10</sup>See also, Section IV., Art. B. of the proposed new consent decree in *United States of America v. ASCAP*, online at <<<http://www.ascap.com/press/afj2final.pdf>>> (last visited, November 22<sup>nd</sup>, 2000)

considering the impact of the potential competition between “direct licensing” and “intermediary licensing” in the process.

### *7.1. The Role of Copyright Collectives and Intermediaries*

Copyright collectives and other intermediaries often retain the independent power to specify the price for individual transactions. This power is limited by antitrust constraints, which result in ASCAP’s inability to conduct first or second degree price discrimination between licensees that are similarly situated (ASCAP does not price discriminate in license rates, terms or conditions between similarly situated users)<sup>11</sup>. These institutions, however, regularly engage in third degree price discrimination, charging different prices to various broad categories of licensees (e.g., profit/non-profit, number of seats in a venue, number of listeners of the radio station, voltage, etc.).<sup>12</sup>

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<sup>11</sup>In response to increasing antitrust concerns by Courts for the monopolistic powers of ASCAP within the music industry, a consent decree was issued, see *United States vs. ASCAP* (United States v. ASCAP, 1940-1943 Trade Cas. (CCH) 56, 104 (S.D.N.Y. 1941). A new consent decree was recently proposed, see <<<http://www.ascap.com/press/afj2final.pdf>>> (last visited November 22<sup>nd</sup>, 2000).

<sup>12</sup> For further reference see <<<http://www.ascap.com>>>, (last visited November 20<sup>th</sup>, 2001). In an amendment to the original consent decree, the United States District Court for the Southern District of New York, is assigned to adjudicate disputes on what constitutes a “reasonable fee” (*United States v. ASCAP*, 1950-1951 Trade Cas. (CCH) 62, 595 (S.D.N.Y. 1950). More recently, the Sensenberger Amendment, in attachment to the Copyright Term Extension Act of 1998, allows non-broadcasters to initiate --less cost intensive-- binding arbitration under the under the rules of the American

In this respect, copyright collectives are not simple agents of copyright holders, maintaining some independence in the pricing and packaging of their product. Such independent authority to fix the price of licenses has an obvious effect on the two equilibria considered above. In the complements scenario, the intermediary would choose prices that are lower than the prices copyright holders would have been chosen if pricing independently from one another. The salient point is that the lower price charged by the intermediary is beneficial to all individual copyright sellers, since it allows them to maximize the total profit from the sale of their licenses, improving upon the alternative anticommons result reached in the absence of price coordination. The paradox – that the intermediaries price is lower than one that would have been chosen by the owners and yet it increases their total profits from the sale – can be understood by recalling that the anticommons equilibrium pricing is the direct outcome of a “prisoner's dilemma” that individual copyright holders face when pricing copyrights independently. While individual sellers could not coordinate prices, intermediaries serve this function, providing a benefit for society as well as for the owners.

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Arbitration Society.(Sec. 203. H.AMDT. 532, amendment to H.R. 2589, 105<sup>th</sup> Cong. (1998), available on <<<http://thomas.loc.gov>>> (Last visited 20<sup>th</sup> of November 2000).

Opposite conclusions are reached in the case of substitutes. Here, an intermediary with independent price-fixing authority renders monopolistic pricing sustainable in a Nash equilibrium. The resulting equilibrium favors copyright owners, who are able to maximize total profit from the sale of their licenses, as would happen in a cartel. But such coordination is socially inefficient compared to the alternative competitive (or oligopolistic) equilibrium, since it prevents beneficial competition with the creation of a social deadweight loss.<sup>13</sup>

## *7.2. Source Licensing and Non-Exclusivity of Intermediary Licensing*

Recent antitrust rulings require copyright owners to retain the ability to issue licenses (“direct licences”) for their work. Potential licensees can choose to contract directly with the author, allowing for potential competition between owners and intermediaries offering licenses.<sup>14</sup> The competitive supply of “direct licenses” and

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<sup>13</sup> Bundling and price coordination is always in the interest of those who have control over these practices (sellers), even though this may not always create desirable equilibria for society at large. This, in turn, generates a pooling equilibrium which prevents us from using revealed preferences to distinguish between the two hypotheses.

<sup>14</sup> This fact was conclusive in *Buffalo Broadcasting Co. v. ASCAP*, where the US Court of Appeal for the Second Circuit held that the blanket licences offered by ASCAP to local TV stations was not an unreasonable restraint on trade; see *Buffalo Broad. Co. v. ASCAP*, 744 F.2d. (2d Cir. 1984), cited in Rutner (1998).

“intermediary licenses” has different effects in the two cases considered here.

In the “complements” case, owners have no incentive to deviate unilaterally from the coordinated pricing equilibrium induced by the intermediary. Owners will not be able to sell for more than the “collectives” equilibrium price and, given the complementarity of the licenses, they have no incentive to sell for less. The competition between source and intermediary licenses would thus have no effect on the equilibrium price. The consent decrees’ provisions on this point are therefore ineffective.

In the “substitutes” case, owners have quite different incentives. Given substitutability, both source and direct licenses compete with the intermediary licenses. Each copyright owner will have an incentive to lower the price of the licenses, and deviate unilaterally from the coordinated pricing equilibrium induced by the intermediary. In turn, this will induce the copyright collectives to lower the price of their offering, in order to preempt the oligopolistic competition of the individual sellers. The competition between source and intermediary licenses thus has beneficial effects on the equilibrium price. In this case, the antitrust rulings are valuable.



### *7.3. The Practice of Blanket Licences*

The question arises whether our analysis applies also to tying practices. ASCAP and other comparable performance right institutions only offer blanket licenses (covering the right to perform the collective's entire repertory) and to a small extent per-program licenses (a blanket license that covering use of the repertory in a specific radio or television program, while requiring the user to keep track of the use). As a practical matter, per-program licences are rendered unattractive by ASCAP and BMI, because of a cumbersome procedure and the threatened enforcement of non-intentional infringement. Also, it is questionable whether source- and direct licences provide alternatives to the preeminent system of blanket licences in performing rights. The viability of source licences is hampered, for syndicates generally tend to split-off performance rights to the collective performing rights associations; while original copyright holders are reluctant to licence their works individually.<sup>15</sup> In fact, the collectives have objected to anything but blanket licences and have been ostensibly unwilling – despite efforts by the antitrust

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<sup>15</sup> These arguments are set forth in Hillman, 1998. Hillman criticizes the flawed remedial role of consent-decrees in performance rights associations' alleged anti-competitive conduct.

authorities – to item-specific licenses (e.g., right to use a particular song once).

The most obvious explanation for this reluctance lies in transaction costs saving arguments (cf. Besen, Kirby, and Salop, 1992; Merges, 1996). The analysis above provides an additional rationale for the strategy of collectives with regard to blanket-licences. By tying all licenses together, copyright collectives are able to shield their market power from the potential competition of individual source licenses. Tying, in other words, is instrumental to the sustainability of the concentrated monopolistic pricing of the copyright collectives. Bearing in mind the previous discussion, this has dual effects from an efficiency point of view. In the “complements” case, this prevents the tragic outcome of the anticommons pricing. However, in the “substitutes” case this has the effect of preventing desirable competition.

The traditional concern of tying should thus be reappraised in light of the beneficial effects of “packaging” complementary goods, to avoid the undesirable pricing problems discussed above. At first impression, bundling may be the result of the successful coordination of suppliers of complementary goods, who have overcome the hold-out

strategies that generate the complementary oligopoly problem discussed in this paper.

#### *7.4. The Rationale of Per-Use Licences*

One word should be spent here to verify whether the tying rationale would also assuage the traditional antitrust concern with ACAP and SMI's reluctance to offer per-use licenses (e.g., a license to buy the performance right to just *one* song), and practice to offer all-or-nothing licenses<sup>16</sup>. The answer to this question is quite straightforward. While practices of bundling may be appreciated as evidence of a successful solution to the firms' strategic problem, this justification would not extend to the practice that excludes per-use licenses from the available options. If the underlying problem is one of complementary oligopoly, the supply of per-use licenses would reflect higher per-unit prices, compared to the alternative bundle. As long as consumers may acquire cheaper bundled licenses, the availability of a per-use license does not constitute an impediment to the solution of the complementary oligopoly problem. The reluctance to offer per-use

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<sup>16</sup> See in this regard the litigation in *Buffalo Broad. Co. v. ASCAP*, 744 F.2d. (2d Cir. 1984) and *CBS v. ASCAP*, 620 F.2D 930 (Distr. 1980), both discussed in Hillman (1998, 747-757).

licenses cannot find support on the sole basis of the model presented here.

### **Conclusion**

This paper has applied the case of complementary oligopoly and anticommons pricing to intellectual property rights. Our model reveals the dramatic result that price coordination and monopolistic pricing do not in all circumstances produce inefficient equilibria. Because complementary inputs push oligopoly to higher prices and greater quantity restrictions, monopoly may paradoxically represent a second-best alternative. That is, an improvement with respect to the alternative Nash equilibrium. As illustrated, the welfare effects of competition and price coordination with regard to works of intellectual property depend on the degree of complementarity and the nature of the intellectual products involved.

This paper concluded with remarks on the implications of this analysis on the practices of copyright collectivisation and relevant antitrust regulation. It was noted that the preservation of competition between “direct licenses” and “intermediary licenses”, as provided by antitrust regulation, produce dual effects from an efficiency point of

view. In the case of intellectual property rights that are complements in a composite creation, such competition remains ineffective. However, with regard to substitutes the antitrust regulation retains its relevance by inducing a lower equilibrium price. Similarly, copyright collective's blanket licensing policies have ambiguous effects from the antitrust policy perspective. Not all practices generally regarded as anticompetitive in the standard case of substitutable goods are undesirable when applied to complementary goods. Practices of price coordination and mergers solve the strategic pricing problem discussed in this paper, to the mutual advantage of producers and consumers. The outcome is not the best social optimum, but is an improvement--both privately and socially--over the alternative Nash equilibrium.

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