Before the
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Washington, D.C.

In the Matter of ADJUSTMENT OF RATES AND TERMS FOR PREEXISTING SUBSCRIPTION SERVICES AND SATELLITE DIGITAL AUDIO RADIO SERVICES	)	Docket No. 2006-1 CRB DSTRA

TESTIMONY OF

JANUSZ ORDOVER

Professor of Economics
and former Director of the Masters in Economics Program at New York University

Witness for SoundExchange, Inc.

FINAL

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Testimony of JANUSZ A. ORDOVER

INTRODUCTION AND QUALIFICATIONS

My name is Janusz A. Ordover. I am Professor of Economics and former Director of the Masters in Economics Program at New York University, where I have taught since 1973. During 1991-92, I served as Deputy Assistant Attorney General for Economics at the Antitrust Division of the United States Department of Justice. As the chief economist for the Antitrust Division, I was responsible for formulating and implementing the economic aspects of antitrust policy and enforcement of the United States, including co-drafting the 1992 U.S. Department of Justice and Federal Trade Commission Horizontal Merger Guidelines. I also had ultimate responsibility for all of the economic analyses conducted by the Department of Justice in connection with its antitrust investigations and litigation.[1]

My areas of specialization include industrial organization economics, particularly antitrust and regulatory economics. I serve on the Board of Editors of the Antitrust Report and have served as an advisor on antitrust and regulatory issues to many organizations, including the American Bar Association, the World Bank, the Organization for Economic Cooperation and Development, the Inter-American Development Bank, and the governments of Poland, Hungary, Russia, the Czech Republic, and Australia, among others. I have provided economic testimony in policy hearings conducted by the Federal Trade Commission and the United States Senate.

I have consulted and testified in a wide range of antitrust and regulatory matters, including a number dealing with issues related to the distribution and pricing of content, and acted as an economic consultant to Commission on New Technological Uses of Copyrighted Works (CONTU) on issues of pricing of copyrighted materials. I have lengthy experience in analyzing economic issues in the music industry as well as in other content industries, including the motion picture and software industries. In this regard, I served as an expert economist for Sony and BMG in connection with their recorded

[1] A copy of my curriculum vitae is attached as Appendix 1.

music joint venture. I also testified on behalf of Universal Music, in a matter dealing with the company's petition to adjust the royalty rate for mechanical rights in the European Union, and in connection with the Three Tenors joint venture. I engaged in several analyses of the issues relating to distribution and pricing of content in the cable television industry, most recently in connection with the transfer of control of portions of Adelphia's cable systems to Comcast. In addition, over the past decade or so I have written and testified in numerous proceedings dealing with pricing of access to telecommunications networks.

One focus of my research throughout my academic career has been on the incentives for creation and dissemination of intellectual property, and in particular the possible tension between the rights to exclude granted by the intellectual property laws and the benefits to consumers from widespread dissemination of intellectual property. This very issue, which is central to this rate proceeding, is addressed later in my report.

I. OVERVIEW OF TESTIMONY

Counsel for SoundExchange, Inc. (SoundExchange) has asked me to analyze the economic issues implicated by the policy factors set out in 17 U.S.C. § 801(b)(1), which govern the rates for access to sound recordings by the two satellite digital audio radio services (SDARS), XM and Sirius, to review empirical data relevant to this rate-setting, and to evaluate the SoundExchange rate proposal in light of these statutory criteria and the empirical evidence. The license at issue in this matter grants the SDARS non-exclusive rights to transmit to their network subscribers digital performances of copyrighted sound recordings. I understand that the license is compulsory, *i.e.*, that copyright owners may not withhold any of their sound recordings from the SDARS.

In reaching the conclusions that follow, I relied on my experience in analyzing pricing issues in general and of pricing of access to firms' assets in a variety of market settings, my knowledge of the music industry (as well as other content industries, such as motion picture, cable television, and software), my knowledge of the relevant economic literature, and my consideration of contracts entered into between copyright holders and

distributors of digital content. I also reviewed the testimony in this proceeding submitted by Dr. Michael Pelcovits and the survey evidence presented by Dr. Yoram Wind.

My overarching conclusion is that a rate that would be established by the parties in a marketplace free of regulatory compulsion and other distortions that could impede the parties from reaching efficient outcomes best satisfies the section 801(b)(1) statutory criteria in principle. Such a rate would be linked to the value of sound recordings to satellite radio subscribers, given all the other channels of distribution for music. I would expect that a substantial portion of that value would accrue to the sound recording copyright holders[2] insofar as music is the paramount content that attracts listeners to satellite radio. After reviewing the statutory criteria, marketplace transactions in related areas, and Dr. Pelcovits' analysis based on the economic situation of the SDARS, I conclude that SoundExchange's proposed rate, starting at a low level and rising to the greater of 23% of revenue or $2.75/subscriber/month in the last year of the statutory license, is a rate that both satisfies the statutory criteria and is consistent with what I would expect to result from individual marketplace transactions between the recording companies and the two SDARS.

This report is organized as follows. Section II explains the role of pricing in allocating society's resources. I show how unimpeded market transactions promote economic efficiency and lead to supply and demand decisions that maximize society's economic welfare. Section III describes the special case of markets for sound recordings and other intellectual property. In these markets, the incremental cost of serving any single user is very low relative to the initial cost of creation, and use by any single user does not diminish the availability of the content to others. I demonstrate that to account for these differences, pricing in these markets should be based on the underlying value of the product to the buyer. In Section IV, I rely on this economic distinction to translate the statutory policy objectives pertinent to this proceeding into economic criteria

[2] I understand that the total royalty is collected by SoundExchange, but is shared between the sound recording copyright holders and the individual artists. When I refer to the sound recording copyright holders' royalties in this report, I mean the total royalty payment. I also realize that SDARS pay a royalty to music publishers.

applicable to the setting of an appropriate rate for the license at issue in this proceeding. I also explain why rates arrived at through voluntary arm's length transactions between buyers (*e.g.*, the SDARS) and sellers (*e.g.*, the record companies) meet the four statutory policy in principle. Finally, I present in Section V my analysis of marketplace rates reached by copyright holders and service providers (*i.e.*, content distributors) in other contexts and offer my conclusions about the SoundExchange rate proposal.

II. THE ROLE OF PRICES

Before addressing the specific issues in this matter, I first briefly explain the role of economics in analyzing consumer and producer decisions and the role that prices play in such an analysis. I then explain the relevance of economic analysis to determining the appropriate rate for the license at issue.

A. Demand for Goods and Services

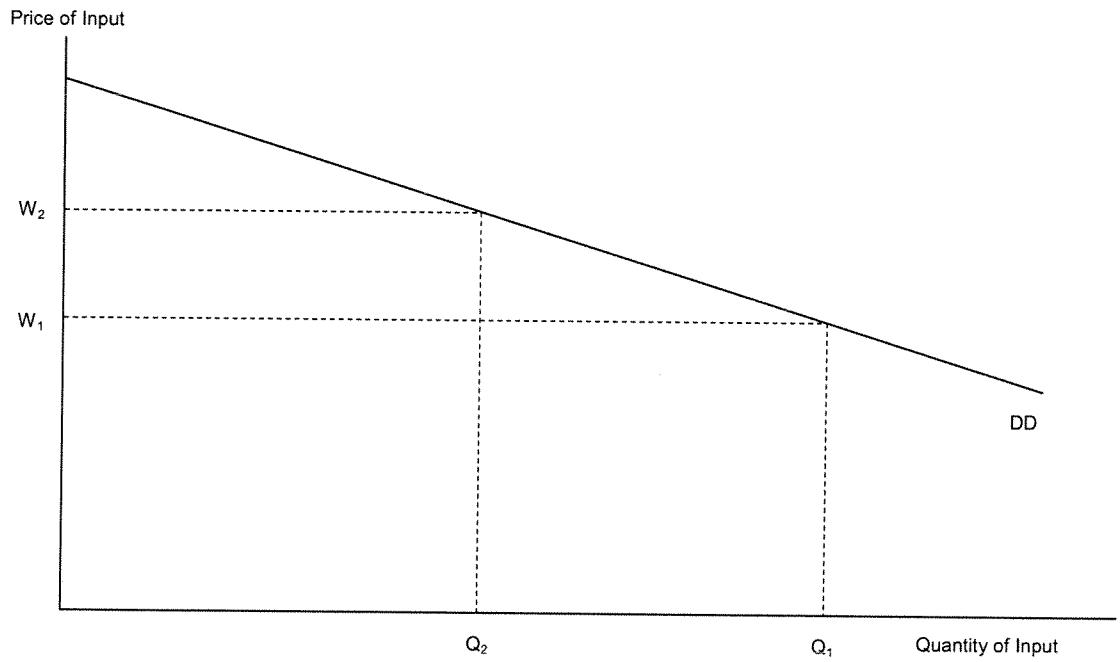
A fundamental assumption in economics is that consumers strive to maximize the satisfaction they derive from the products and services available for their use, given the prevailing prices, budgetary constraints, and the totality of alternatives available to them. One implication of this assumption is that an increase in the price for any particular good causes consumers to demand less of the good. Stated more succinctly, the demand curve for the good is downward sloping – the more something costs, the less of it will be demanded. For example, an increase in the price of gas decreases the amount that people drive.

More relevant to the issues in this proceeding is that a downward-sloping demand curve also characterizes a firm's demand for productive inputs, such as the SDARS' demand for the right to transmit sound recordings. Just as economics assumes that consumers seek to maximize the value received from their use of goods and services, it also assumes that a firm's objective is to maximize its profits, that is, the return it derives from selling its goods or services to the marketplace. Consistent with this objective, the firm attempts to minimize the costs incurred in producing a given quantity (and quality) of its output. As a result, an increase in the price of an input will induce the firm to substitute the use of that input with available alternatives. For example, an increase in

the price of steel will induce a can manufacturer to switch towards the use of aluminum or plastic. Moreover, as the price of an input increases, the final price of the product will also increase, reducing demand and causing a further decline in the demand for the input. These effects working together explain the downward-sloping shape of the hypothetical demand curve DD in Figure 1(A). (This curve can illustrate firm-specific or industry-wide demand.)

Figure 1

(A)
Firm Demand for Input

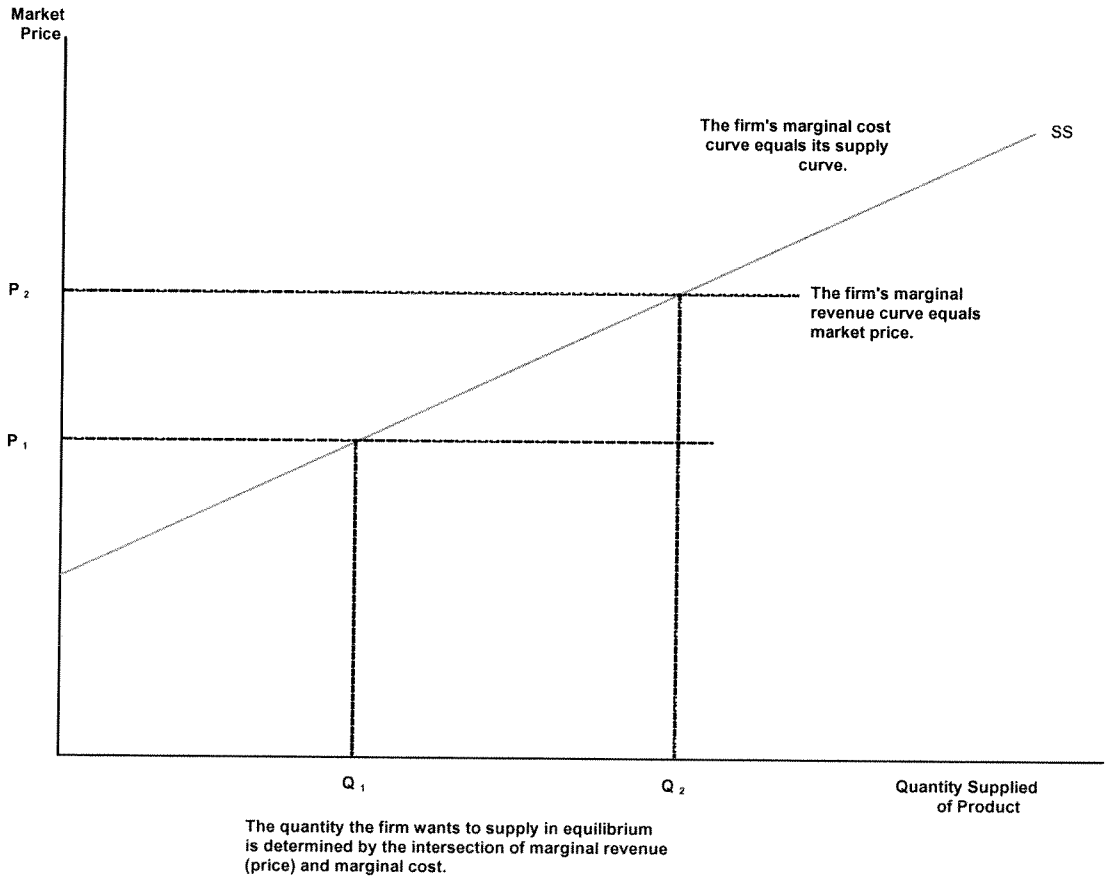


B. Supply of Productive Inputs

Another basic assumption of economics is that owners of productive resources endeavor to maximize the net income they generate from those resources, subject to the competitive and other constraints (such as regulations) they face and their customers' willingness to pay. This means that when the price of a good rises, owners of productive resources – including the current producers and new producers – will have an incentive to supply more of that good. In other words, the supply curve for any given good or service is upward sloping. For example, suppliers of organic food will find it profitable to increase their output as prices increase, and new firms will enter. Or, more specific to

this proceeding, an increase in the returns available to copyright holders will lead to more (or higher quality) output. Thus, the more revenue that any sound recording is expected to generate, the stronger will be the incentives for record companies and music creators to produce more content and to improve its quality. Moreover, new firms will be attracted into the industry by the prospect of better returns. This concept is shown in Figure 1(B), where the hypothetical firm's supply curve is illustrated as SS. (This curve can also be taken to illustrate industry aggregate supply.)

Figure 1
(B)
Firm Supply of Product



C. Markets Intermediate Between Buyers and Sellers

The discussion above summarized how buyers and sellers respond to price incentives. However, it did not address the question of the level of price that the product or service in question (be it a final good or an input) will command. In order to

determine the level of price, we need to put together the forces of demand and supply and examine the interplay between them. Markets are the primary institutions that intermediate between the forces of supply and demand.

Economists classify markets along different criteria. One criterion is the extent to which individual buyers and sellers have the ability to influence the market price for the product in question. When no single buyer and seller can influence the market price, the relevant market is described as being "perfectly competitive." For example, a global market for wheat or soybeans approximates the "perfectly competitive" benchmark. As a general matter, economists assume that in a perfectly competitive market all participating firms offer a homogeneous product (that is, products that are perfect substitutes for each other), sell that product at the same "market price," and act "as if" their output decisions have no effect on market price. Simply, firms in this hypothetical perfectly competitive market have no ability to affect the market price of the product they sell through their output decisions.

As a result, while the industry collectively faces a downward-sloping demand curve, as depicted in Figure 1(A), each individual firm behaves like a "price taker," meaning that it faces a perfectly horizontal demand curve. Furthermore, because the production of an additional unit of output incurs an incremental cost, the firm will select the level of output such that additional revenue from additional production (here equal to price) balances the additional costs the firm incurs to produce this incremental output (as shown in Figure 1(B)).

The industry supply *at any given price* is now simply the sum total of such production decisions of all the pertinent firms, as previously depicted in the supply curve in Figure 1(B).

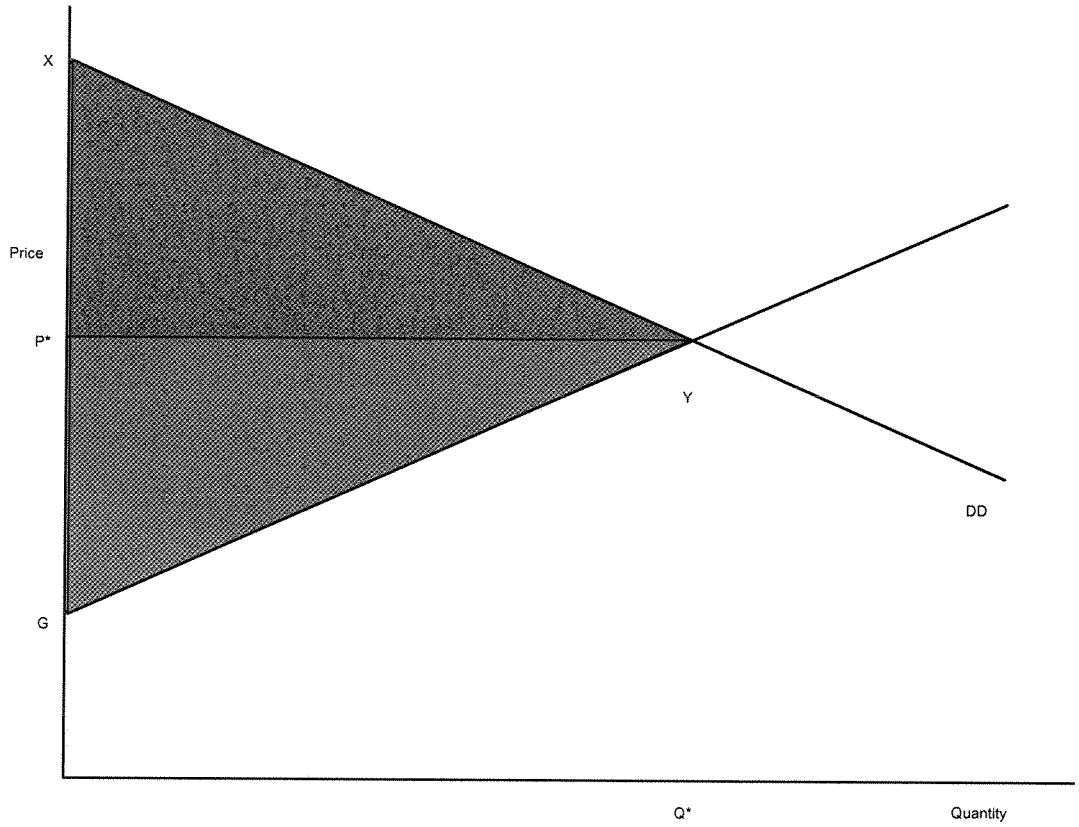
Given the supply and demand decisions in this hypothetical market, it is a straightforward matter to determine the price for the product. In particular, the product's price will be established at the level at which supply and demand are equal: that is, the market "equilibrates" where the number of units of output that firms are willing to supply at a given price just equals the number of units that consumers demand at that price (*see*

Figure 2). At any other price, there will be either excess demand or excess supply that the unimpeded operations of market forces will correct.

Economists deem the price and output combination determined in the perfectly competitive market to be "efficient." That is, this price and output combination maximizes society's total welfare from production of the good. Consumer welfare is maximized because production continues to the level where the value that consumers (including producers that use the good as an input into their own production process) place on the additional unit of the good equals the incremental cost of producing the additional unit of the good, but no further.

The equilibrium price and output combination also determines how the total economic welfare that sales of the product create is allocated between buyers and producers. At the competitive equilibrium, users receive "consumer surplus" – the excess of the total value they place on the output, less what they are required to pay – as measured by the area of the triangle XYP in Figure 2. Producers receive profit – the difference between the total revenue they earn and the total costs they incur – as measured by the area of the triangle GYP in Figure 2. Total *social* welfare is the sum of consumer surplus plus profit, as measured by the area GYX.

Figure 2
Market Supply and Demand



Consumer Surplus = Shaded Area XYP*

Producer Surplus = Shaded Area GYP*

Total Social Welfare = XYP* + GYP* = XYG

For economists, the optimal result, and the one that is achieved under "perfect competition," maximizes total social welfare. In other words, there is in theory a "perfect" price – high enough to assure that producers supply enough of the product to satisfy society's desire for the product at that price, and low enough so that the quantity demanded equals the quantity that producers supply.

Although "perfect competition" is a theoretical construct that is useful in economic textbooks, it does not fully describe how the markets work (*i.e.*, the intermediating role of markets) in more realistic settings, including the one at issue in this

proceeding. In particular, for a variety of reasons "real" markets differ from the "perfectly competitive" benchmark. For example, firms' products (such as content) may differ from each other in ways that are important to some consumers but less so to others. In such a setting, unlike in a perfectly competitive market, a supplier would lose only some (and not all) of its customers if it were to charge a price that is slightly higher than that charged by its rivals, and would attract only some (and not all) of its competitors' customers if it were to charge a little less. As a result, in a market in which firms' products are differentiated, market prices that equilibrate supply and demand may deviate from underlying production costs. The extent of this deviation will be driven by the extent of product differentiation and also by the availability of alternatives.

Another reason why a market may not be "perfectly competitive" is that, on the supply side, there may be only very few firms. This could be because the production technology exhibits scale economies (relative to the strength of demand).[3] In that case, it is efficient that there be only a few firms so that they can each achieve an efficient scale. For example, satellite radio technology exhibits such scale economies because there are up-front fixed costs of setting up a satellite distribution channel, but the incremental cost of serving an additional customer is low (possibly near zero). Nevertheless, if the market is "workably" competitive, firms' profits aggregated over the range of products they supply will be restrained or capped by the forces of inter-firm and inter-product rivalry. For example, content markets are generally characterized by huge product variety coupled with effective competition among suppliers of such differentiated content.

Irrespective of the reasons why any particular market may deviate from the textbook perfectly competitive ideal, the general presumption in economics (and in public policy) is that voluntary transactions between buyers and sellers as mediated by the *market* are the most effective way to implement efficient allocations of societal resources. When buyers attempt to depress prices below levels that generate reasonable returns to suppliers, available output will be curtailed and incentives to innovate will be suppressed.

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[3] Scale economies are present when the unit cost of production falls with the volume of output. This has profound implications for the pricing of the product.

Similarly, when sellers attempt to extract supra-competitive returns, consumers will substitute away from the products in question while new firms will find it profitable to come into the market and lower prices. Thus, prices act as signals that guide buyers and sellers regarding their consumption and production decisions in a manner that conduces to economic efficiency.

Regulatory intervention into the market-driven process of setting prices is desirable in only very few situations. One such situation may arise when voluntary transactions in the unregulated market would result in prices that provide substantially and persistently distorted pricing signals, and thereby result in significantly *inefficient* allocations of resources. For example, such intervention may be warranted when the supplier is a monopolist in the relevant market and thus can persistently extract "monopoly" rents from buyers.[4] I say "may be" warranted, because economists and policy makers have long recognized that the very process of regulating a market is costly and can (in intended or unintended ways) create its own distortions in resource allocation.[5] Accordingly, for an economist, absent a public policy decision actually to *distort* pricing structure (through taxes or subsidies), the fundamental objective in a rate setting proceeding such as this one should be to "mimic" what an effectively competitive marketplace accomplishes in an unregulated setting – to find the price that minimizes inefficiencies and thereby maximizes economic welfare, subject to current and likely future economic conditions.

In my view, as set out in more detail in Part IV, this objective is entirely consistent with the operative directive of the first three policy factors in the statute governing this proceeding, which is to establish a rate that provides a "fair return," "maximizes availability" of a product, and ensures that the risks borne by each party are

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[4] *See, e.g.*, R. D. Willig, "Economic principles to guide post-privatization governance," chap. 8 in F. Besanes, et al., (eds.), *Can Privatization Deliver?*, Johns Hopkins U. Press (1999), for a succinct statement of preconditions for regulation.

[5] *See, e.g.*, R.G. Noll, "The Politics of Regulation," chap. 22 in R. Schmalensee and R. Willig (eds.) *Handbook of Industrial Organization* (Vol. 2), North Holland (1989); D. Carlton and J. Perloff, *Modern Industrial Organization* (3rd ed.), chap. 20, Addison-Wesley (2000).

adequately rewarded. That is, the first three statutory policy goals enunciated in section 801(b)(1) would appear to point to maximizing economic welfare, and these objectives can be achieved by establishing rates that provide both the copyright holders and the copyright users with incentives to maximize the social benefits derived from the creation and dissemination of the creative works. While this standard perhaps can be construed to permit below-market rates in some circumstances, and leaving to one side the fourth statutory factor, which I discuss separately in what follows, as a general matter the statutory standard points towards rates that best reflect what would be the result of unimpeded negotiations among buyers and sellers in a workably competitive marketplace.

Before I can explain what this means in the current context, I need to address the question of pricing of goods for which pricing at "marginal cost," that is, pricing that is the most efficient in an *abstract* textbook sense, is simply infeasible because it would bankrupt the supplier and thus deprive society of desirable products.

III. PRICING OF CONTENT

The pricing principles discussed in Section II are applied in the most straightforward manner in markets for goods like furniture or cars, where each additional unit is costly to produce, and use by a given user precludes use by any other user. In such markets efficiency requires that pricing be driven by the incremental costs of producing an additional unit of the product -- for example, one more car -- while ensuring that the total costs of production are covered on a forward-looking basis. This is an important *caveat* because even in typical markets, pricing based on marginal costs may be infeasible if the producer incurs significant fixed costs that can only be recovered by "marking up" the incremental production costs, *i.e.*, the costs of manufacturing and selling an additional car, for example. When this is the case, prices must *per force* deviate from the marginal cost-pricing principle (sometimes referred to as the "first-best level") in order to ensure firms' viability.

A. Optimal Pricing of Content

The problem which I have just identified is endemic to pricing of content and, in general, to pricing of products in markets in which intellectual property is the valuable (and scarce) asset that is being transacted.[6] While the role pricing plays in intellectual property markets is the same as the role it plays in typical markets for products such as steel, cars, or laundry services, intellectual property markets have several characteristics directly relevant to the issues raised in this regulatory proceeding.

The first characteristic that I want to emphasize relates to the nature of costs associated with the production of content. The essential feature of content is that it has high up-front costs (*i.e.*, the costs of producing the first unit of content) and relatively low (and generally non-increasing) costs of producing incremental units of that same content. Thus, to illustrate, while the fixed costs of producing the first copy of a CD (including all of the costs of producing the sound recording) can be very high, the marginal costs of delivering the content of a CD to an additional listener via web-streaming, for example, is likely to be very low (possibly zero).

This "incremental" cost of (re)producing an additional unit of output typically is very low for two reasons: First, the intellectual property can be shared by a number of users without detracting from its value to any one user. Second (and related), once produced, it is generally inexpensive to generate an additional copy of the content, such as a recording, a download, or an exhibition of a motion picture. Taken together, this means that if every purchaser of content were only charged the incremental cost of serving that customer, total production costs would not be recovered and the supplier would go bankrupt. In the context of sound recordings, this problem is exacerbated by the fact that much of the produced content does not find enough buyers to even recover the first-copy costs.[7] Consequently, market prices must also reflect all the risks

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[6] I use the term "content" generically and mean by it any type of product protected by copyright. In general, the issues discussed in the text are pertinent to production and pricing of any type of intellectual property.

[7] These problems are further exacerbated by unauthorized downloading of musical content.

associated with substantial sunk costs (first copy costs) that a producer of content or any kind of intellectual property incurs.

There is a second important characteristic that pertains to the pricing of content to subscription-based services. In principle, and absent regulatory intervention, such content can be differentially priced to would-be users with different willingness to pay. The combination of low (or zero) marginal costs of serving an additional user, together with the possibility of excluding non-payers, turns content into an "excludable public" good.[8]

Although an additional use of the content imposes little or no additional cost, a price equal to marginal cost is not socially optimal, as would be the case with a so-called "pure" public good where, unlike here, exclusion is not feasible. Indeed, resource allocation will benefit by the imposition of prices in excess of marginal cost for public goods such as content, where owners are able to collect such prices, in order to provide incentives for production of copyrighted content. Absent the ability of producers of content to earn sufficient amounts to cover expected costs and earn risk-adjusted returns on their investments in the creative process, the supply of content would dry up or vastly shrink. Because the dissemination of content requires its availability in the first place, creation of incentives for production of content is of paramount public policy concern.

In this section I review the basic principles of pricing goods that are costly to create but inexpensive to disseminate, and where use by a single user does not preclude use by others. Although markets for such goods differ in fundamental ways from markets for goods like cars, the role of prices in promoting efficient allocation of resources and in maximizing social welfare remains unchanged. Thus, it remains the case that too high a price would choke off demand, and too low a price would limit supply. However, the path to identifying the optimal price in this context is more

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[8] In this way, a sound recording is different than, for example, a lighthouse, because it is difficult (and inefficient) to prevent all shippers from using a lighthouse once it is built. A more complete discussion can be found in, *e.g.*, W. J. Baumol and J. A. Ordover, "On the Optimality of Public Goods Pricing with Exclusion Devices," *Kyklos*, vol. 30, Fasc. I (1977), and J. A. Ordover and R. D. Willig, "On the Optimal Provision of Journals *Qua* Sometimes Shared Goods," *American Econ. Rev.*, vol. 68, No. 3 (June 1978).

difficult because now there is a complex trade-off between ensuring that producers recover their costs (which necessitates prices in excess of marginal costs) without undermining incentives for dissemination of the content product (which point to prices close to marginal cost *once the content is produced*). Indeed, the pricing of goods for which creation is costly but output expansion is inexpensive is a classic problem in economics.[9]

B. Pricing above Marginal Cost

The solutions to this policy problem focus on an oft-noted tension in the pricing of intellectual property between static and dynamic efficiency.[10] In this context, static efficiency considerations mandate that the asset, whether a copyrighted sound recording or satellite radio transmission of programming content, be made widely available to all those willing to pay the low marginal cost of dissemination. To explain what this means, consider the case of the SDARS itself. Once a SDARS has built its network, a subscription price to its service equal to the marginal cost of serving an additional subscriber – which is likely to be zero or close to it – guarantees the socially optimal volume of subscribers and first-best dissemination of satellite radio content. Such low price serves the goals of *static efficiency.*

However, a price equal to the cost of serving an additional subscriber undermines *dynamic efficiency* because it precludes the owner of the SDARS from ever being able to recoup its initial investment.[11] As a result, a rational investor will have no reason to develop the service in the first place. This would be an inefficient result because, as evidenced by its success, the SDARS delivers a service that many consumers are willing to pay for, thereby demonstrating its value to society.

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[9] *See, e.g.*, R. Coase, "The Lighthouse in Economics," *Journal of Law and Economics*, October 1974, pp. 357-376.

[10] *See, e.g.*, J. A. Ordover, "A Patent System for Both Diffusion and Exclusion," *Journal of Economic Perspectives*, Winter 1991, pp. 43-60.

[11] Here I abstract from advertising revenues which are the source of revenues for OTA radio and television.

In a free market equilibrium, the service whose provision has the characteristics described above will likely be priced at a rate that exceeds the marginal cost of serving the additional consumer. Such a price therefore will suppress usage, but only to the extent that it enables the provider of the service to recoup and (possibly) earn a return on its investment. In that way the price is conducive to dynamic efficiency. I will now discuss this market solution in slightly greater detail and then relate it to the issues raised by the current rate hearing.

C. Static Pricing of Content: The Second-Best Approach

Static efficiency assumes that the product or service is already available, which means that the pertinent fixed (and sunk) costs have already been expended. The question becomes how these fixed costs, along with the variable costs associated with distribution of content, should be recovered in order best to meet static efficiency objectives without destroying incentives for investment.[12] As it turns out, economists have given a clear answer to this question. The answer is provided by so called *second-best* or "Ramsey pricing."[13]

The basic idea behind "Ramsey pricing" is straightforward: Given that incremental-cost pricing is not feasible (because it leads to financial ruin), prices should be set in such a manner as to distort usage to the minimum extent (given the profit target). This prescription leads to a simple rule. The rule is that those customers – be they final users or intermediate customers (such as the SDARS, for example) – whose demand for the product (content) is inelastic should pay a higher markup above the marginal costs of serving them, and those whose demands are elastic should pay a lower markup.[14] The

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[12] I do not consider here one possible solution: providing the content at public expense and providing it to users at zero marginal cost. This solution may give rise to another problem. If users do not pay for the use of the product – if the content were given away for free – there may not be a reliable metric for the value they receive. If it is difficult reliably to measure the total value of its use, then it likely is not feasible to determine whether the value received justifies (that is, equals or exceeds) the costs of developing the content in the first place.

[13] For a clear exposition of second-best pricing *see, e.g.*, W. J. Baumol and J. G. Sidak, *Toward Competition in Local Telephony*, MIT Press (1994), chaps. 3, 4, 6.

[14] This prescription is often termed an inverse elasticity rule, or a Ramsey rule. Demand is said to be elastic when a given percentage change in price prompts a greater percentage change in quantity

(footnote continued...)

rule makes sound economic sense because – for any given profit target – it distorts usage the least. Since elasticity of demand is related to the "willingness to pay," the rule also means that those users or usages with a high willingness to pay – meaning, high valuations – for the content should be required to contribute the most (per unit of usage) towards defraying the costs of providing the product in the first place. Application of this principle assures that the greatest number of consumers will be able to benefit from use of a product consistent with the supplier being able to recover sufficient revenue to justify the product's creation in the first instance.

The economic rationale for Ramsey pricing is thus straightforward and follows the general precepts of pricing discussed in the previous section. In particular, under the Ramsey pricing principles, the valuation of the product to a consumer (or a group of users) is the driver of the price that they will pay in market-based transactions. Since the consumer is never willing to pay more than his or her "willingness to pay," asking those buyers who have high willingness to pay to contribute more to the recovery of first copy costs ensures that those whose valuations are lower may have the opportunity to access the content as well. It is for this reason that "Ramsey pricing" has been at times referred to as "value-based pricing." Such pricing also provides the correct incentives for producers of content insofar as it ensures that overall revenues from all sources recoup (in the expected value sense) the costs of creating the content in the first place.

Putting these observations in the current context, it is important to note that demand for music content by the SDARS is a "derived demand" in the sense that it flows from consumers' demand for the service as a distribution channel for music (as well as other content so delivered). For example, at the extreme, if consumers had no interest in listening to music *via* satellite radio, XM and Sirius would have no willingness to pay for the rights to transmit digital performances of sound recordings. More generally, the SDARS' willingness to pay content owners is inextricably linked to consumers'

(...footnote continued)

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demanded. For example, if a 5% increase in price results in a 10% decline in quantity demanded, the elasticity of demand is equal to two.

willingness to pay for the SDARS' service, given the other options that are available. In particular, the more that consumers value a sound recording distribution channel, the less "elastic" the demand for sound recordings by the operator of such channel is likely to be.

For purposes of this proceeding, application of value-based pricing principles has great utility in gauging what would be the outcome of voluntary negotiations between the SDARS and copyright holders of sound recordings. That is so because observed rates in other music distribution channels provide information regarding distributors' willingness to pay for sound recording content; that is, the elasticities of the distributors' derived demands for music.

Any given distributor's willingness to pay for sound recording content depends on current or anticipated revenues (*e.g.*, in the case of subscription services, the product of the per-subscriber charge and the number of subscribers) which, as noted, reflect the value to listeners from receiving music through this channel, and costs (excluding the cost of the sound recording content itself). One would expect *a priori* that the derived demand elasticities for satellite radio do not differ substantially from the analogous elasticities in other distribution channels for sound recordings. Hence, observed rates in other channels should serve as useful metrics in setting a rate in the instant proceeding. I return to this point in Section V, where I present rates observed in other channels that can be used to obtain an economically reasonable rate (or range of rates) in this proceeding.

I now need to address an important complication to basic Ramsey pricing which arises when cross-elasticities of demand are present across the various available distribution channels (*i.e.*, modes of listening). For example, an increase in CD prices will likely drive some consumers of sound recordings to other services which deliver sound recordings in different formats. Consequently, the licensor of content must take these cross-elasticities into account, and it is important that it be allowed to do so. In particular, if the seller disregards the effects of such "cross-elasticities," or, worse still, if it cannot reflect them in prices, it will set inefficient prices. For example, by being forced to set the price of content low to one channel, a content provider can end up diverting demand from other channels in which it earns a better contribution towards its fixed costs

and profits. Such pricing results, in effect, in inefficient "cross-subsidization" of one channel (and its users) at the expense of other channels (and their users).[15]

In sum, application of Ramsey pricing principles to the pricing of content means that price ought to reflect value received by purchasers, and that purchasers who place similar value on the ability to transmit digital performances of sound recordings ought to pay similar prices for the rights to do so. Absent any evidence that demand for satellite radio is highly elastic at given rates – which is highly improbable – and taking note of the cross-elastic effects, the rate should not differ substantially from rates paid by firms operating in other channels of distribution which transmit and perform the same recorded music.

D. Market Power, Transactions Costs, and Licensing

The analysis in the preceding sections must be extended to take into account the complications that are present in real markets for copyrighted works. The first complication stems from the concern that record companies may each possess substantial market power due to the alleged importance of each of their repertoires for the commercial viability of a music distribution service. In the presence of substantial market power, voluntary commercial arrangements may result in prices that significantly deviate from those that would emerge in a more competitive market environment. Here, however, there is a substantial body of marketplace evidence that establishes that this potential abuse of market power is not a concern. Time and again record companies have been able to negotiate rates with other distributors of content at levels that have permitted these other services to emerge and thrive, to the benefit of these distributors and to the listening public. This is not a case in which market failure should lead the Court to depart from a market-based approach and reliance upon rates that have emerged through negotiations between record companies and music distributors.

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[15] Equity analyst reports covering the satellite radio industry note the likely cannibalistic effects satellite radio has on purchased music. For example, a Citigroup report notes that, "...because of the sheer amount of time that is spent by consumers listening to [satellite radio] instead of listening to purchased music, it is likely to be highly cannibalistic of purchased music." "Warner Music Group," Citigroup Equity Research: United States, September 22, 2005, at p. 39 ("Citigroup Warner Report") SX Ex. 103 DR.

In the instant case, an additional complication arises from the fact that record companies are allowed jointly to negotiate license fees with the SDARS under the auspices of SoundExchange. Such an arrangement is efficient because it minimizes transactions costs and also obviates a concern – whether real or not – that one record company will attempt to "hold up" a provider of satellite radio service.[16] Hence, even if an individual record company may lack substantial market power, record companies negotiating as a single entity likely will have such power. It is therefore important to ensure that the rates that would emerge from a hypothetical arm's length negotiation between SoundExchange and the SDARS are free of any "monopoly profits" that might be created by the statutory framework which gives SoundExchange the ability to represent all sound recording copyright holders collectively. The best way to protect against this result is to rely on actual marketplace rates (or analysis that is intended to yield marketplace rates), since in the marketplace it is the individual record companies, and not SoundExchange, that bargain and enter into agreements with distributors.

E. Conclusion

In sum, rates should reflect purchasers' willingness to pay for the music content. That is, they should reflect the value of the music content to the SDARS and to their subscribers, as embedded in the principles of value-based pricing. In this way, the Court-determined rates will properly balance the goals of static and dynamic efficiency. As I noted earlier, the most effective way to construct such a rate is to mimic rates set in the marketplace for sound recordings.

IV. THE ECONOMIC IMPLICATIONS OF THE SECTION 801(b) POLICY OBJECTIVES

In Sections II and III above, I laid out the basic rules for setting prices when the theoretical ideal of marginal cost pricing is not feasible. I explained, in particular, why efficient pricing of intellectual property, as opposed to more standard products, cannot be resolved simply by identifying the product's marginal cost. I now turn to an analysis of

[16] This issue is addressed by Dr. Pelcovits who uses "Shapley value" as a solution to a cooperative game bargaining model for deriving an appropriate license fee.

the policy objectives set forth in 17 U.S.C. § 801(b)(1) with this basic concept in mind. In particular, I use the economic principles discussed above to assess the economic implications of each policy objective and to thereby translate each objective into economic criteria for establishing a rate for the license at issue. I conclude that the first three factors in particular focus on the trade-off between the need for incentives to create content such as music and the legitimate goal of ensuring its dissemination to the listening public.

The list below spells out the policy objectives that apply to setting the rate for the blanket license at issue in this case:

(A) To maximize the availability of creative works to the public;

(B) To afford the copyright owner a fair return for his creative work and the copyright user a fair income under existing economic conditions;

(C) To reflect the relative roles of the copyright owner and the copyright user in the product made available to the public with respect to relative creative contribution, technological contribution, capital investment, cost, risk, and contribution to the opening of new markets for creative expression and media for their communication; and

(D) To minimize any disruptive impact on the structure of the industries involved and on generally prevailing industry practices.

I now address each objective in turn.

Objective 1: To Maximize the Availability of Creative Works to the Public

In principle, this objective is best advanced by a market-based rate that sends the correct incentives both to copyright holders and to distributors of creative content. This factor has a clear economic interpretation in terms of the principles laid out above. I understand that this panel's precedent establishes this first objective as principally focused on the adequate provision of incentives for the "production" of *new* creative works.[17] These incentives are most potent when creators of content receive sufficient

[17] Determination of Reasonable Rates and Terms for the Digital Performance of Sound Recordings, 63 Fed. Reg. 25394, 25406-25407 (May 8, 1998).

compensation for their creative efforts, while the distributors of content have sufficient incentives to deliver the content to potential users. Put another way, as I understand it, this objective should not be interpreted as compelling a blanket license to access a given stock of sound recordings that maximizes distributors' profits. Rather, the objective is best interpreted as implying that license fees should promote creation of new content while maintaining the viability of various distribution channels that are attractive to the listening public.

In order to satisfy this policy objective, the blanket license rate must be high enough so that it does not constrict the future supply of sound recordings below the socially efficient level, and not so high as to expropriate the SDARS' competitive returns. At the minimum, this requires that expected risk-adjusted returns to creating new sound recordings as determined by license revenues from feasible distribution channels should at least recover the associated expected fixed and variable costs incurred by the creators of new sound recordings in the aggregate. In addition, the blanket rate should not undermine record companies' earnings in other channels or create competitive distortions among channels.

According to the economic rules described in Section III above, the license fee contribution from any given distribution channel should reflect the value of sound recordings in that channel as measured by the elasticity of demand for sound recordings, and the cross-elasticities of demand between the channel under consideration and the alternative modes of distribution.

The survey data and results obtained by Dr. Yoram Wind are highly informative regarding the role of music in attracting SDARS subscribers and strongly support the proposition that a representative subscriber to satellite radio values music programming substantially more than the other programming delivered by the SDARS. Nearly one-half (43%) of all respondents indicated that they would cancel the service if it lacked music, a percentage that was triple that obtained with respect to any other type of programming (*e.g.*, talk shows or sports). Respondents were also asked to assign 100 points among seven satellite radio programming types in proportion to the relative importance respondents placed on them. Music, on average, received 44 points, again

triple the average amount ascribed to any other programming type. Moreover, 74% of respondents assigned the highest number of points to music programming, a full four times the level for any other type of content. Finally, in response to a query regarding the type of programming transmitted on satellite radio that would be missed the most if not available, 50% of respondents cited music. No other category of content was cited by more than 16% of respondents.

Thus, given the critical importance of music in attracting subscribers to satellite radio, it is reasonable to assume that the blanket license and the sound recordings it covers account for a substantial share of the SDARS' value, and therefore should receive a substantial share of that value. Of course, there is a limit on how much of that value could accrue to the record companies. In particular, the elasticity of demand for sound recordings by the SDARS is not zero: that is, an increase in a blanket license fee to some high level would induce the SDARS to substitute other content for music. Moreover, higher blanket license fees may result in higher subscription rates, and thus in fewer subscribers.

These considerations limit the rates that the record companies would be able or willing to set by means of individual bargains in the open market for blanket licenses to their individual repertoires.[18] This is so because the dollar volume of fees each record company is able to collect depends, in the end, on the number of customers that the SDARS (and all other music distribution channels) are able to attract. These individually negotiated blanket license fees thus likely will reflect the value of the individual repertoires, and the licensor's estimate of the record companies' ability to deliver value through future releases, as constrained by competition among record companies. Because these types of considerations play themselves out in other licensing venues, license fees negotiated individually by record companies in such other venues provide useful benchmarks for the blanket rate at issue here.

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[18] Moreover, from the standpoint of a single record company, an increase in its demanded rate relative to what rivals charge would place it in a weaker position *vis-à-vis* the other record companies.

Voluntarily-negotiated pricing of content in fact reflects a legislative judgment about the extent to which intellectual property holders should be compensated for their creative efforts. Because Congress granted the copyright holder substantial property rights in the first instance, and thus potentially substantial negotiating power, market-based rates provide the copyright holder with as much of the surplus (value) generated through the use of its intellectual property as the marketplace will permit. The copyright law grants the author a "monopoly" over a particular form of expression of an idea: it gives the owner the right to exclude non-payers from using the property (assuming that anyone actually wants to pay anything for it). Although such protection does not generally impart *monopoly power* to the copyright owner, it does lead to a market setting in which the owner of the copyright does not face competition from an identical product (unlike a producer of steel or wheat, for example).[19] In that way – by creating the right to exclude and the right to an expression – Congress itself has created a system designed to maximize the availability of creative works to the public, and that system is based on the operation of market forces under the umbrella of copyright law.

The value to the licensee of copyrighted creative works thus is most clearly revealed in voluntary transactions reached through negotiations and other market mechanisms, either with (some) distributors of digital content, or directly with consumers.

Objective 2: To Afford the Copyright Owner a Fair Return for His Creative Work and the Copyright User a Fair Income Under Existing Economic Conditions

The second policy objective requires "fairness" for both the copyright owner and the copyright user under "existing economic conditions." "Fairness" is not a core economic concept. Insofar as it has a basis in economics, it relates to the outcomes that arise through unfettered market interactions in workably-competitive markets, that is, in markets that are not distorted by undue exercise of monopoly (seller) or monopsony

[19] This is not to say that, in this digital day and age, that the copyright owner does not face competition from almost identical purloined versions of its copyrighted product, such as illegal CDs or downloads.

(buyer) power. From that perspective, then, "fairness" too is achieved by maintaining consistency with rates that are the result of market-based transactions.

A market transaction occurs only if both sides find it desirable as compared to the alternative, *i.e.*, not transacting with each other. Since market transactions are voluntary, it follows that prices (here licensing rates) that emerge through this voluntary process should be deemed fair in this basic sense. From the social welfare standpoint, prices determined by unfettered marketplace interactions reflecting users' willingness to pay and suppliers' production costs can be said to result in a "fair" outcome for both sides, and also in an outcome that is efficient in the sense that it may not be possible to change these allocations through regulatory or other interventions without at the same time reducing *aggregate* economic welfare. Therefore, the equilibrium price arrived at through unfettered marketplace interactions can be said to result in a "fair" division of benefits from transactions over the long run.

This said, it is important, in my opinion, to avoid several pitfalls which might improperly be introduced into the public policy debate about the proper level of a blanket rate under the rubric of "fairness."

First, it would not conduce to achieving the goal of "fairness" to set a very low blanket because some portion of the recorded music played on satellite radio is comprised of past repertoire (*i.e.*, the "catalog"). As explained earlier, copyright owners base their decisions on the expected future flows of revenues from all available sources. Hence, arbitrarily truncating these flows will lead to dynamic inefficiency in the form of reduced future supply of output.[20]

Second, it is not uncommon in the marketplace for a producer to sell its products at a low price to a start-up distributor because it may be in the producer's long-term interest to promote an additional distribution outlet for its product. But in the marketplace, such "introductory" low rates will not persist once the buyer grows in size. Indeed, such low rates will not persist even if the buyer – either because of high costs or

[20] Of course, the copyright law truncates the flow of revenues at the time the copyright expires.

lack of appeal of its product or service – does not achieve economic viability. Thus, an introductory low rate is "fair" by market standards – inasmuch as it was voluntarily set by the seller – but it ceases to be "fair" when the purchaser attains viability, or at least has had sufficient opportunity to become viable, but nevertheless turns to regulation (or other means) to lock in the rate. In the instant context, there is no reason – and in fact would be bad economics and public policy – that the recording companies should be asked to reduce the risk of failure of satellite radio by charging below-market rates for their content.

Third, it might be in a licensor's private interest to offer a low rate to a start-up distributor, but only if other content providers are doing the same. Otherwise, the content provider who offers a discounted rate may not be advancing its own business interests, but simply transferring wealth to the buyer, and potentially enabling the buyer to make better deals with providers of competitive content. It is conceivable that the SDARS could rationally persuade the record companies to charge them a low rate during the start-up period. It is less conceivable that the record companies would accept such a rate if the SDARS were at the same time offering highly lucrative deals to other content providers such as Howard Stern and Major League Baseball, for example. Thus, marketplace evidence on the terms of freely negotiated contracts with other content providers is relevant both to gauging the willingness of recording companies to offer "introductory" rates, and also to assessing the willingness and ability of the SDARS to pay for attractive content.

In sum, I see no basis on "fairness" grounds for imposing on record companies and artists a rate in this case that would deviate from what would be freely determined through negotiations in the marketplace. Setting a blanket license rate at substantially below market rate is a prescription for inefficiency and inimical to sound public policy. A below-market rate would amount to "subsidizing" the SDARS, which would have the undesired effects of both giving the SDARS an undue competitive advantage *vis-à-vis* other distributors of music, and weakening the incentives for production of new recordings and for efficient distribution of music in the new media. Regulators rarely establish such "below-market" rates. They typically do so only when confronted with a

clear legislative mandate to create such a rate. Such rates are the exception rather than the rule, and there is no sound economic or public policy reason to implement such rates through this proceeding. This admonition applies, of course, not only to the rate to be paid by the SDARS but (plainly) also to the rate to be received by record companies. Deviation from a competitive market rate in either direction does not conduce to short-term and long-term economic efficiency.

Finally, the economic consequences of setting the rate "too high" are likely to be less severe than if the rate is set "too low." The rate established through the regulatory process establishes a ceiling. If this maximum rate is so high that it undermines the SDARS' business model, the parties can negotiate a lower rate that is more conductive to dissemination of content *via* satellite radio networks. The record companies have an incentive to agree to a lower rate if the statutory rate were set too high. In the context of individual negotiations, a copyright holder would receive no benefit from setting a license fee that is "too high," because it would significantly curtail dissemination of music over satellite radio networks (or eliminate it altogether) relative to the level that would be attained in a well-functioning market.[21]

On the other side of the table, if confronted with a mandated rate that is too low, the record companies have no choice but to license their sound recording repertoires, even if, as a result, they are not obtaining a warranted contribution from satellite radio to their overall return on their portfolio of recordings. While in the short-run, a blanket license that is too low likely will not affect either the demand for or the supply of already-recorded performances of music, in the long-run, an inefficiently low price will reduce the supply of new recordings, which is inimical to the public policy goals stated in Objective 1.

Further, as described above, the detrimental effect to society of setting a fee for the compulsory license that is too low relative to benchmark market rates extends beyond

[21] Market rates in other channels reflect whatever legitimate pricing flexibility recording companies have as a result of developing attractive recording assets whose use is protected by copyright. I have seen no evidence that these rates reflect "monopoly power" rather than competitive pricing of differentiated products.

the reduced supply of new recordings; it effectively results in a subsidy to the SDARS by allowing them to pay less for the licenses than their value would command in the market. Such a subsidy likely will stimulate growth of satellite radio but only because of undue cost advantage. And, because satellite radio is, to varying degrees, substitutable for other channels through which recorded music is distributed to listeners, subsidizing satellite radio necessarily will divert sales from these other distribution channels. This diversion will occur even if these alternative modes of distribution are more efficient relative to satellite radio, and as a result society's resource costs of music distribution will needlessly increase. Moreover, from the standpoint of the record companies, diversion of the sort I describe will lower their returns from both satellite radio and other distribution systems, which would be forced to lower their own rates (and ultimately lower the amount they pay to the copyright holder) in response to a subsidized rate. In sum, in considering the second factor, the social costs of setting a rate too low exceed the social costs of setting it too high.

Objective 3: To Reflect the Relative Roles of the Copyright Owner and the Copyright User with Respect to Their Relative Creative and Technological Contributions, Cost, Risk, and Contribution to the Opening of New Markets for Creative Expression

The public policy goals of this Objective too are best attained by setting the license fee in a manner that reflects the level of the fees that would be set in the market. Markets properly reward and take account of capital investment, the costs and risks involved in deploying the facilities and infrastructure necessary to produce a good or service, and each of the other considerations listed in this factor. Specifically, the third objective invokes several economic considerations.

First, the SDARS are, in the end, distributors of sound recordings and other third-party content. Although the SDARS develop some original programming that they provide around the music and other content (the so-called "wrapper"), the content itself is the essential input. Moreover, sound recordings comprise a key portion of the content, as evidenced by the amount of time subscribers spend listening to music relative to other content, and as evidenced by the reasons subscribers give for choosing to subscribe to

satellite radio.[22] Without the creative input provided by the sound recording copyright holders, these services likely would not survive in the marketplace.

Of course, the SDARS' success is driven in part by how well they program channels of music (and other content) that subscribers want to hear. However, as noted above, this incremental contribution would have zero value if there were no music content to package! The same is not true of sound recordings, which have an already established value separate and apart from their packaging and distribution *via* satellite radio. This is not to say, of course, that satellite radio does not deliver value: if it did not, there would be no subscribers.

Second, with respect to the SDARS' roles in terms of their contributions to distribution technology, I note that the concept of distributing content *via* satellite is well-established, and hence, in some respect, the innovative aspect of the SDARS is best seen as an extension of a known distribution mode to music (and other content). Obviously, the SDARS have incurred risks associated with the "launch" of the service, including the launch of the satellites and the marketing expenditures undertaken at a time when the success of satellite radio was not assured.[23] Accordingly, the SDARS should be compensated for these costs and risks, as well as for all the costs they incur on a recurring basis to deliver programming to subscribers. Based on the available evidence regarding the margins that the SDARS are earning on their programming (and on the forecasts of margins that they would earn after an increase in the blanket license), one cannot reliably conclude that Court-approval of the rate requested by SoundExchange, and the increase in licensee fee payments that such approval would create for the SDARS, would, on a forward-looking basis, push the distributors to below-competitive, risk-adjusted rates of

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[22] In addition to the survey results reported by Dr. Wind, reports issued by various equity research firms highlight the critical role of music content in the SDARS' offerings. *See, e.g.*, Citigroup Warner Report, SX Ex. 103 DR, at p. 38 (Sirius reports that 80% of people who subscribe to satellite radio do so in order to receive commercial-free digital music and that greater than 70% of subscribers' time spent listening to satellite radio is devoted to music.); "Satellite Radio Survey 2005," JPMorgan North American Equity Research, February 7, 2005. SX Ex. 108 DR, at p. 3 ("Our survey shows that the key demand driver for satellite radio is commercial free music, … .").

[23] Insofar as the transponders on the launched satellites could be used for other services, the sunk costs associated with their launch would be mitigated.

return on their up-front investments and on their on-going contributions to dissemination of music content.[24] Put another way, there is no evidence of which I am aware that the SDARS would be unable to pay on a forward-looking basis the license fees generated through imposition of the proposed rate. Nor is there any evidence that such an increase in license fees paid by the SDARS would amount to an expropriation of their reasonable returns on past investments and attendant risks. And finally, there is no evidence that the increase would necessarily substantially constrict the volume of subscribers (or undermine growth).

At the same time, this factor is not a justification for compelling a rate that provides either side with some assured return on their investments. As I already explained, a rate that assures the SDARS an above-competitive, risk-adjusted return on their investments may result in inefficiencies insofar as the rate would not only reduce the record companies' revenues from their recordings to below an amount available through market transactions, but also would raise the total cost of music distribution by insulating to some degree the SDARS from the rigors of competition. Thus, regulatory efforts to ensure such a return would benefit only the investors in those technologies. Society as a whole would be worse off.

Objective 4: To Minimize Any Disruptive Impact on the Structure of the Industries Involved and on Generally Prevailing Industry Practices.

The economic implications of this policy objective are best understood as focusing on the effects of changes in the rate (or maintenance of the current rate) on both the licensors and the licensees, here the record companies and the SDARS. In addressing this factor, two issues should be considered. First, the satellite radio industry is not yet mature, and thus, its "structure" and "industry practices" are still evolving. Second, competitive forces frequently result in "disruptive impacts" on existing industries that nevertheless bring tremendous social benefits, particularly in high-tech industries. For example, introduction of the digital calculator destroyed the market for slide rules; DVD technology essentially eliminated the demand for products that are complementary to

[24] *See, e.g.*, Citigroup Warner Report, SX Ex. 103 DR, at pp. 35-39.

video tapes; MP3 players eliminated demand for Sony's WalkMan; and following its entry, Apple's iPod quickly emerged as the leading technology among portable music players. From this perspective it follows that the SDARS should not be protected from the rigors of competition (any more than they already are by the mere fact that the industry is limited to just two players) from other existing and yet-to-emerge channels of distribution.

In the same vein, and consistent with my discussion of Objective 3, it would be inefficient to use this rate proceeding to set a rate for a blanket license that would maintain the SDARS' current margins on the theory that any change in margins would be disruptive to industry operations. And it would be also inefficient to prop up an inefficient distribution technology which otherwise might not survive on its own in competition with alternative channels of music distribution.

Of course, I am not claiming that satellite radio is surviving and prospering only because of the very low rate it pays for the content that is essential to its competitive survival. Far from it: there is no evidence that higher rates that better reflect the value of music could not be built into the SDARS' business models while maintaining their chances of future success. While the fourth statutory factor calls for the minimization of disruptive impacts, that command is qualified both by its own terms ("minimization" is not the same thing as "avoidance") and by the other statutory factors with which it must be considered.

From this perspective, I therefore understand this fourth factor to promote a policy of setting a rate that minimizes disruption by avoiding *abrupt* changes in rates resulting from changes in regulatory policy. I do not, however, understand it to require freezing regulations in place or permanently setting below-market rates that would shelter the licensees indefinitely from disruptions normally engendered by the competitive process. Nor do I view the fourth factor as advocating a rate that confers upon one distribution channel a prolonged and unwarranted competitive advantage *vis-à-vis* rival channels.

In considering a rate adjustment that minimizes disruptive impacts, the Court will need to balance potential effects on each of the industries impacted by the rate.

Impact on the SDARS. Considering the rate's effect on the SDARS is relatively straightforward. I understand that SoundExchange is introducing testimony concerning the SDARS' costs and revenues, taking into account the rates SoundExchange is proposing. If, as I understand to be the case, those rates would not drive one or the other of the SDARS from the market, the proposed rate would not have any effect on the *structure* of the satellite radio industry. Moreover, there is no indication that higher rates would effectively curtail the ability of the SDARS to compete on the merits (*i.e.*, on the basis of the desirable attributes of satellite radio service) against other distribution channels and to continue to increase their subscriber base.

Impact on the Music Industry. Addressing the effect of the rate on the structure of the music industry is both less and more complicated. It is less complicated because the industry is simply asking for a higher rate which surely should improve its "bottom line." It is also more complicated inasmuch as *not* granting the rate increase could have an important impact on the industry's future. The music industry is in flux as it transitions from a principal reliance on CD sales for its revenue to an increasing reliance on multiple sources of revenue flowing from different channels of digital distribution of non-physical copies of sound recordings. That transition raises a host of issues relating to consideration of this fourth statutory factor: (i) how quickly the transition will occur; (ii) the extent to which any particular form(s) of digital distribution will gain market acceptance and become most prevalent in the future; and (iii) the extent to which the various forms of digital distribution are substitutes for each other, and for CD sales.

Taking these sets of concerns together, in considering the policy implications of the fourth factor the Court should neither protect the SDARS from the market effects of market-based pricing of access to sound recordings, nor the music industry as it increasingly relies on digital distribution of music. It should, however, scrutinize the rate to make sure that whatever the long-run effects the change in the rate is likely to have on the two industries, it does not cause immediate disruption. This may include

considerations of the different structure of the blanket license and the speed of migration to a proposed rate.[25]

In sum, the fourth factor recognizes that industry participants may need time to adjust to significant changes in the rate, given their existing market arrangements. A drastic change in a regulatory regime can disrupt the business plans of industry participants. However, this recognition should not be, in my view, a basis for inertia with respect to rates for access to sound recordings that the SDARS should pay. After all, firms in effectively competitive markets have to deal with change all the time, and those unable to adapt fall by the wayside. Here, in particular, I see no evidence that proper phasing-in of new and higher rates either would undermine the economic viability of the SDARS or would deprive the listening public of the benefits of this mode of content distribution. At the same time, sticking with unduly depressed rates for the blanket license will adversely impact the record companies (as the satellite radio subscriber base grows) and will distort competition between the SDARS and other distribution channels.

V. RATES ARISING FROM VOLUNTARY TRANSACTIONS

It should be clear from the discussion in Section IV that rates arising from voluntary transactions best satisfy in principle the policy objectives set out by the statute, and promote economic welfare that reflects the interests of listeners, record companies, copyright users, and other relevant parties. Although markets for the rights to perform recorded music do not resemble the stylized model of "perfect competition" discussed earlier, voluntary transactions between record companies and various licensees in the marketplace nonetheless provide useful guidelines for setting rates for the distribution of sound recordings by the SDARS.

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[25] In this regard, the escalating nature of SoundExchange's proposed rate accounts for the fact that the SDARS, based upon forecasts, will gain additional scale efficiencies over time, and thus will be able to distribute their fixed costs over a larger volume of subscribers. In other words, while an immediate imposition of the ultimate rate might place a strain on the SDARS' ability to continue to invest in expansion of and enhancements to their services, a phased-in imposition will be less of a burden due to increased efficiencies in operations of the networks.

Consequently, to repeat, market-based rates well-reflect the competitive circumstances that protect both sides from undue exercise of buyer and seller power. The resulting rates likely conduce to overall economic efficiency and balance the need to compensate creators of music content and the need to provide sufficient profits for distributors to disseminate the creative works to the listening public. In that sense, the market rate is "fair" because it does not distort the competitive playing field to favor one party to the transaction over another and generates transaction surplus for both, to the benefit of the listening public. A bargained-for rate is not so high that the potential user decides to forego licensing the rights. Nor is the rate so low that the content provider is injured by cannibalization of sales from other channels of distribution for recorded music.

When considering rates set in the market, two kinds of evidence and economic analyses with respect to voluntary agreements are helpful in formulating an appropriate rate. First, it is possible through economic modeling to simulate a market negotiation that would occur between the sound recording copyright holders acting individually and the two SDARS. Dr. Pelcovits developed such a simulation of market-like negotiations. I believe that his simulation is highly probative as to the appropriate rate. The key empirical data needed to develop such a simulation are the satellite operators' expected costs (net of fees for content) and revenues. With such data, the modeling exercise allows one to predict how the available surplus, *i.e.*, forecasted revenues less expected costs (net of fees for content) would be divided between the satellite radio networks and the various content providers. One obvious advantage of this approach is that it relies on a rich set of public data (when available) from the satellite firms. The principal limitation of this approach is the flip side of its strength, namely that its theoretical nature precludes consideration of the full set of dynamics actually observed in the marketplace. Thus, from my perspective, these types of market simulations are especially probative when their results are corroborated in some way by marketplace evidence.

The second type of approach provides just such corroboration. To the extent that market rates can be observed for transactions involving rights to transmit sound recordings *via* media other than satellite radio, or rights to transmit non-music content over satellite radio, the market rates provide useful benchmarks for the rates to be set in

this proceeding. Of course, the benchmark rates must be adjusted for any material differences between the benchmark rates based on market transactions and the compulsory license. Indeed, all of these considerations are reflected in the level and responsiveness to rates of demand for music on a particular platform. In particular, distribution channels that have similar demand characteristics (as perceived by the supplier of music content) should (more or less) pay similar rates.[26]

The true value of the benchmark methodology is that it relies on real-world market outcomes. However, since no benchmark is perfect, any comparison can be criticized to the extent it fails to capture (or fails properly to adjust for) some pertinent difference between the benchmark market and the distribution of sound recordings over satellite radio networks, for example. Nevertheless, taken together, the bargaining model and the benchmark analysis provide the best possible guidance for setting rates that adhere to the statutory factors.

There are three separate types of pertinent marketplace transactions that, in my view, provide important information concerning the proper level of a statutorily-compliant rate, and that provide useful benchmarks that can be used in this proceeding. Each has its own strengths and weaknesses but, taken together, these cannot be disregarded.

First, the amount that the SDARS pay in open market transactions for content other than sound recordings is highly instructive. In the end, content draws customers and adds value to the network. The amounts paid by satellite radio for that value added, in light of their own cost structures, gives some indication as to the results of a hypothetical bargain between content providers and the SDARS. I understand Dr. Pelcovits provides an analysis of one satellite radio deal about which there is considerable public information, namely Sirius' deal with Howard Stern.[27] Plainly, the

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[26] Thus, for example, the costs of the channel will be reflected in the channel's elasticity of demand together with listeners' willingness to pay for the music content delivered *via* the channel. It has to be remembered that these rates will also reflect cross-channel impacts, which are termed "cannibalization."

[27] The fact that this content is exclusive – unlike music – imparts some additional value. I understand Dr. Pelcovits has taken account of that additional value in his analysis. On the other hand, absent music,

(footnote continued...)

analysis of that deal provides important insight into the valuation of content by one of the SDARS. Information from that deal can be translated into terms that can be applied to music, and I find reasonable the results Dr. Pelcovits obtains through the application of this benchmark.

Deals between content providers and satellite television operators comprise a second category of benchmarks. The strengths and weaknesses of this second benchmark are quite similar to those of the first benchmark described above. In particular, these agreements provide important information about how content is valued by distributors who presumably have similar cost structures to the satellite radio operators. On the other hand, the satellite television deals do not directly tell us anything about the SDARS' willingness to pay for music content. Hence, from these benchmarks we can gain only limited insight into the pricing of music in particular to satellite radio service providers. I review the evidence from satellite television deals for non-music content in the next subsection.

A final useful benchmark consists of the rates at which sound recordings are licensed to distribution channels comparable to satellite radio. The principal advantages of this benchmark are two-fold: (i) the underlying licensed content is sound recordings – the same sound recordings that are played on satellite radio which is now subject to the compulsory license, and (ii) the licensed content is transmitted, as in this case, over digital distribution channels. The principal disadvantage is that consumers may value music differently (at least to some degree) when it is delivered *via* different media, with different functionalities, varying features, and so forth. In addition, differences in cost structures across music distributors could impact their willingness and ability to pay for content. In my view, while this latter difference is of some importance, it should not be regarded as dispositive. For example, as I explained earlier, relatively "high" own costs in a given distribution channel do not represent a defensible justification for low rates.

(...footnote continued)

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satellite radio likely would not find many subscribers, at least not at current rates.

Indeed, an intrinsically high-cost channel can only justify demand for its service if the value it delivers is sufficiently great that the listening public will be willing to pay for the costs incurred to fill the content pipeline at market-based rates. Similarly, the fact that some channels offer permanent downloads while satellite radio does not (at least as part of the compulsory license), is not a sufficient reason to disregard information from these types of transactions. In the end, what is being purchased is sound recordings.

A. Satellite Television as a Benchmark

Satellite TV, also known as Direct Broadcast Satellite (DBS), and satellite radio employ roughly similar business models:[28]

- Both rely on the delivery of content to subscribing customers by means of a satellite signal delivered to the subscriber's receiving unit (be it a television set or a radio);
- Both require significant upfront investments in satellites and satellite infrastructure;
- Both benefited from attracting "early adopters." For example, in the first two to three years after launch, the DBS firms attracted roughly four million subscribers;
- Both needed to subsidize hardware, offer rebates on installation, and provide discounts on programming package to stimulate additional subscriptions;
- Both utilize "big box" stores (*e.g.*, Best Buy, Circuit City, etc.) and electronics stores (*e.g.*, Radio Shack), as well as direct sales, to attract new subscribers;
- Both rely extensively (or predominately) on subscriber revenues to cover the costs of programming and other variable costs (such as marketing) as well as generate (at least) a risk-adjusted competitive rate of return on the invested assets; and
- Both are subject to various regulatory strictures. For example, at their inception, access of DBS networks to content presented complex public policy issues, in

[28] To be sure, there are differences between satellite television and satellite radio, but the overarching business models are similar.

some way similar to those presented by satellite radio today.[29] In 1992, Congress enacted the Cable Television Consumer Protection and Competition Act. The stated intent of the Act was to increase competition in the provision of television programming to households. Among other things, the Act required that vertically integrated cable companies could not enter into exclusive arrangements with their terrestrially-delivered cable networks and that cable networks that licensed programming to cable TV also license that same programming to satellite TV at non-discriminatory rates, effectively imposing a compulsory license.[30]

It is important to note that by 1997 – at least three years after the launch of DBS – Kagan Associates (a leading analyst of media industries) estimated that none of the providers was profitable. However, the fact that DBS vendors (such as DIRECTV) were "losing" money in the accounting sense would not provide a public policy rationale for content providers to be required to offer the DBS companies "discounts" on programming relative to cable television distributors (such as Cablevision or Comcast). Rates with DBS networks were set through market transactions within the broad strictures set by pertinent regulations. Now, when DBS is an established distribution channel for video programming with a very large subscriber base, its content costs as measured by percentage of subscriber revenues are equal to 40%.[31]

The similarities between satellite TV's and satellite radio's business model and early history suggest that voluntary agreements between satellite TV providers and content providers can give us a plausible benchmark for rates (measured as percentage of revenues) that would result from voluntary licensing agreements between SDARS and the record companies in the absence of the compulsory license. The share of revenues

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[29] *Kagan's Media Cast 2006*, Paul Kagan Associates, Inc. 1997.

[30] *See* Edward J. Markey, 46 Federal Comm. L. J. 1.

[31] Prudential Equity Group, "Cable & Satellite TV: Earnings Preview, Second Quarter 2006," July 21, 2006 (SX Ex. 110 DR).

that DBS network pay for content is an informative metric for gauging what the SDARS' content costs likely would be absent a blanket compulsory licensing rate.[32]

There are two ways to conduct the "DBS benchmarking" analysis. The first is to examine DBS providers' programming costs as a percentage of revenues for premium networks only, since premium networks, like music programming on satellite radio, are commercial-free. The second is to analyze the DBS networks' subscription revenues and then to calculate programming costs as a share of revenues.[33] These calculations are presented below.

Data published by Kagan Associates show that the license fees paid by DBS to the premium networks amount to nearly one-half (49.3%) of the DBS subscriber revenues that are attributable to these premium services.[34] Moreover, overall programming expenses for DBS today account for 40% of subscriber revenue.[35] Thus, DBS offers two potential benchmarks for the compulsory license rate: (1) 49.3%, which is the percentage of subscriber revenues generated by premium network programming that the DBS providers pay for premium network content; and (2) 40%, which is the percentage of total subscriber revenues that the DBS providers pay for content overall

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[32] Most music programming on the SDARS is offered on a commercial-free basis and thus the SDARS today earn minimal advertising revenue. DBS firms do not earn advertising revenue on most of the channels they offer (*e.g.*, DBS firms do not earn any advertising revenue on premium channels, such as HBO or Showtime, since those networks have no commercials, and they do not earn advertising revenue on local broadcast stations). DBS firms do earn advertising revenue on certain cable programming networks, but the share of total revenue derived from such sources is small and unlikely to bias significantly the benchmarking analysis presented below.

[33] An important countervailing factor is that providers of non-premium content to DBS earn not only a share of the subscription fees charged by the DBS firms, but also a substantial portion of the advertising revenues generated by the broadcast of their programming. The availability of these advertising revenues would tend to reduce the price at which providers of non-premium content would be willing to license their programming to the DBS firms. Thus, my second calculation, based on a comparison of the DBS firms' programming costs (which are supplemented by advertising revenue received by the content providers) and the SDARS' music programming costs (which are not), quite likely serves to underestimate the music programming costs of the SDARS as a percentage of their subscription revenues.

[34] Source: Kagan, "Cable Program Investor," July 28, 2006 (SX Ex. 109 DR). These premium networks include HBO, Showtime, and others.

[35] Prudential Equity Group, "Cable & Satellite TV: Earnings Preview, Second Quarter 2006," July 21, 2006 (SX Ex. 110 DR).

(but which does not account for the advertising revenues received by DBS content providers).

These numbers are very informative for the task at hand. Given the similarities in their business models, and especially in light of the fact that programming content represents the critical input for both satellite television and satellite radio networks, it is reasonable to assume that the SDARS, in an unfettered market setting, would be willing and able to spend on content a percentage of subscriber revenues that does not markedly differ from the aforementioned expenditures by the DBS providers. In order to get an estimate of the share of revenues that would likely accrue to music, the two shares noted above must be adjusted to account for fact that both music and non-music programming are available on satellite radio.[36] That is, sound recording copyright holders would receive only some portion of total content expenditures.

To derive an estimate of the percentage of subscriber revenues the SDARS would likely spend on music content following market-based negotiations, I rely on Dr. Wind's survey of satellite radio subscribers. That survey provided a variety of measures of the importance and value of music to a representative sample of current subscribers to satellite radio networks. By a wide margin, all of these measurements identified sound recordings as the most valuable content delivered by satellite radio service to the current base of subscribers. Based upon these findings, I agree with Dr. Pelcovits that it is plausible to conclude that music accounts for approximately 55% of the value of all programming content distributed by the SDARS. *See* Pelcovits Testimony 13 n.14, 26. Thus, the two DBS benchmarks of revenue shares, namely 40% and 49%, when adjusted by the 55% estimate for the value of music content, become 22% and 27% as realistic benchmark shares for music. Assuming that the music publishers must be paid out of that share, and that their rate (which is not public) is approximately 3.5% of revenue, that leaves a percentage of revenue for the sound recording copyright holders of 18.5% to

[36] Another possible adjustment would reflect the fact that a limited amount of the programming offered by a DBS vendor is exclusive to that vendor, which makes it more valuable to the vendor. For example, DIRECTV has exclusive access to certain NFL games and EchoStar has exclusive access to certain international programming.

23.5% of revenue. Notably, this estimated range is consistent with the calculations offered by Dr. Pelcovits, whose proposed rate represents 23% of the SDARS' revenues by the end of the statutory period in 2012, especially considering that the 18.5% figure is conservative because it fails to take account of advertising revenue earned by DBS content providers. *See* n. 33.

DBS spending on content also can be used to estimate reasonable per-subscriber rates. In the table below I use the two DBS content expenditure benchmarks (*i.e.*, the 40% and 49%) to project analogous per-subscriber amounts for SDARS in 2004, when satellite radio programming consisted almost entirely of music-based programming. My calculations yield figures of $2.37 to $2.91, which represent the range of amounts that the SDARS would pay as of 2004 for music content on a per-subscriber, per-month basis.

Projected Rates for Satellite Radio using 2004 DBS Content Expenditure Benchmarks

Revenue ($MM)	$311.3	$311.3
Projected Programming Expense ($MM)	$124.52 (40%)	$152.54 (49%)
Publishers' Share ($MM)	$10.9 (3.5%)	$10.9 (3.5%)
Sound Recording Share ($MM)	$113.62	$141.64
Avg. Number of Subs (MM)	4.37	4.37
Projected Programming Expense/Sub/Month	$2.17	$2.70

Source: Oppenheimer Equity Research, "Satellite Radio: Turn Up the Volume," July 21, 2005.

Because this benchmark is based on the satellite networks' revenues at a time when their principal programming was music, it needs no further adjustment to reflect the

value of non-music programming.[37] That is, these benchmark rates reflect the share of satellite radio revenue and per-subscriber rates that likely would have been arrived at by means of voluntary market transactions between music companies and the SDARS networks in 2004 in the absence of the compulsory license.

B. Other Digital Music Distribution Channels as Benchmarks

In order to gain additional insight into the range of market rates for recorded music that SDARS would be expected to pay in a marketplace, I also considered marketplace rates negotiated for several different distribution channels for digital music, and in one distribution channel for digital video, discussed in the submitted testimony of record company executives Mark Eisenberg and Lawrence Kenswil, which explain the terms of payment voluntarily negotiated between the record companies and distributors operating in these channels. Record companies and service providers have voluntarily reached agreements on rates for various types of digital distribution.[38] The table below provides a list of these digital distribution channels and the corresponding rates for the copyright license in contracts reached between major record companies and digital music distributors. The rates reflected in the Table are "current" insofar as they reflect the compensation record companies are receiving under recent agreements.

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[37] Had I applied this methodology to projected revenue for 2008 for example, it would have yielded higher estimates that would have required such further adjustment.

[38] The rates imposed by the predecessors to this Court are not relevant benchmarks since these do not reflect marketplace (*i.e.,* voluntary) license terms. Neither do I regard as probative the rates negotiated in the shadow of a statutory license proceeding, insofar as these rates are more indicative of what the parties believed would be the result of a rate case than they reflect a marketplace dynamic. Among the rates I did not consider for this reason are rates that were set for services directly subject to a statutory license, or negotiated rates for services such as "custom radio," where the parties still dispute whether or not the service is subject to a statutory license. In particular, the rate set for "custom radio" plausibly reflects the record companies' aversion to taking the risk that the license dispute would be unfavorably resolved. Here too, the dynamic at work in these contractual negotiations is simply too bound up in regulatory considerations and judgments to be a useful indication of market rates.

Channel	Retail Rate	Per-Play	% of Revenue	Per-Unit or Subscriber
Permanent Audio Download	$.99/track	n/a	[redacted]	[redacted]
Cellular (OTA Download)	$2.50	n/a	[redacted]	[redacted]
Cellular (Ringtone)	$2.50	n/a	[redacted]	[redacted]
Video Streaming (Non-Interactive)	Ad-supported	[redacted]	[redacted]	NA
Video Streaming (Interactive)	Ad-supported	[redacted]	[redacted]	NA
Interactive Subscription (Portable)	$12.50/mo	[redacted]	[redacted]	[redacted]
Interactive Subscription (Non-Portable)	$8.00/mo	[redacted]	[redacted]	[redacted]

This compilation of data offers several insights into market rates. First, in every case in which sound recordings (or music videos) essentially make up a service, sound recording copyright owners receive a substantial share of gross revenues earned by the distributor. Second, at least with respect to audio distribution, the percentages of revenues that record companies receive are within a relatively narrow range, clustering around [redacted] (though higher for permanent audio downloads).

There are, I think, two reasons for this regularity in the contract data. As a general proposition, different channels of digital music distribution are to some extent substitutable for each other. There are limits to how much music per day (on average) any person can listen to, and thus, an increase in the time devoted to the enjoyment of music in one channel generally will divert from the time devoted to enjoyment of music in all other channels of distribution. Insofar as these various channels are substitutable, one therefore would expect the sound recording copyright owner would aim to obtain a

comparable percentage of the music's ultimate value to the consumer, as this value is reflected in the retail price or other revenues that may accrue to the distributor, including advertising revenues.[39]

Prices that listeners pay for access to music, and license fees paid by distributors, ultimately are a function of the value to the consumer of the music as transmitted over the distribution channel. Plainly, some distribution channels offer greater value to consumers on average (all things being the same). To illustrate, a particular consumer may value a CD more than the ability to listen to a song one time on a radio, even though the value of hearing a new release could be substantial. Moreover, these valuations depend on time and place and, of course, vary across different consumers. At bottom, consumers value access to music through different channels (perhaps some more so than others on average) and there is no *a priori* reason why owners of copyrighted sound recordings should receive different compensation for their product depending on the *identity* of the channel. The market rates listed above, despite their differences, involve a license to obtain (or deliver to third parties) sound recordings in one form or the other in return for compensation based on marketplace realities *rather than* on regulatory decisions. Distributors whose contracts are summarized in the Table above are selling versions of the same product – recorded music – which, in principle, are valued by the consumer in the end for the same reason.[40] The fact that that license fees are comparable across a range of distribution channels is consistent with this assessment, in my view.

In light of these findings, I make two observations about these marketplace agreements.

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[39] Indeed, if all distribution channels were perfect substitutes for each other then rates for accessing music could not be materially different across channels, since distribution channels with higher rates would simply be driven from the market.

[40] Indeed, as noted earlier, one industry analyst concluded that the amount of time spent by consumers listening to satellite radio, rather than purchased music, is likely to be "highly cannibalistic of purchased music." Citigroup Warner Report, SX Ex. 103 DR, at p. 39.

1. The Percentage-of-Revenue Rates

Although the "per-play" and "per-unit" fees to which the record companies and the digital music services have voluntarily agreed may affect the ultimate economic terms of these agreements (in all cases, under the "greater of" rate structure, to the benefit of the record companies), and leaving to one side the [redacted] of revenue deals with services like iTunes, sound recording copyright holders and distributors have agreed to fees that cluster between [redacted] % of "percent of revenue."[41] In other words, the value created by the use of the music as reflected in revenue figures is shared [redacted] between the record companies and the digital music services, independent of the dollar amount of revenue generated by the service. Assuming, again, that, in the context of satellite radio, roughly 55% of total expenditures on content can be fairly attributed to music, with the rest going to other content, this suggests that sound recording copyright owners would receive between 19% and 28% of revenues in the free market from satellite radio.

2. The Per Subscriber/Per Unit Rates

The per subscriber, per unit, and per play license fees in the various agreements listed above also provide useful information about the plausible market-based rates for licensing music to satellite radio that would result from arm's length negotiations. To be sure, these rates vary more widely than the "percentage of revenue" deals, suggesting that the value to a listener from accessing music does depend on the mode of delivery (that is, specific characteristics that the music service provides). Therefore, reliance on the "per-play" or "per-unit" license fees for gauging proper rates to satellite radio does require some adjustment for the differentiating characteristics of these other services. In particular, because there are monitoring limitations as to what the basis of the rate can be, it is most instructive for our purposes to focus on per subscriber rates as opposed to per play rates.

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[41] According to Mr. Kenswil, the trend in licensing fees for music videos based on the "[redacted]. Kenswil Statement at 11.

Because of the lack of extensive data and the multiple differences between satellite radio and these other digital music services, it is not possible to perform a proper statistical study (such as a hedonic regression) that would "price out" the value to an average listener of the various features that differentiate each of these distribution modes from another. It is nevertheless helpful to identify the differences among the services that pay market-based rates and the services offered by the SDARS, and then to attempt to make adjustments to account for these differences. While there are insufficient data to make these adjustments with statistical precision, it is possible to make qualitatively meaningful adjustments, and then to compare the adjusted marketplace rates with the other evidence of how rates for this statutory license would be set in a competitive marketplace.

In subjecting these rates to this type of qualitative scrutiny, I follow two different approaches. The first looks at the different characteristics of these various services and attempts to adjust for those differences. The second makes a comparison based on the retail rates of the services – the ultimate indication of the consumer value offered by the service. I then compare each of these results to the results obtained through other economic analyses proffered by SoundExchange's witnesses. Each of the approaches, while providing essentially rough approximations, is instructive in establishing a most reasonable range of rates that the Court should consider.

a) Adjustments Based on Differences in the Services.

As noted above, the "per play" and "per subscriber" rates vary greatly for reasons already adduced. By taking account of these differences, we can get some sense of where satellite radio falls within the range of observed market rates that compensate the record companies based on more disaggregated criteria noted above.

In relevant respects, satellite radio is a portable, immediately available, non-interactive subscription service. It is portable insofar as the service is available wherever the satellite radio is located (*e.g.*, a traveling listener in the car has continuous access to satellite radio programming and, once at a destination, the listener can remove the unit from the car or purchase a separate portable unit and listen to it at home or in the office). In addition to being portable, the satellite radio companies deliver content wherever and

whenever the consumer wants to hear it on the receiver. With respect to this feature, satellite radio is perhaps closer to music downloaded or streamed to a cellular handset, and thus can be differentiated from a portable music player which can only play music after completion of a two-step process -- downloading music onto a computer, and then uploading the music from the computer onto the portable player.

Additionally, satellite radio is non-interactive. Although the listener may pick a particular channel, even one devoted to a narrowly defined genre of music, the listener cannot choose what song, artist, or album to play at any given time. In this way it differs from interactive services which allow a customer to choose a particular song to play. Finally, satellite radio is a subscription service, of course, because the marketing model requires the listener to pay the same monthly (or annual) fee to have access to the service irrespective of the hours of programming that the subscriber accesses.

Given the attributes of satellite radio service, one plausible candidate for rate comparison is a portable, interactive subscription service, like Rhapsody To Go. Like satellite radio, this service is sold on a subscription basis and is portable, but unlike satellite radio, it is interactive, and songs must be downloaded to the computer and then uploaded on a portable device. The table below summarizes the main attributes of these two services:

Service	Subscription	Portable	Interactive	Immediacy
Satellite Radio	Y	Y	N	Y
Interactive Webcasting Services	Y	Y	Y	N

As between satellite radio and portable, interactive subscription service, the obvious relevant differences are that satellite radio is not interactive, but it is available immediately (that is, without completing a two-step process). Thus, before one can make a meaningful use of the rates paid by these webcasting services as a benchmark for SDARS rates, it is important to make some estimate of the premium that interactivity and immediate reception command in the marketplace. To get a sense of the importance of these attributes to average subscribers, I need to compare the license rates that record companies receive for interactive and non-interactive, and computer-based and

immediately available music services that are otherwise similar. This type of comparison informs the assessment of the benefits that consumers derive from interactivity and from the ability to access music immediately as opposed to going through the process of copying music files from a computer onto a portable player.

Value of Interactivity. To determine the value of interactivity, one approach is to consider the relationship between license fees for otherwise similar interactive and non-interactive services. Unfortunately, most non-interactive music services are subject to a statutory license, so presently there is no market-based rate for a non-interactive music service. Rates set by regulation, or set in the shadow of regulation, are not marketplace rates and therefore provide little useful information in this context. However, there are both interactive and non-interactive streaming music video services, neither of which is subject to regulated rates. As noted above, copyright holders license these services generally at [redacted] Copyright holders license music for interactive video service at approximately [redacted] per play. The same music when used in a non-interactive service is licensed [redacted] per play.[42] In other words, music licensed for a non-interactive video streaming distribution channel commands a rate that is approximately [redacted], which gives one qualitative gauge of the value of interactivity in services whose rates are unaffected by regulatory considerations.

Value of Immediate Accessibility. I can estimate the value of immediate accessibility in the same manner. Here, I compare services that allow a user to download a song to a computer hard drive and then transfer a copy onto a portable player with services that allow immediate downloads through a wireless cell phone connection. Each of these services is completely portable, but only one allows a user to access music anytime and anywhere. Record companies license music for computer downloads, such as through iTunes, at the rate of approximately [redacted] per track. The same music is licensed for wireless cell phone downloads at the rate of approximately [redacted] per track.

[42] Kenswil Testimony at 11.

These differences offer some gauge of the value of being able to download music directly away from one's computer, that is, it provides a measure of the value that consumers may place on not being tethered to the computer and a two step process before they can listen to music on a portable device. Put another way, there appears to be a substantial premium for immediate accessibility via transmission to a wireless handset, with the ratio of the two fees being [redacted] Whatever the value that consumers place on the ability to obtain music anytime and anywhere, it is clear that sound recording copyright owners are paid a premium by distributors for the right to distribute sound recordings in this manner.

I would expect that the rate for music licensed to an immediately available, non-interactive service like satellite radio to be approximately the same as for the same music licensed to a portable, computer-based, interactive webcasting, adjusted for both interactivity and for immediate accessibility. Sound recording copyright holders receive approximately [redacted] per subscriber per month for sound recordings supplied to a portable, interactive webcasting distribution channel. In order to get an indication of what the rate for a negotiated blanket license to SDARS would be, I start with the rate of [redacted] and then adjust it by, first, reducing it to account for satellite radio's non-interactivity and then by increasing it to account for the immediate availability of the satellite radio signal. This two-step adjustment leads to a suggested copyright fee of $2.51 per subscriber per month, which is obtained as [redacted] to adjust for immediate access.

b) <u>Adjustments Based on Differences in the Retail Rate.</u>

A second method of placing satellite radio rates in the range of benchmark rates recognizes that, as a whole, these benchmarks show that the greater the overall value that the subscriber derives from any particular type of service – as measured by the retail price of the service – the higher the per-play rate. This relationship make sense: to the extent the consumer derives greater value from certain attributes, these attributes will command a premium in the marketplace, as measured by retail prices to consumers. Moreover, if these same features have the effect of diverting demand from other sources

of revenue (such as CDs), copyright owners likely will insist on a higher license fee. This observed relationship between functionality, retail price and share of revenue provides another way of deriving a plausible value for a market-based "share of revenue" license fee that would likely be paid by SDARS. I do so by comparing the retail rate of the SDARS service to the retail rate for non-interactive non-portable subscription services, set out in the chart below.

Channel	Per-Play	% of Revenue	Per-Unit	Retail Price
Permanent Audio Download	n/a	[redacted]	[redacted]	$.99/track
Interactive Subscription (Portable)	[redacted]	[redacted]	[redacted]	$12.50/sub/month
Interactive Subscription (Non-Portable)	[redacted]	[redacted]	[redacted]	$8.00/sub/month

First, I assume that the average monthly per subscriber price for satellite radio is $11.25. In order to get a comparable price for a music-only service, I need to make an adjustment for the fact that SDARS distribute content other than sound recordings, while the other services considered in the table do not. As previously discussed, *see* pp. 40-41, survey data suggest that roughly 55% of the value of satellite radio to average subscriber comes from its music content. This suggests that consumers consider $6.19/subscriber/month ($11.25 x .55) to be a reasonable estimate of the value they derive from having music content delivered over satellite radio. If we take $6.19 as the adjusted retail "price" of a hypothetical satellite radio service that offered only music, then the above chart suggests that the service has about 77% of the value to the consumer as a non-portable interactive subscription service, which retails on average for $8.00/month ($6.19/$8.00 = 77%).

Record companies receive approximately [redacted] for licensing sound recordings to non-portable interactive subscription services. As a result, record companies ought to receive slightly less than this rate for licensing sound recordings to satellite radio. Applying the [redacted] ratio of prices calculated above, this benchmark yields a comparable rate of $3.09/subscriber/month [redacted]

I do not mean to suggest that these calculations are a substitute for a rigorous regression analysis. They are not. However, these analyses shed light on what a hypothetical market-based rate for music would be to SDARS, and place it in the range of market rates paid by other music distribution services.

Most of all, these methods powerfully corroborate all of the *other* evidence and calculations that SoundExchange has developed in this opening stage of the proceeding. The following table shows how close are the rates that result from these different approaches to determination of the market-based rate:

Method	% of Revenue	/Subscriber/Month
Surplus analysis	24%	$2.90
"Howard Stern" example	24.5%	$2.94
Satellite Television example	18.5-23.5%	$2.17-$2.70
Per Unit/Per Subscriber Analysis	n/a	$2.51
Retail Rate Analysis	n/a	$3.09
Percentage of Revenue Analysis	19-28%	n/a

All of these analyses are fully consistent with the rate proposed by SoundExchange, namely:

Method	% of Revenue	/Subscriber/Month
Last Year (2012)	23%	$2.75
Average	16.5%	$1.92

In sum, the different approaches to the data taken here and in the testimony of Dr. Pelcovits collectively strongly support the proposition that SoundExchange's rate proposal is on the low end of a royalty that if adopted would promote the policies set out in section 810(b).

I declare under penalty of perjury that the foregoing testimony is true and correct to the best of my knowledge and belief.

Date: 10/30/2006

Janusz A. Ordover

May 2006

JANUSZ ALEKSANDER ORDOVER

Department of Economics
New York University
269 Mercer Street
New York, New York 10003

Office: (212) 998-8956
Fax: (212) 995-3932
Home: (203) 966-3788
Fax: (203) 972-3615
e-mail: jao@ordover.com

EDUCATION

1968-1973	Columbia University, New York, New York Graduate Department of Economics and European Institute of the School of International Affairs Doctoral Dissertation: Three Essays on Economic Theory (May 1973). Ph.D 1973.
1967-1968	McGill University, Montreal, Canada Departments of Economics and Political Science
1963-1966	Warsaw University, Warsaw, Poland Department of Political Economy. B.A. (equiv.), 1966.

HONORS

1973	Columbia University: Highest distinction for the doctoral dissertation
1971-1972	Columbia University: Honorary President's Fellow
1969-1971	Columbia University: President's Fellow
1967-1968	McGill University: Honors Student
1964, 1965	Warsaw University: Award for Academic Achievement, Department of Political Economy
	Who's Who in the World Who's Who in America Who's Who in the East

PROFESSIONAL EXPERIENCE

June 1982 - present	Professor of Economics Department of Economics, New York University, New York, New York
Sept. 1996 - Aug. 2001	Director of Masters in Economics Program Department of Economics, New York University, New York, New York

Summer 1996-2000	Lecturer International Program on Privatization and Reform Institute for International Development, Harvard University, Cambridge, Massachusetts
Aug. 1991 - Oct. 1992	Deputy Assistant Attorney General for Economics Antitrust Division United States Department of Justice, Washington, D.C.
Sept. 1989 - July 1990	Visiting Professor of Economics School of Management, Yale University, New Haven, Connecticut
	Lecturer in Law Yale Law School
Mar. 1984 - June 1988	Visiting Professor of Economics Universita Commerciale "Luigi Bocconi", Milan, Italy
June 1982 - Feb. 1985	Director of Graduate Studies Department of Economics, New York University
Sept. 1982 - June 1986	Adjunct Professor of Law (part-time) Columbia University Law School, New York, New York
Feb. 1982 - June 1982	Acting Director of Graduate Studies Department of Economics, New York University
June 1978 - June 1982	Associate Professor of Economics Department of Economics, New York University
Sept. 1979 - May 1990	Lecturer in Economics and Antitrust New York University Law School
Sept. 1977 - June 1978	Member, Technical Staff Bell Laboratories, Holmdel, New Jersey
	Associate Professor of Economics Columbia University
	Visiting Research Scholar Center for Law and Economics, University of Miami, Miami, Florida
Sept. 1973 - Aug. 1977	Assistant Professor of Economics New York University
Summer 1976	Fellow, Legal Institute for Economists, Center for Law and Economics, University of Miami
Summer 1976	Visiting Researcher Bell Laboratories, Holmdel, New Jersey

OTHER PROFESSIONAL ACTIVITIES

2006 - present	Special Consultant, Compass/FTI Company, Washington, D.C.
2003 - 2006	Director, Competition Policy Associates, Inc. ("Compass"), Washington, D.C.
1997 – 1999	Consultant, Inter-American Development Bank, Washington, D.C.
1997 – present	Board of Editors, *Antitrust Report*
1995 – 2001	Consultant, The World Bank, Washington, D.C.
1998 – 2004	Senior Consultant Applied Economic Solutions, Inc., San Francisco, California
1995 - 2000	Senior Affiliate Cornerstone Research, Inc., Palo Alto, California
various	Testimony at Hearings of the Federal Trade Commission
1994 - 1996	Senior Affiliate Law and Economics Consulting Group, Emoryville, California
1994 - 2000	Senior Affiliate Consultants in Industry Economics, LLC, Princeton, New Jersey
1993 - 1994	Director Consultants in Industry Economics, Inc., Princeton, New Jersey
1992 - 1993	Vice-Chair (*pro tempore*) Economics Committee, American Bar Association, Chicago, Illinois
1990 - 1991 1992 - 1995	Senior Consultant Organization for Economic Cooperation and Development, Paris, France
1991	Member *Ad hoc* Working Group on Bulgaria's Draft Antitrust Law The Central and East European Law Initiative American Bar Association
1990 - 1991	Advisor Polish Ministry of Finance and Anti-Monopoly Office Warsaw, Poland
1990 - 1991	Member Special Committee on Antitrust Section of Antitrust Law, American Bar Association
1990 - 1991	Director and Senior Advisor Putnam, Hayes & Bartlett, Inc., Washington, D.C.

1990 - 1996	Member Predatory Pricing Monograph Task Force Section of Antitrust Law, American Bar Association
1989	Hearings on Competitive Issues in the Cable TV Industry Subcommittee on Monopolies and Business Rights of the Senate Judiciary Committee Washington, D.C.
1989	Member EEC Merger Control Task Force, American Bar Association
1988 - present	Associate Member American Bar Association
1987 - 1989	Adjunct Member Antitrust and Trade Regulation Committee, The Association of the Bar of the City of New York
1984	Speaker, "Industrial and Intellectual Property: The Antitrust Interface" National Institutes, American Bar Association, Philadelphia, Pennsylvania
1983 - 1990	Director Consultants in Industry Economics, Inc
1982	Member Organizing Committee Tenth Annual Telecommunications Policy Research Conference, Annapolis, Maryland
1981	Member Section 7 Clayton Act Committee, Project on Revising Merger Guidelines American Bar Association
1980	Organizer Invited Session on Law and Economics American Economic Association Meetings, Denver, Colorado
1978 - 1979	Member Department of Commerce Technical Advisory Board Scientific and Technical Information Economics and Pricing Subgroup
1978 – present	Referee for numerous scholarly journals, publishers, and the National Science Foundation

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

American Economic Association
American Bar Association

PUBLICATIONS

A. Journal Articles

"Merchant Benefits and Public Policy towards Interchange: An Economic Assessment," with M. Guerin-Calvert, *Review of Network Economics: Special Issue*, forthcoming (2006).

"All-Units Discounts in Retail Contracts," with S. Kolay and G. Shaffer, *J. of Economics and Management Strategy,* vol. 13 (3), September 2004, 429-59.

"Archimedean Leveraging and the GE/Honeywell Transaction," with R. J. Reynolds, *Antitrust Law Journal*, vol. 70, no. 1, 2002, 171-98.

"Entrepreneurship, Access Policy and Economic Development: Lessons from Industrial Organizations," with M. A. Dutz and R. D. Willig, *European Economic Review,* vol. 4, no. 4-6, May 2000.

"Parity Pricing and its Critics: Necessary Condition for Efficiency in Provision of Bottleneck Services to Competitors," with W. J. Baumol and R .D. Willig, *Yale Journal on Regulation*, vol. 14, Winter 1997, 146-63.

"Competition and Trade Law and the Case for a Modest Linkage," with E. Fox, *World Competition, Law and Economics Review*, vol. 19, December 1995, 5-34.

"On the Perils of Vertical Control by a Partial Owner of Downstream Enterprise," with W.J. Baumol, *Revue D'économie industrielle*, No. 69, 3e trimestre 1994, 7-20.

"Competition Policy for Natural Monopolies in Developing Market Economy," with R.W. Pittman and P. Clyde, *Economics of Transition*, vol. 2, no. 3, September 1994, 317-343. Reprinted in B. Clay (ed), *De-monopolization and Competition Policy in Post-Communist Economies*, Westview Press 1996, 159-193.

"The 1992 Agency Horizontal Merger Guidelines and the Department of Justice's Approach to Bank Merger Analysis," with M. Guerin-Calvert, *Antitrust Bulletin*, vol. 37, no. 3, 667-688. Reprinted in *Proceedings of the 1992 Conference on Bank Structure and Competition: Credit Markets in Transition*, Federal Reserve Bank of Chicago, 1992, 541-560.

"Entry Analysis Under the 1992 Horizontal Merger Guidelines," with Jonathan B. Baker, *Antitrust Law Journal*, vol. 61, no. 1, Summer 1992, 139-146.

"Economics and the 1992 Merger Guidelines: A Brief Survey," with Robert D. Willig, *Review of Industrial Organization*, vol. 8, 139-150, 1993. Reprinted in E. Fox and J. Halverson (eds.), *Collaborations Among Competitors: Antitrust Policy and Economics*, American Bar Association, 1992, 639-652.

"Equilibrium Vertical Foreclosure: A Reply," with G. Saloner and S.C. Salop, *American Economic Review*, vol. 82, no. 3, 1992, 698-703.

"A Patent System for Both Diffusion and Exclusion," *Journal of Economic Perspectives*, vol. 5, Winter 1991, 43-60.

"R&D Cooperation and Competition," with M. Katz, *Brookings Papers on Economic Activity: Microeconomics*, 1990, 137-203.

"Equilibrium Vertical Foreclosure," with G. Saloner and S. Salop, *American Economic Review*, vol. 80, March 1990, 127-142.

"Antitrust Policy for High-Technology Industries," with W.J. Baumol, *Oxford Review of Economic Policy*, vol. 4, Winter 1988, 13-34. Reprinted in E. Fox and J. Halverson (eds.), *Collaborations Among Competitors: Antitrust Policy and Economics*, American Bar Association, 1991, 949-984.

"Conflicts of Jurisdiction: Antitrust and Industrial Policy," *Law and Contemporary Problems*, vol. 50, Summer 1987, 165-178.

"Market Structure and Optimal Management Organization," with C. Bull, *Rand Journal of Economics*, vol. 18, no. 4, Winter 1987, 480-491.

"A Sequential Concession Game with Asymmetric Information," with A. Rubinstein, *Quarterly Journal of Economics,* vol. 101, no.4, November 1986, 879-888.

"The G.M.-Toyota Joint Venture: An Economic Assessment," with C. Shapiro, *Wayne Law Journal*, vol. 31, no. 4, 1985, 1167-1194.

"Economic Foundations and Considerations in Protecting Industrial and Intellectual Property: An Introduction," *ABA Antitrust Law Journal*, vol. 53, no. 3, 1985. 503-518, Comments, 523-532.

"Antitrust for High-Technology Industries: Assessing Research Joint Ventures and Mergers," with R.D. Willig, *Journal of Law and Economics*, vol. 28, May 1985, 311-334.

"Use of Antitrust to Subvert Competition," with W.J. Baumol, *Journal of Law and Economics*, vol. 28, May 1985, 247-266. Reprinted in *Journal of Reprints for Antitrust Law and Economics*, vol. 16, no. 2.

"Advances in Supervision Technology and Economic Welfare: A General Equilibrium Analysis," with C. Shapiro, *Journal of Public Economics*, vol. 25/3, 1985, 371-390.

"Predatory Systems Rivalry: A Reply," with A. O. Sykes and R. D. Willig, 83 *Columbia Law Review*, June 1983, 1150-1166. Reprinted in *Corporate Counsel*, Matthew Bender & Company, 1984, 433-450.

"The 1982 Department of Justice Merger Guidelines: An Economic Assessment," with R. D. Willig, 71 *California Law Review*, March 1983,535-574. Reprinted in *Antitrust Policy in Transition: The Convergence of Law and Economics*, E. Fox and J. Halverson (eds.), American Bar Association Press, 1984, 267-304.

"Unfair International Trade Practices," with A. O. Sykes and R. D. Willig, 15 *Journal of International Law and Politics*, Winter 1983, 323-338.

"On Non-linear Pricing of Inputs," with J. Panzar, *International Economic Review*, October 1982, 659-675.

"Herfindahl Concentration, Rivalry and Mergers," with A. O. Sykes and R. D. Willig, *Harvard Law Review*, vol. 95, June 1982, 1857-1875.

"A Reply to 'Journals as Shared Goods: Comment,'" with R. D. Willig, *American Economic Review*, June 1982, 603-607.

"Proposed Revisions to the Justice Department's Merger Guidelines," with S. Edwards, *et al.*, *Columbia Law Review*, vol. 81, December 1981, 1543-1591.

"An Economic Definition of Predation: Pricing and Product Innovation," with R.D. Willig, *Yale Law Journal*, vol. 91, November 1981, 8-53.

"On the Consequences of Costly Litigation in the Model of Single Activity Accidents: Some New Results," *Journal of Legal Studies*, June 1981, 269-291.

"On the Political Sustainability of Taxes," with A. Schotter, *American Economic Review Papers and Proceedings*, May 1981, 278-282.

"Information and the Law: Evaluating Legal Restrictions on Competitive Contracts," with A. Weiss, *American Economic Review Papers and Proceedings*, May 1981, 399-404.

"Redistributing Incomes: *Ex Ante* or *Ex Post*," *Economic Inquiry*, April 1981, 333-349.

"On the Nonexistence of *Pareto Superior* Outlay Schedules," with J. Panzar, *The Bell Journal of Economics*, Spring 1980, 351-354.

"The Role of Information in the Design of Public Policy Towards Externalities," with R. D. Willig, *Journal of Public Economics*, December 1979, 271-299.

"On the Concept of Optimal Taxation in the Overlapping-Generations Model of Efficient Growth," with E.S. Phelps, *Journal of Public Economics*, August 1979, 1-27.

"Products Liability in Markets With Heterogeneous Consumers," *Journal of Legal Studies*, June 1979, 505-525.

"Costly Litigation and the Tort Law: Single Activity Accidents," *Journal of Legal Studies*, June 1978, 243-261.

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"Distortionary Wage Differentials in a Two-Sector Growth Model: Some Theorems on Factor Earnings," *International Economic Review*, June 1978, 321-333.

"On the Optimality of Public-Goods Pricing with Exclusion Devices," with W.J. Baumol, *Kyklos*, Fasc. 1, 1977, 5-21.

"Public Good Properties in Reality: The Case of Scientific Journals," with W.J. Baumol, *Proceedings of the ASIS Meetings*, San Francisco, October 1976.

"Merger Illusions and Externalities: A Note," with A. Schotter, *Eastern Economic Review*, November 1976, 19-21.

"Distributive Justice and Optimal Taxation of Wages and Interest in a Growing Economy," *Journal of Public Economics*, January 1976, 139-160.

"Linear Taxation of Wealth and Wages for Intragenerational Lifetime Justice: Some Steady-State Cases," with E.S. Phelps, *American Economic Review*, September 1975, 660-673.

B. Books and Monographs

Proceedings of the Tenth Annual Telecommunications Policy Research Conference, editor with O. Gandy and P. Espinosa, ABLEX Publishers, 1983.

Obstacles to Trade and Competition, with L. Goldberg, OECD, Paris, 1993.

Predatory Pricing, with William Green, *et al.*, American Bar Association, Section of Antitrust Law, Monograph 22, 1996.

C. Book Chapters

"Practical Rules for Pricing Access in Telecommunications," with R. D. Willig, Chap. 6, in *Second-Generations Reforms in Infrastructure Services,* F. Besanes and R. D. Willig (eds.), Inter-American Development Bank, Washington, D.C., April 2002, 149-76.

"Sustainable Privatization of Latin American Infrastructure: The Role of Law and Regulatory Institutions," with Evamaria Uribe, Chap. 1 in F. Basanes, E. Uribe, R. D. Willig (eds.), *Can Privatization Deliver? Infrastructure for Latin America,* The Johns Hopkins U. P. for Inter-American Development Bank, 1999, 9-32.

"Access and Bundling in High-Technology Markets," with R. D. Willig, Chap. 6, in J. A. Eisenach and T. M. Leonard, (eds.), *Competition, Innovation, and the Microsoft Monopoly: The Role of Antitrust in the Digital Marketplace*, Kluver Academic Press, 1999, 103-29.

"The Harmonization of Competition and Trade Law," with E. Fox, Chap. 15 in L. Waverman, *et al.* (eds.), *Competition Policy in the Global Economy*, Routledge, 1997, 407-439.

"Transition to a Market Economy: Some Industrial Organization Issues," with M. Iwanek, Chap. 7 in H. Kierzkowski, *et al.* (eds.), *Stabilization and Structural Adjustment in Poland*, Routledge, 1993, 133-170.

"Competition Policies for Natural Monopolies in a Developing Market Economy," with Russell Pittman, *Butterworth's Trade and Finance in Central and Eastern Europe*, Butterworth Law Publishers Ltd., 1993, 78-88, Reprinted in *Journal for Shareholders* (published by the Russian Union of Shareholder), Moscow, January 1993, 33-36; *Versenyfelugyeleti Ertesito* (Bulletin of Competition Supervision), Budapest, vol. 3, no. 1-2, January 1993, 30-41; *Narodni Hospodarstvi* (National Economy), Prague; *ICE: Revista de Economia*, No. 736 (December 1994) (in Spanish), 69-90.

"Antitrust: Source of Dynamic and Static Inefficiencies?" with W.J. Baumol, in T. Jorde and D. Teece (eds.), *Antitrust, Innovation, and Competitiveness*, Oxford University Press, 1992, 82-97. Reprinted in "The Journal of Reprints for Antitrust Law and Economics," vol. 26, no. 1, 1996.

"Economic Foundations of Competition Policy: A Review of Recent Contributions," in W. Comanor, et al., *Competition Policy in Europe and North America: Economic Issues and Institutions, Fundamentals of Pure and Applied Economics* (Vol. 43), Harwood Academic Publishers, 1990, 7-42.

"The Department of Justice 1988 Guidelines for International Operations: An Economic Assessment," with A.O. Sykes, in B. Hawk (ed.), *European/American Antitrust and Trade Laws*, Matthew Bender, 1989, 4.1-4.18.

"Predation, Monopolization, and Antitrust," with G. Saloner, in R. Schmalensee and R.D. Willig (eds.), *Handbook of Industrial Organization*, vol. 1, North Holland, 1989, 538-596.

"Supervision Technology, Firm Structure, and Employees' Welfare," in *Prices, Competition and Equilibrium*, M. Peston and R.E. Quandt (eds.), Philip Allan Publishers, Ltd., 1986, 142-163.

"Perspectives on Mergers and World Competition," with R.D. Willig, in *Antitrust and Regulation*, R. Grieson (ed.), Lexington Books, 1986, 201-218.

"Transnational Antitrust and Economics," in *Antitrust and Trade Policies in International Trade*, B. Hawk (ed.), Matthew Bender, 1985, 233-248.

"Pricing of Interexchange Access: Some Thoughts on the Third Report and Order in FCC Docket No. 78-72," in *Proceedings of the Eleventh Annual Telecommunications Policy Research Conference*, Vincent Mosco (ed.), ABLEX Publishers, 1984, 145-161.

"Non-Price Anticompetitive Behavior by Dominant Firms Toward the Producers of Complementary Products," with A.O. Sykes and R.D. Willig, in *Antitrust and Regulation: Essays in Memory of John McGowan*, F. Fisher (ed.), MIT Press, 1985, 315-330.

"Local Telephone Pricing in a Competitive Environment," with R.D. Willig, in *Regulating New Telecommunication Networks*, E. Noam (ed.), Harcourt Brace Jovanovich, 1983, 267-289.

"An Economic Definition of Predatory Product Innovation," with R.D. Willig, in *Strategy, Predation and Antitrust Analysis*, S. Salop (ed.), Federal Trade Commission, 1981, 301-396.

"Marginal Cost," in *Encyclopedia of Economics*, D. Greenwald (ed.), McGraw-Hill, 2nd ed. 1994, 627-630.

"Understanding Economic Justice: Some Recent Development in Pure and Applied Welfare Economics," in *Economic Perspectives*, M. Ballabon (ed.) Harwood Academic Publishers, vol. 1, 1979, 51-72.

"Problems of Political Equilibrium in the Soviet Proposals for a European Security Conference," in *Columbia Essays in International Affairs*, Andrew W. Cordier (ed.) Columbia University Press, New York, 1971, 1951-197

D. Other Publications

"Safer Than A Known Way? A Critique of the FTC's Report on Competition and Patent Law and Policy," with I. Simmons and D. A. Applebaum, *Antitrust Magazine,* Spring 2004, 39-43.

"Predatory Pricing," in Peter Newman (ed.), *The New Palgrave Dictionary of Economics and the Law*, Grove Dictionaries, New York, 1999.

Book review of L. Phlips, *Competition Policy: A Game Theoretic Perspective*, reviewed in *Journal of Economic Literature*, vol. 35, No.3, September 1997, 1408-9.

"The Role of Efficiencies in Merger Assessment: The 1997 Guidelines," *Antitrust Report*, September 1997, 10-17.

"Bingaman's Antitrust Era," *Regulation*, vol. 20, No. 2, Spring 1997, 21-26.

"Competition Policy for High-Technology Industries," *International Business Lawyer*, vol. 24, No. 10, November 1996, 479-82.

"Internationalizing Competition Law to Limit Parochial State and Private Action: Moving Towards the Vision of World Welfare," with E.M. Fox, *International Business Lawyer*, vol. 24, No. 10, November 1996, 458-62.

"Economists' View: The Department of Justice Draft for the Licensing and Acquisition of Intellectual Property," *Antitrust*, vol. 9, No. 2, Spring 1995, 29-36.

"Competition Policy During Transformation to a Centrally Planned Economy: A Comment," with R.W. Pittman, in B. Hawk (ed.), *1992 Fordham Corporate Law Institute*, 533-38.

"Poland: The First 1,000 Days and Beyond," E*conomic Times*, vol. 3, no. 9, October 1992, 6-7.

"Interview: Janusz A. Ordover: A Merger of Standards? The 1992 Merger Guidelines," *Antitrust,* vol. 6, no. 3, Summer 1992, 12-16.

"Interview: U.S. Justice Department's New Chief Economist: Janusz A. Ordover," *International Merger Law*, no. 14, October 1991.

"Poland: Economy in Transition," *Business Economics*, vol. 26, no. 1, January 1991, 25-30.

"Economic Analysis of Section 337: Protectionism versus Protection of Intellectual Property," with R.D. Willig, in *Technology, Trade and World Competition*, JEIDA Conference Proceedings, Washington, D.C., 1990, 199-232.

"Eastern Europe Needs Antitrust Now," with E. Fox, *New York Law Journal*, November 23, 1990, 1-4.

"Understanding Econometric Methods of Market Definition," with D. Wall, *Antitrust*, vol. 3, no. 3, Summer 1989, 20-25.

"Proving Entry Barriers: A Practical Guide to Economics of Entry," with D. Wall, *Antitrust*, vol. 2, no. 2, Winter 1988, 12-17.

"Proving Predation After Monfort and Matsushita: What the New 'New Learning' has to Offer," with D. Wall, *Antitrust*, vol. 1, no. 3, Summer 1987, 5-11.

"The Costs of the Tort System," with A. Schotter, Economic Policy Paper No. PP-42, New York University, March 1986. Reprinted in *Congressional Record*, U.S. Government Printing Office, Washington, D.C., 1987.

"An Economic Definition of Predation: Pricing and Product Innovation," with R.D. Willig, Report for the Federal Trade Commission, October 1982, 131 pp.

"Market Power and Market Definition," with R.D. Willig, Memorandum for ABA Section 7 Clayton Act Committee, Project on Revising the Merger Guidelines, May 1981.

"Herfindahl Concentration Index," with R.D. Willig, Memorandum for ABA Section 7 Clayton Act Committee, Project on Revising the Merger Guidelines, March 1981.

"Public Interest Pricing of Scientific and Technical Information," Report for the Department of Commerce Technical Advisory Board, September 1979.

"Economics of Property Rights as Applied to Computer Software and Databases," with Y.M. Braunstein, D.M. Fischer, W.J. Baumol, prepared for the National Commission on New Technological Uses of Copyrighted Works, June 1977, 140 pp. Reprinted in part in *Technology and Copyright*, R.H. Dreyfuss (ed.), Lemond Publications, 1978.

Book review of O. Morgenstern and G.L. Thompson, *Economic Theory of Expanding and Contracting Economies*, reviewed in *Southern Economic Journal*, September 1978.

"Manual of Pricing and Cost Determination for Organizations Engaged in Dissemination of Knowledge," with W.J. Baumol, Y.M. Braunstein, D.M. Fischer, prepared for the Division of Science Information, NSF April 1977, 150 pp.

UNPUBLISHED PAPERS

"When does supplying an entrant makes sense for vertically integrated oligopolists?" with Greg Shaffer, Dec. 2006.

"Regulation of Credit Card Interchange Fees and Incentives for Network Investments," with Y. Wang, Competition Policy Associates WP, Washington D.C. September 2005.

"Economics, Antitrust and the Motion Picture Industry," C.V. Starr Center Policy Paper, July 1983.

"On Bargaining, Settling, and Litigating: A Problem in Multiperiod Games With Imperfect Information," with A. Rubinstein, C.V. Starr Working Paper, December 1982.

"Supervision and Social Welfare: An Expository Example," C.V. Starr Center Working Paper, January 1982.

"Should We Take Rights Seriously: Economic Analysis of the Family Education Rights Act," with M. Manove, November 1977.

"An Echo or a Choice: Product Variety Under Monopolistic Competition," with A. Weiss; presented at the Bell Laboratories Conference on Market Structures, February 1977.

GRANTS RECEIVED

Regulation and Policy Analysis Program, National Science Foundation, Collaborative Research on Antitrust Policy, Principal Investigator, July 15, 1985 - December 31, 1986.

Regulation of Economic Activity Program, National Science Foundation, Microeconomic Analysis of Antitrust Policy, Principal Investigator, April 1, 1983 - March 31, 1984.

Economics Division of the National Science Foundation, "Political Economy of Taxation," Principal Investigator, Summer 1982.

Sloan Workshop in Applied Microeconomics (coordinator), with W.J. Baumol (Principal Coordinator), September 1977 - August 1982.

Economics Division of the National Science Foundation, "Collaborative Research on the Theory of Optimal Taxation and Tax Reform," July 1979 to September 1980, with E.S. Phelps.

Division of Science Information of the National Science Foundation for Research on "Scale Economies and Public Goods Properties of Information," W.J. Baumol, Y.M. Braunstein, M.I. Nadiri, Fall 1974 to Fall 1977.

National Science Foundation Institutional Grant to New York University for Research on Taxation and Distribution of Income, Summer 1974.

Exhibits Sponsored by Janusz Ordover

Exhibit No.	Description
SX Ex. 103 DR	Citigroup research report on Warner Music Group (Sept. 22, 2005)
SX Ex. 108 DR	JPMorgan North American Equity Research report "Satellite Radio Survey 2005: Content Wars Shift Share, Not the Demand Curve" (Feb. 7, 2005)
SX Ex. 109 DR	Kagan research report "Cable Program Investor™: Analyzing Economics of Basic and Premium Programming" (July 28, 2006)
SX Ex. 110 DR	Prudential Equity Group, LLC research report "Cable & Satellite TV: Earnings Preview Second-Quarter 2006" (July 21, 2006)