

VALUE BASED PRICING OF MUSIC

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ABSTRACT. In the regulatory setting of rates for statutory-licensed music services, the question of value-based versus cost-based rate setting for the component-rights of a musical performance arises. In this article, we have demonstrated this value-or-cost question is a distinction without a difference. Starting with the value-based concept of second-best (or Ramsey) prices, we end with a result prescribing that cost differences should be fully reflected in compensation across the inputs to the music recording. Each price is set so that the costs are covered, no more and no less.

1. INTRODUCTION

The music business is not an industry that typically comes to mind during discussions of price regulation. Yet, when music is subject to compulsory licenses – as it is when streamed over the Internet (in some forms), broadcasted on a video provider’s music channels, or transmitted over satellite radio – the compensation rates the copyright holders receive for the use of their property is often set by a regulatory board rather than a market. Typically, the rights to be compensated include those for the musical work, which compensates the composer, and the performance right, which compensates (jointly) performers and record labels. In the United States, the rates for the musical works right is set by a rate court proceeding (if negotiations fail), while the rates for the performance right are set by the three judges of the Copyright Royalty Board, typically operating under a ‘willing buyer/willing seller’ standard. The Copyright Royalty Board of Canada establishes the rates for compulsory licenses under an ‘equitable remuneration’ standard. Many other nations have similar laws and rate-setting apparatus.

Economists have varying opinions about how to apply rate standards in copyright cases and such differences are debated during contested proceedings before the relevant rate-setting

board or court. In most cases, marketplace agreements between buyers and sellers of services not falling under a compulsory license are used as benchmarks, with adjustments made to account for differences in services and distribution modalities. For any given sound recording, the costs borne by the record labels are greater than those of the composers (Chace, 2011; Brabec and Brabec, 2011, pp. 34, 121, 127).¹ So, in market agreements, it is typically the case that compensation to the performers and labels exceeds that to composers, often by a large amount.² In U.S. based contracts, the evidence suggests that compensation for the performance right is about 30% of revenues while the musical works right gets a little less than 5% of revenues.³ This relationship is mirrored in the regulated rates set by the CRB and the rate court. Pandora, for example, pays about 6% of its revenues to the composer collectives ASCAP, BMI and SESAC, but pays about 46% of its revenues to the performance rights collective SoundExchange.⁴

In contrast, the Canadian Copyright Board has in past decisions established equal compensation across label and composer collectives (LaFrance, 2011, p. 254).⁵ In a 2010 decision, the Copyright Board “ruled that performing rights in sound recordings are worth the same as in musical works.”⁶ This decision reflects an earlier ruling in 1999, when the Board concluded that “there is no reason to believe that the use of sound recordings on [the user] has *any greater value* than the use of the underlying works,” and that, “it can be readily argued that

¹Final Rule and Order, Digital Performance Right in Sound Recordings and Ephemeral Recordings, Docket No. 2005-1 CRB DTRA, 72 Fed. Reg. 24084, 24096 (May 1, 2007) (“Webcasting II”) at 24094-95; Final Rule and Order, Determination of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services, Docket No. 2006-1 CRB DSTRA, 73 Fed. Reg. 4080, 4089-90 (Jan. 24, 2008) (“SDARS I”) at 4089-90.

²Written Rebuttal Testimony of Aaron Harrison, In the Matter of Determination of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services, Docket No. 2011-1, CRB PSS/Satellite II (2011) at 13-14 (available at: http://www.loc.gov/crb/proceedings/2011-1/rps/sx_vol_2.pdf).

³For the composer collectives, webcasting royalty rates are set forth in forms available on their websites (ASCAP 1.85%; BMI 1.75%; SESAC 0.053%). For performers and record companies, see Testimony of Michael D. Pelcovits, In the Matter of Digital Performance Right in Sound Recordings and Ephemeral Recordings, Docket No. 2005-1 CRB DTRA, at Table 6.3.

⁴Pandora Investor Presentation: Q2 CY2015 (September 8, 2015)(available at: <http://investor.pandora.com/phoenix.zhtml?c=227956&p=irol-presentations>).

⁵Also see, e.g., Decision of the Board, Statement of Royalties to be Collected by SOCAN, RE:SOUND, CSI, AVLA/SOPROG and ARTISTI in Respect of Commercial Radio Stations, Copyright Board Canada (July 9, 2010).

⁶Id., at 236.

a pre-recorded performance is *worth no more* to [the user] than a pre-recorded work.”⁷ In its decision, the Board was clearly focused on the “the relative value of recordings to the [user].” The Board rejected the idea of “looking to the market ... for guidance,” though it acknowledged evidence “that making a sound recording costs approximately 4.5 times what it costs to make a song” and that “royalties paid to performers and makers of sound recordings in free market transactions are approximately 2.5 times higher than royalties paid to authors.”⁸

The Canadian Board’s decision highlights an important question, the resolution of which may be helpful in formulating economically-rational rates for copyrighted works in regulatory proceedings, both in Canada and elsewhere where this ‘value based’ logic may appear. The ‘relative value’ approach of Canada’s Copyright Board is arguably a demand-based model of rate setting, where the value of two rights, both necessary to produce a recording song, are of equal value but of different opportunity costs.⁹ In this short paper, we offer an economic analysis that incorporates both the consideration of ‘relative value’ and of relative cost. Following a standard economic approach, we find welfare maximizing compensation levels by finding the prices for the inputs (the musical composition itself and the performance) that maximize consumer surplus and provide zero economic profits to the sellers. In economic theory, such prices are termed “Ramsey Prices,” and such welfare-maximizing prices are often referred to as value-based prices since the relationship of price to marginal cost for each good reflects differences in demand.¹⁰ Compensating the inputs to music recordings is a special case of this general problem, however, in that any given recording contains exactly one unit each

⁷Decision of the Board, Tariff 1.A – Commercial Radio in 1998, 1999, 2000, 2001, and 2002, Copyright Board Canada (August 13, 1999) at p. 32 (emphasis supplied).

⁸*Id.*, at p. 31.

⁹While the Canadian Copyright Act has no stated purpose, the Supreme Court of Canada has stated that its purpose, in part, is to ensure “the encouragement and dissemination of works of the arts and intellect and obtaining a just reward for the creator” and that “In crassly economic terms it would be as inefficient to overcompensate artists and authors for the right of reproduction as it would be self-defeating to undercompensate them.” Plainly, by the Supreme Court’s standard, costs matter. *Theberge v. Galerie d’Art du Petit Champlain Inc.*, 2002 SCC 34, 31.

¹⁰Ramsey pricing has appeared in arguments made before the U.S. Copyright Royalty Board, though the argument is not similar to the one made in this article. See Testimony of Janusz Ordovery, In the Matter of Adjustment of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services, Docket No. 2006-1 CRB DTRA (October 2006).

of these two inputs; that is, a music recording consists of a song (provided by the composer) and a recording of it (provided by the labels and performers), in addition to those further services provided by the firm that packages these components into a commercial product. This joint production problem leads to an interesting finding. Specifically, though we start with a value-based Ramsey approach, the optimal prices turn out to be purely cost based. This solution is practically important, since value-based pricing does not permit the avoidance of cost comparisons and, in fact, devolves into a relative-cost problem.

2. MODEL

Consider a final product Z (a distributed music recording such as an album, compact disc, mp3, or webstream) that requires the one-to-one combination of one unit of a product X (a song) and one unit of a product Y (a recording made by labels and performers) in order to be produced and sold. The product Z may take the form of a compact disc, an MP3 download, or a web-stream of a sound recording (made up of an X and a Y). The products X and Y are produced by separate industries denoted by x and y . There is no independent demand for either X or Y ; only Z has value for final consumers. We will assume that the distribution and sale of Z is done by a perfectly competitive industry with a constant marginal cost and mark-up given by c_z .

Production of X and Y occurs under conditions of increasing marginal costs, so that the supply curves will be defined and have the usual appearance. Obviously, the costs of creating a music recording consist mostly of upfront costs, since sales cannot occur until the recording is completed, and such costs exist whether the recording is never sold or goes platinum. Thus, we will also assume that the industries x and y have fixed (non-incremental) costs F_x and F_y . In the long-run, the viability of these industries is assumed to depend on their ability to recover these costs through their sales of X and Y .

Suppose that a benevolent regulator was tasked with the problem of setting uniform prices for X and Y to maximize the social welfare generated by consumption of the product Z , while

also assuring the long-run viability of the industry by recovering the long-run economic costs of production, which include a ‘normal’ return. This problem is well-known in economics and is termed ‘Ramsey pricing’ (Tirole, 1995, p. 70).¹¹ In the standard setting, the solution to this problem involves mark-ups in the prices of both goods, above their marginal costs, which are inversely proportional to the elasticity of demand for the products.¹² This technique produces the seller revenue necessary for economic viability with the least reduction in consumer welfare.¹³

The application of the Ramsey logic to this problem, however, is non-standard, because X and Y are not multiple products of a single firm, but the separate products of two different sectors. This circumstance imposes an additional constraint on the regulator’s problem which is absent in the ordinary Ramsey model. In particular, unless there exists some legal and feasible means for income to be transferred/shared between sectors x and y , then the regulator must make sure that the selected prices P_x^* and P_y^* independently generate sufficient revenues for each sector to recover their fixed costs.

In other words, if the two sectors were viewed as a single merged entity, then the relevant constraint would be that prices for X and Y would collectively recover the entity’s fixed cost $F_x + F_y$ and, as is well-known, this would involve prices of the form $[(P_i - c_i)/P_i] = -\Lambda/\varepsilon_i$, where P_i is the price of good i , c_i is the marginal cost of i , ε_i is the elasticity of good i , and Λ is a multiplier (variable) which represents the severity of the revenue requirement constraint on the regulator’s problem. We note that both costs and demand characteristics

¹¹The term Lerner Index is often used to describe the percentage markup of price over marginal cost (Tirole 1995), and this concept has been used in proceedings before the U.S. Copyright Royalty Board. See, e.g., Written Direct Testimony of Carl Shapiro, In re Determination of Royalty Rates and Terms for Ephemeral Recording and Digital Performance of Sound Recordings (Web IV), Docket No. 14-CRB-0001-WR (October 6, 2014).

¹²Ramsey prices are welfare maximizing for inputs of production when the downstream is competitive (Brown and Sibley, 1986, Ch. 6).

¹³Copyrights generally serve to ensure the owners of existing copyrighted material are compensated (mostly as an equity concern), but more importantly – as interpreted by economists and the law – to encourage new works by providing remuneration for its creators. Thus, compensation is not really a ‘backward-looking’ concern, but a ‘forward-looking’ one, designed to encourage the speculative investments needed to provide society with new creative works. Thus, the ‘fixed’ costs of production are recurring in the sense that new works are continually created.

(ε) jointly determine the optimal solution, so pricing is a matter of balancing both supply- and demand-side characteristics.

In contrast, consider the problem the regulator faces when sectors x and y are independent, stand-alone businesses. In this case, there are two revenue adequacy constraints on the problem. We need both

$$P_x Q_z - V_x(Q_z) - F_x \geq 0 \quad (1)$$

and

$$P_y Q_z - V_y(Q_z) - F_y \geq 0 \quad (2)$$

where $V_i(\cdot)$ is the variable costs of production of sector $i = x, y$ and $Q_z = Q_y = Q_x$ and $P_z = P_x + P_y + c_z$. Each sector must cover its long-run costs from its own revenues. This requirement, which is relevant to the circumstances here, leads to quite a different solution to the regulator's (and society's) problem.

Since the number of constraints and prices is now equal, the regulator no longer has any degrees of freedom in his solution to the problem: if the problem has a feasible and economically relevant solution, then it must be that the optimal prices solve

$$P_i^* = \frac{V_i(Q_z) + F_i}{Q_z} \quad \text{for } i = x, y \quad (3)$$

In other words, optimal prices are equal to long-run average costs for both x and y .

A little reflection shows why this must be so: in most cases, there is only one price for a good which produces revenues exactly equal to the production costs for that good, the point at which the long-run average cost curve crosses the demand curve for the good. In the case at hand, we have two prices the regulator may set, but two constraints in those variables. When those constraints cross each other precisely one time in the positive quadrant, then the problem is degenerate in the sense that there is only one point which simultaneously satisfies the constraints. The only exceptions to this conclusion would arise in cases in which there were multiple crossing points. Frequently, we can expect a unique solution given some modest

assumptions. To this end, let $P = P_x + P_y$ denote the price sum and $Q_z = D(P^* + c_z)$. Summing the two equations in (3):

$$P^* = T(P^*) \quad (4)$$

where

$$T(P) = \frac{V_x(D(P + c_z)) + V_y(D(P + c_z)) + F_x + F_y}{D(P + c_z)}$$

The function $T(P)$ is the combined average total cost of industries x and y composed with the demand curve for the composite good. Our problem is equivalent to searching for a fixed point to this function. Since T is a composite average cost function, we can generally be assured that T is always greater than zero as there will be positive marginal and fixed costs. If there exists a $\lambda < 1$ such that $T'(P) \leq \lambda$ for all P , then a straightforward application of the Banach fixed point theorem implies the existence of a unique fixed point P^* to the function T . While this slope restriction is a sufficient condition to guarantee uniqueness, a unique fixed point can certainly still occur when the slope of T exceeds one over limited intervals.

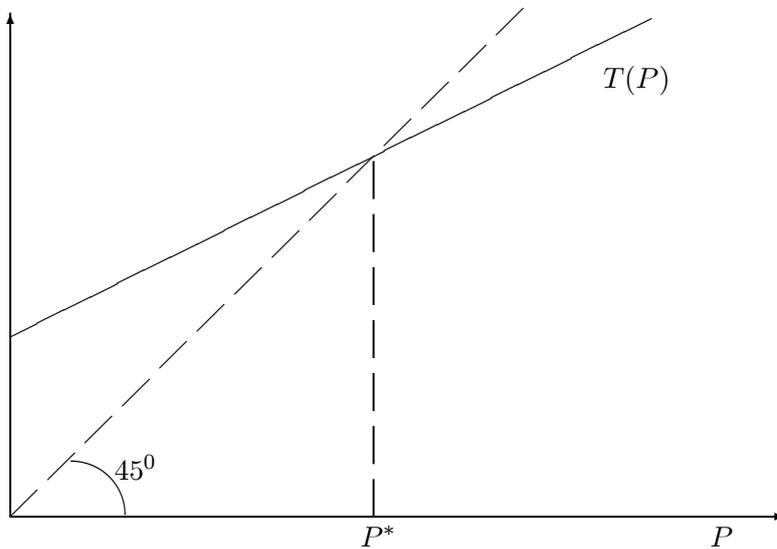


Figure 1: Fixed point of $T(P)$

Figure 1 illustrates this unique fixed point. The price sum P^* implies an optimal quantity of $Q_z = D(P^* + c_z)$. This optimal quantity can then be directly used on the right-hand side of equation (3) to calculate the unique optimal prices and $P_x^* + P_y^*$.

3. PARAMETERIZED EXAMPLE

A simple and concrete example which illustrates our analysis is obtained from the specification given next. Let demand for Z be given by $Q_z = \frac{M}{P_z}$, where M is a parameter measuring the strength of market demand or market size. The (isoelastic) demand for the composite good Z is a standard downward sloping hyperbola. The parameter M will generally need to be sufficiently large in comparison to the fixed costs in order to generate sufficient revenue to make the composite good economically viable. We assume a very simple linear form for the variable cost functions for X and Y . Let $V_x = c_x Q_z$ and $V_y = c_y Q_z$, for positive constants c_x and c_y . The two conditions in (3) for the optimal prices will take on a very simple form given the aforementioned specification for demand and variable costs:

$$\begin{aligned} P_x &= c_x + \frac{F_x}{M} (P_x + P_y + c_z) \\ P_y &= c_y + \frac{F_y}{M} (P_x + P_y + c_z) \end{aligned} \quad (5)$$

These two conditions are just linear equations in the optimal prices. Summing these two equations yields a concrete version of equation (4):

$$P = (c_x + c_y) + \lambda(P + c_z) \quad \text{where } \lambda = \frac{F_x + F_y}{M} \quad (6)$$

If the market size M is sufficient to cover the aggregate fixed costs, then $\lambda < 1$ and we have the following unique solution:

$$\begin{aligned} P^* &= \frac{c_x + c_y + \lambda c_z}{1 - \lambda}; \\ P_x^* &= c_x + \frac{F_x (c_x + c_y + c_z)}{M(1 - \lambda)}; \\ P_y^* &= c_y + \frac{F_y (c_x + c_y + c_z)}{M(1 - \lambda)} \end{aligned}$$

Hence, the unique optimal prices are fully determined from the two zero profit conditions, and without any reference to a complex welfare maximization problem. Put simply, each price is set so that the costs are covered, no more no less.

We note that our assumptions regarding the structure and performance of the packaging industry that produces Z can be relaxed in several ways. First, one may assume that this industry also has a fixed cost F_z that must be covered for the sector to be viable. This implies that the regulated rates for goods x and y must be set to allow sufficient returns, but the forms of the resulting optimal prices are the same. Similarly, if industry z is not competitive, but instead earns a mark-up exceeding its economic costs that is exogenous to the regulators' decision, the identical logic carries through. This complication, however, raises the more basic question of the obligations of regulators to unregulated firms which merely buy inputs from regulated sectors. Such speculation takes us well beyond the scope of this paper.

4. CONCLUSION

In the regulatory setting of rates for statutory-licensed music services, the question of value-based versus cost-based rate setting for the component-rights of a musical performance often arises. In this article, we have demonstrated this value-or-cost question is a distinction without a difference. In the case of music rights, even if we start with the value-based concept of second-best (or Ramsey) prices, we end with a result prescribing that cost differences should be fully reflected in compensation across the inputs to the music recording. Each price is set so that the costs are covered, no more and no less. This solution is practically advantageous, since value-based pricing is a complex, information-intensive approach, but cost-based pricing is generally viewed as more manageable from an administrative perspective.

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