

Before the  
COPYRIGHT ROYALTY JUDGES  
LIBRARY OF CONGRESS  
Washington, D.C.

**CO Trial**  
**Ex. 400**

In the Matter of

Mechanical and Digital Phonorecord Delivery Rate  
Adjustment Proceeding

Docket No. 2006-3 CRB DPRA

**REBUTTAL REPORT OF KEVIN M. MURPHY ON BEHALF OF  
NATIONAL MUSIC PUBLISHERS' ASSOCIATION, INC.,  
THE SONGWRITERS GUILD OF AMERICA AND  
THE NASHVILLE SONGWRITERS ASSOCIATION INTERNATIONAL**

**I. CREDENTIALS**

1. My name is Kevin M. Murphy. I am the George J. Stigler Distinguished Service Professor of Economics in the Graduate School of Business and the Department of Economics at the University of Chicago, where I have taught since 1983.

2. I earned a doctorate degree in economics from the University of Chicago in 1986. I received my bachelor's degree, also in economics, from the University of California, Los Angeles, in 1981.

3. At the University of Chicago, I teach economics in both the Graduate School of Business and the Department of Economics. I teach graduate level courses in microeconomics, price theory, empirical labor economics, and the economics of public policy issues. I cover a wide range of topics in these courses, including the incentives that motivate firms and individuals, the operation of markets, the determinants of market prices, and the impacts of regulation and the legal system. Most of my teaching focuses on two things: how to use the tools of economics to understand the behavior of individuals, firms and markets; and how

to apply economic analysis to data. My focus in both research and teaching has been on integrating economic principles and empirical analysis.

4. I have authored or co-authored more than sixty-five articles in a variety of areas in economics. Those articles have been published in leading scholarly and professional journals, including the American Economic Review, Journal of Law and Economics, and the Journal of Political Economy.

5. I am a Fellow of the Econometric Society and a member of the American Academy of Arts and Sciences. In 1997, I was awarded the John Bates Clark Medal, which the American Economic Association awards once every two years to an outstanding American economist under the age of forty. In 2005, I was named a MacArthur Fellow, an award that provides a five-year fellowship to individuals who show exceptional merit and promise for continued and enhanced creative work.

6. In addition to my position at the University of Chicago, I am also a Principal at Chicago Partners, LLC, a consulting firm that specializes in the application of economics to law and regulatory matters. I have consulted on a variety of antitrust, intellectual property and other matters involving economic and legal issues such as mergers, class certification, damages, labor practices, joint ventures, and allegations of anticompetitive exclusionary access, tying, price fixing, and price discrimination.

7. I have submitted testimony in Federal Court, the U.S. Senate and to state regulatory bodies, and I have submitted expert reports in numerous cases. A list of the reports I have filed and the testimony I have given over the past four years is provided in my CV, attached as Exhibit A. Chicago Partners is being compensated at a rate of \$880 per hour for my work on this matter.

## II. SUMMARY OF MY OPINIONS

8. I have been asked by National Music Publishers' Association, Inc. ("NMPA"), the Songwriters Guild of America and the Nashville Songwriters Association International (collectively, the "Copyright Owners") to review reports and testimony offered in this proceeding by certain witnesses for the Recording Industry Association of America, Inc. ("RIAA") and the Digital Media Association ("DiMA"), and to offer my opinion on two issues. The first issue is the economic validity of the RIAA's claim that reduced sales of compact discs and the reduction in CD prices make the current ratio of mechanical royalties to wholesale price too high. The second issue is whether the terms of the controlled composition clauses in recording contracts between record companies and recording artists provide economic evidence relevant to determining the appropriate statutory rate for the mechanical license.

9. Based on my review of the materials listed in Exhibit B, my expertise as an economist, and the empirical and economic analysis I present in this report, I have reached the following conclusions:

1. Regardless of whether royalties are paid as a fixed penny rate or as a percentage of revenue, the RIAA's argument that the statutory mechanical royalty rate should be reduced because of the decline in CD sales and/or CD prices is not supported by the economics of the industry and empirical evidence from the marketplace;
2. The mechanical royalty rates set forth in controlled composition provisions in many artist contracts with record companies do not provide an appropriate benchmark for determining the statutory rate for the mechanical royalty and do not support the RIAA's claims that the statutory rate should be reduced.

In the rest of my report, I explain the bases for my opinions.



### **III. THE HISTORICAL RATIO OF TOTAL MECHANICAL ROYALTIES TO THE PRICE OF A CD DOES NOT PROVIDE AN APPROPRIATE BENCHMARK FOR SETTING THE MECHANICAL ROYALTY**

10. From an economic perspective, we can think of the market for recorded music as a vertical chain. At the first step, the recording is produced by combining musical compositions, artist talent and recording services. At the second step, the recorded music is marketed and sold to consumers in the form of a CD, permanent download, subscription download, or a number of other products. For purposes of my analysis, I will refer to the first step as the “creation” step and the second step as the “distribution” step. Thus, musical compositions, artist talent, and recording services are combined in the creation step to create the recording, while marketing, manufacturing and distribution services are provided at the distribution step to deliver the product to consumers.

11. Consumers demand the delivered music product, and the economic value of the required creation and distribution inputs derives from the value that consumers place on the final product. In this kind of vertical system, the inputs supplied in the two steps are economic complements. Economic theory has clear predictions about how the market values of the creative and distribution inputs provided in the two steps of the vertical chain will change in response to changes in the underlying fundamentals of the market. An increase in the demand for the final product will raise the demand for inputs supplied at both steps and increase their usage and market prices. In contrast, an increase in the supply of or reduction in the cost of providing inputs in one step will lower their market prices and lower the price of the final product while raising the demand for and the market price of inputs supplied in the other step. Thus, depending on the operative market forces, prices for the inputs supplied at the two steps will move in either the same or opposite directions. Discussion of the economic impact of the change in the supply of distribution represents the second type of shift – one that reduces the cost

of supplying inputs in one step of the vertical chain. My subsequent discussion of how the market-determined prices of fixed and variable inputs adjust with changes in demand for the final product deals with the first type of shift.

**A. The Impact of the Change in Supply of Distribution**

12. Digital distribution increasingly competes with physical distribution methods, which themselves evolved over the decades from piano rolls to LPs, tape cassettes and, most recently, CDs. The result, applying the framework outlined above, has been an outward shift in the supply of distribution resulting in a likely increase in consumption of recorded music (legitimate and pirated combined) but decline in sales and prices of traditional distribution methods, such as recorded music delivered on CDs. While technical progress created a shift in delivery methods and therefore lower delivery costs and prices, it does not appear that this progress reduced consumer demand for the item delivered – a recorded song – although it may have reduced demand for legally supplied products and increased demand for and supply of pirated copies.<sup>1</sup> In fact, the “consumption” of recorded music likely has increased, as music is now available everywhere – on portable MP3 players, computers, and cell phones – and not just on home record players and automobile cassette and CD players.

13. Professor Teece argues that songwriters should receive a lower statutory royalty because of the recent decline in CD prices. However, his argument that songwriters should receive **less** per song when the per-unit price of recorded music declines ignores the prediction from economic theory that greater relative supply of alternative distribution methods will **increase**, not reduce, the market-determined compensation of songwriters and other inputs used to create the recordings relative to both record company compensation for distribution and

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<sup>1</sup> As Professor Teece describes at length, piracy likely contributed to the overall decline in the price of recorded music.

the price of the final product. When market conditions change due to a shift in the supply of one of the inputs, relative prices of the inputs and output will not be constant and prices for the two inputs often will move in opposite directions. A benchmark based on a fixed ratio between the price paid to an input (songwriters) and the price of the output (recorded music), as proposed by Professor Teece, is not an appropriate indicator of market values under such conditions.

**B. The Impact of Changes in Demand for Recorded Music**

14. Even when changes in market conditions result from changes in the demand for the final product, rather than from shifts in the supply of inputs provided in one of the steps of the vertical chain, market-determined royalties for songs and other components of the talent pool would not in general move in proportion to output prices. Creative inputs, including composers and artists, have fixed costs of supply. The costs incurred by a songwriter to create a single composition are not variable costs that change with the number of recorded units of that song that are sold. Rather, the cost to compose a song is a fixed cost of creation that does not change if the song is recorded 100 times or sells one million units, or if it is recorded once or even never recorded at all.

15. If a decline in sales of recorded music results in lower sales of each album that is released, then (all else equal) the songwriter's return, and his incentive to create new songs, will decline even if the per-unit return (as measured by the mechanical royalty) remains unchanged. Thus, a songwriter who requires an expected return of \$15,000 to compose a song will compose the song if he expects to receive a 10 cent mechanical royalty per unit and expects the song to sell 150,000 copies. A decline in expected sales to 100,000 units lowers the composer's expected return to \$10,000 if the royalty remains fixed at 10 cents. An increase in the



royalty to 15 cents per unit would be required in order to maintain the songwriter's incentive to supply the composition.

16. In contrast to the fixed costs to create a song, the factors supplied in the second step of the vertical chain, the distribution function, consist of both fixed and variable inputs. While the cost to create a musical composition does not vary with the number of units sold, distributing recorded music requires a variety of variable cost inputs for which an additional cost is incurred for each additional unit of the recording sold. Some of these variable costs include the materials used to manufacture the physical media as well as some of the industry's marketing efforts.

17. The incentive to provide variable inputs (inputs that vary in proportion to output) depends only on the return per unit sold and not directly on the total amount of sales. To illustrate the contrast with the incentive to compose a song, consider what would happen if the amount paid per-recording to both the fixed and variable inputs were reduced by 10 percent, while sales per recorded song were reduced by 20 percent. The incentive to provide variable inputs (those provided on a per-unit sold basis) would fall by 10 percent, since they now receive 10 percent less per unit of input supplied. However, the incentive to supply songs and other fixed inputs would fall by 28 percent, because composers and others in the talent pool would now receive only 72 percent of what they received before for each song recorded (they would sell only 80 percent as many units and each unit would earn 90 percent of the amount it earned previously ( $0.8 \text{ times } 0.9 = 0.72$ )). Thus, under such conditions, an equal reduction in the per-unit payment for the fixed cost and variable cost inputs would create a disproportionate reduction in the incentive to supply songwriting and other fixed-cost elements of the recording.

18. In order to maintain the same incentive to supply creative inputs (e.g., the same number of songs composed), the average compensation per unit for these inputs must increase when unit sales per recording declines. In contrast, the average compensation per unit for variable-cost inputs need not change in order to maintain economic incentives. This implies the following economic conclusion: when both the price and quantity sold of recorded-music products decline, the per-unit compensation of fixed-cost inputs must increase relative to the per-unit compensation of the variable inputs in order to equalize the reduction in the economic returns to the fixed and variable inputs. In the present context, in order to maintain the relative incentives to provide creative and distribution inputs, the relative compensation per recording for inputs in the creative step (including songwriters) must increase. Thus, because record companies have variable as well as fixed costs, while songwriters and artists have only (or largely) fixed costs, a decline in unit sales of each recorded song increases songwriter and artist compensation relative to record company compensation, even if inputs supplied in both steps suffer the same loss per unit input supplied.

**C. Empirical Evidence Supports the Economic Theory**

19. The economic analysis presented above has two predictions. First, to the extent that there is an increase in the supply of alternative methods of distribution (and the market did not respond by spending more in total on distribution), the compensation of songwriters and other inputs used to create a recording should increase relative to the compensation of the inputs used to distribute that recording. Second, since songwriter inputs are fixed costs per recording supplied, their relative compensation must increase in order to maintain the relative incentive to supply those inputs.

20. There is a natural empirical test of these two propositions. Since both recording artist and songwriter inputs are used to create the recording (step one of the vertical

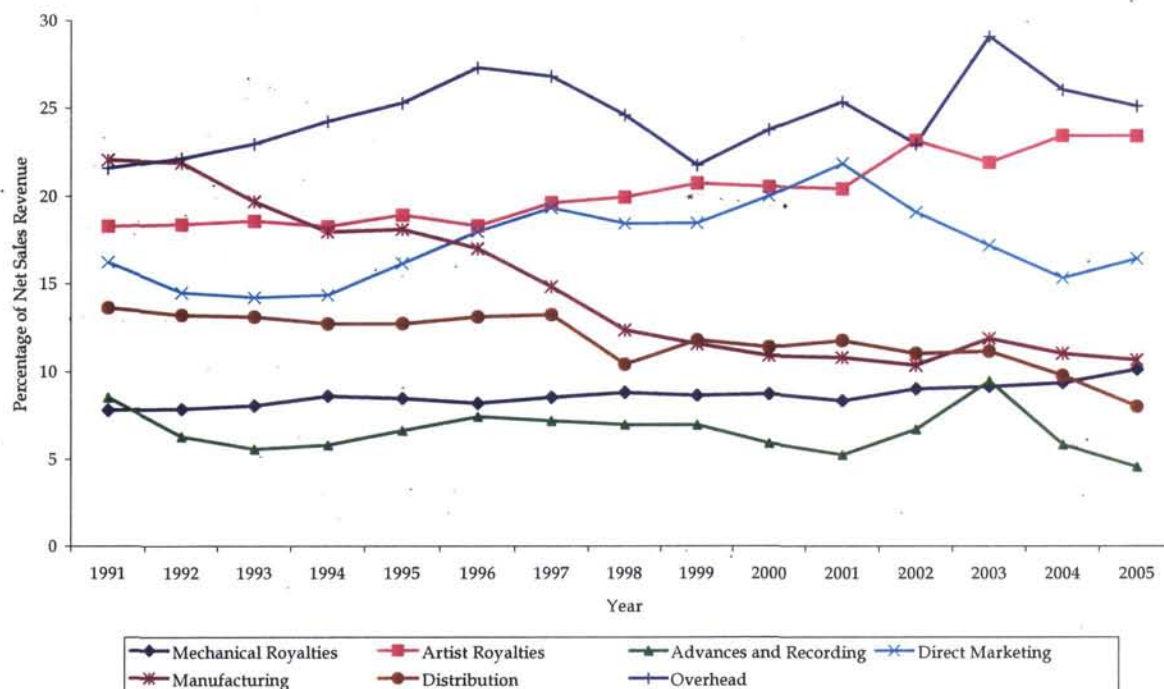


chain), market-determined compensation for both of these creative contributions should be subject to the same market forces. In addition, since the inputs provided by recording artists also have a substantial fixed cost, the market-determined compensations to both recording artists and songwriters should respond similarly to changes in the relative compensation of fixed and variable cost inputs. Thus, the economic analysis that I developed above implies that the market-determined compensation of recording artists is likely to evolve in much the same way as market-determined compensation for songwriters.

21. In fact, empirical evidence shows that both songwriter and recording artist revenues have increased as a fraction of total record company costs in recent years. The RIAA's expert, Linda McLaughlin, provided testimony and offered data on the major record labels' costs from 1991 through 2005 by cost category. Based on her classification of cost categories, these data show that the percentage of the record labels' total costs and net revenue accounted for by inputs contributed in the creation step (mechanical royalties, artist royalties and advances and recording expenditures to acquire the songs and artist talent needed to make a master recording) increased over the period, while the percentage accounted for by other record label functions (direct marketing, manufacturing and distribution) declined. See Figure 1.

**Figure 1**

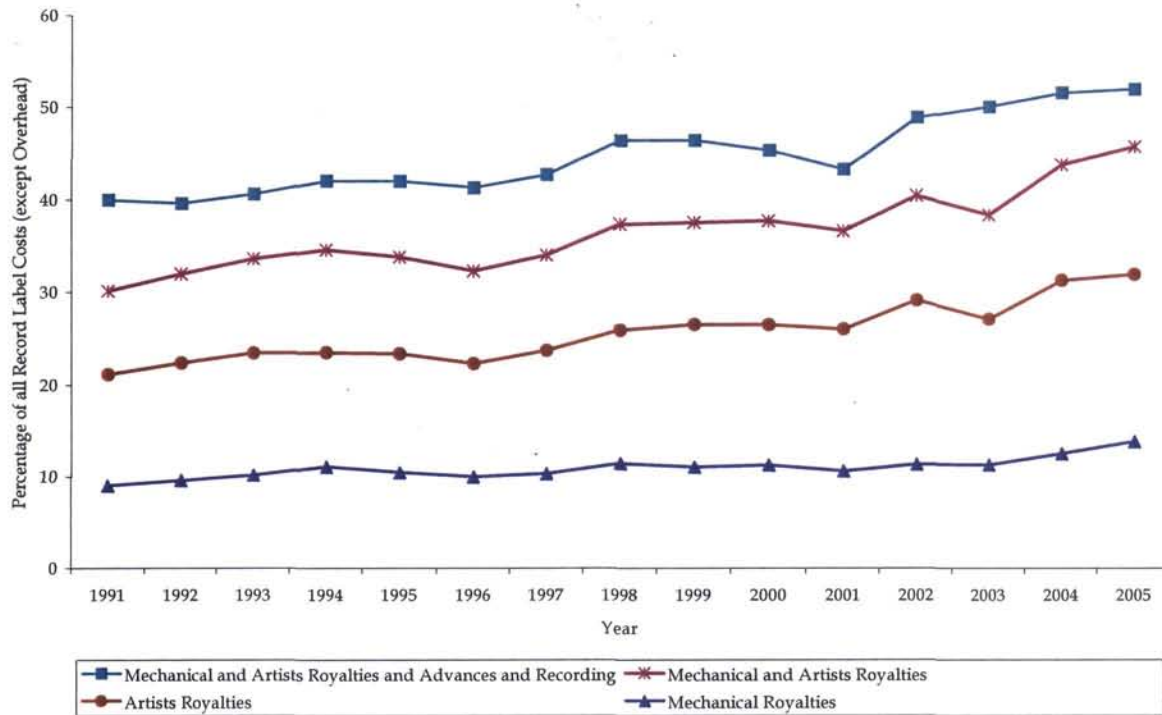
Record Label Costs for Intellectual Property have Increased Relative to Costs of Other Record Label Functions



22. A more relevant calculation is the percentage of total record label costs accounted for by inputs supplied in the two steps in the vertical chain. In these calculations, I exclude overhead costs, because I understand from Ms. McLaughlin's testimony that this is at least partly an allocated cost category and may not reflect true costs to the labels. As shown in Figure 2, both artist and mechanical royalties have increased as a percentage of non-overhead costs, as have the combined costs of royalties and advances and recording. This increase in the fraction of cost accounted for by intellectual property and artistic talents is what I would expect to observe if the more traditional record company functions associated with the production and sale of physical products (the second step in the chain) are less important in the digital world.

**Figure 2**

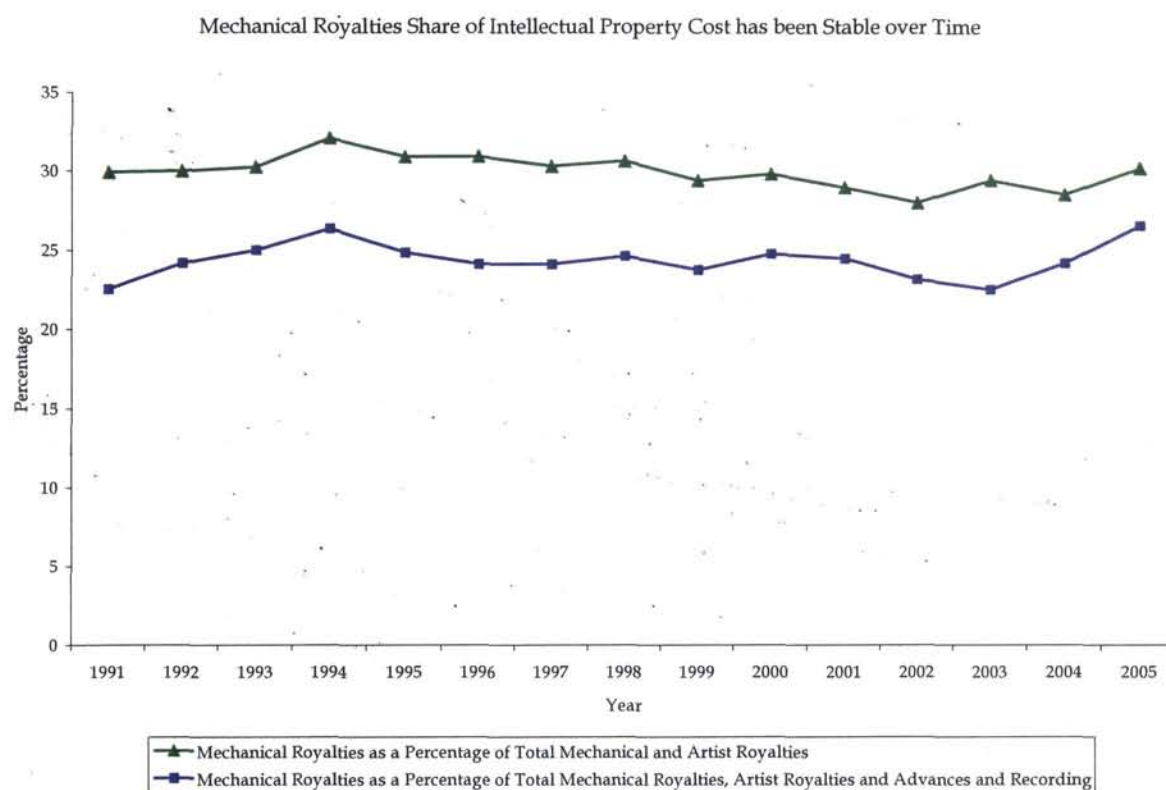
Intellectual Property Costs have Increased as a Percentage of All Record Label Costs



23. The RIAA data submitted by Ms. McLaughlin show further that mechanical royalties, which the record companies claim are excessive and outside their control, have accounted for a fairly constant percentage of total record label payments for artistic inputs (mechanical royalties, artist royalties and advances and recording costs), most of which the record labels negotiate directly with artists. For most of the period 1991-2005, mechanical royalties accounted for about 30 percent of the total payments to songwriters and recording artists (including advances and recording costs), or 25 percent of combined mechanical and artist royalties. See Figure 3.



**Figure 3**



24. The increase in composer and artist compensation as a fraction of total record-label costs shows that Professor Teece's use of a constant percentage of revenue benchmark is inconsistent with the economics of the marketplace for recorded music. Artist royalties, which are set by the market and by the competition among record companies to attract talent, are neither limited nor inflated by a statutory rate, and Ms. McLaughlin's data show that artist royalties have increased substantially as a fraction of total record label costs. This is inconsistent with the logic of Professor Teece's argument, which would imply that artists' royalties should have declined proportionately with record company revenues. In fact, if, as Professor Teece and the RIAA claim, mechanical royalties have been too high, I would have expected a relative decline in payments to artists, since artist and songwriter inputs are used

together in the creation step to create the recording and therefore an excessive price for one would tend to drive down the return to the other. But, in fact, payments to artists and songwriters have increased relative to other record company costs, which is consistent with the economic theory I presented above.

25. The increase in the variety of ways in which consumers can obtain music without much of the traditional contributions of the record companies has not reduced demand for the intellectual property essential to any form in which music is delivered. The consequence is that, as economics predicts, Copyright Owners have obtained a larger fraction of total consumer spending on recorded music, because their contribution has become relatively more important. Similarly, recording artists have obtained a greater fraction of total consumer spending on recorded music.

#### **D. Conclusion and Implications of My Analysis**

26. Even though Copyright Owners may obtain a larger **fraction** of total consumer spending on recorded music, this does not mean that their total compensation is unaffected by the decline in record company sales. As the number of units of recorded music falls, Copyright Owners receive less in mechanical royalties for any given royalty rate, with no corresponding reduction in their costs. Thus, even though the statutory rate is a penny rate and does not adjust up or down with changes in the wholesale price of CDs or digital downloads (as Professor Teece and the RIAA claim it should), Copyright Owners share in any economic decline in the record industry if fewer units are sold.

27. The economic analysis presented above sheds considerable light on how mechanical royalties should be set on a going forward basis. By all accounts, the distribution of recorded music to consumers is undergoing a transformation. Physical distribution methods are losing ground relative to digital distribution methods and this trend is forecasted to continue.

Since changes in the supply of distribution will in general push the market-determined compensation for creation and distribution in opposite directions, setting the statutory rate for compensation of Copyright Owners for their mechanical rights as a fixed percentage of the price of the product sold will not in general provide a reasonable benchmark for the market-determined price of creative inputs. Lower distribution costs would lower product prices but would, all else equal, raise the compensation to creative inputs. However, under a percentage of revenue royalty system, royalties would decline at the same time that the market compensation to creative inputs must rise in order to maintain the supply of songwriting. Such a proportional movement in royalties also would be inconsistent with the historical evidence on the market-determined compensation of the other creative input, recording artists.

**IV. CONTROLLED COMPOSITION CLAUSES IN MANY SINGER/SONGWRITER CONTRACTS ARE NOT A BENCHMARK FOR AN APPROPRIATE STATUTORY MECHANICAL ROYALTY RATE**

28. I understand that many contracts between singer/songwriter recording artists and record companies contain a “controlled composition clause,” under which an artist agrees to limit in some way the mechanical royalties that the record company will pay for the songs the singer/songwriter records. This provision does not obligate other songwriters to agree to the use of his or her songs for such a recording at the reduced rate, but only binds the singer-songwriter.

29. I reviewed the 86 EMI artist contracts (excluding amendments and options) produced in this proceeding, the earliest of which is Frank Sinatra’s 1953 recording contract and the most recent of which is Mandisa’s January 2007 contract. I focused my review on the artist contracts that contain a controlled composition clause and that were executed since 1999 (the year in which the changes in the industry discussed above and in Professor Teece’s



report began).<sup>2</sup> I find that these contracts contain two provisions related to the controlled composition clause that affect the mechanical royalties paid by the record company:<sup>3</sup>

- The rate for the mechanical license for a particular song: in all contracts that contain this provision, the rate for the mechanical license is denominated as a percentage of the statutory rate, and is not set independently of the statutory rate in effect on a particular date;
- The maximum number of songs for which a mechanical royalty is paid: most recent contracts specify that mechanical royalties will be paid on a maximum of 10-12 songs per album.

30. I have been asked to consider whether controlled composition clauses provide economic evidence that is relevant to determining the appropriate statutory mechanical rate. I conclude that they do not, because these artist contracts contain many other provisions related to artist compensation and obligations. Given the complexity of these contracts and the variety of different ways in which an artist can obtain compensation for a recording, it is not appropriate to focus only on one contract provision as evidence of a negotiated mechanical royalty rate in a free-market setting. Both parties to the contract, the record company and the artist, care more about the total amount of compensation paid than they care about the allocation of that compensation to the various services provided by the artist. In the context of the negotiations between an artist and its record company, market forces determine the total

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<sup>2</sup> I look only at original contracts, and not amendments or options that the record companies decided to execute.

<sup>3</sup> The contracts include a variety of other provisions as well. For example, some contracts specify a different (lower) rate for mid-priced and budget records; some include provisions under which the mechanical royalty is increased if certain sales volume targets are achieved or if the artist also uses an EMI music publisher. Many contracts also specify that mechanical royalties are paid on "Net Sales," where this term is defined as a certain percentage of gross sales.

compensation package. This is true of many contracts. For example, the fact that employers provide “free” or subsidized health insurance to their employees does not imply that the “true” market price for health insurance is the price paid by the employee. Both the employer and the employee realize that the total compensation package, including wages and benefits, is what matters to both parties.

31. Even if controlled composition clauses were relevant to setting a statutory mechanical rate, they do not support the claims of Professor Teece and the RIAA that the statutory rate today is out of line with historical rates. If this were true, I would expect the gap between the mechanical royalty rates established in controlled composition clauses and the statutory rate to have increased over time. This is because as the statutory rate has increased, the percentage rates in controlled composition clauses would theoretically need to adjust downward in order to reduce the actual rate to the market level that the RIAA claims is appropriate. My review of the EMI contracts, however, has produced no evidence of such an increasing divergence. Since 1999, the controlled composition rate for top-line or full-price recordings has been either 75 or 100 percent of the statutory rate in all the contracts provided by EMI.<sup>4</sup>

32. Alternatively, record companies could adjust to the changes in the statutory rate by reducing the cap on the number of songs for which they will pay mechanical royalties. Once again, the EMI contracts do not bear this out. Instead, the contracts show that the number of compositions for which a mechanical royalty will be paid has not declined in a way that would reduce the controlled rate relative to the statutory rate.<sup>5</sup>

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<sup>4</sup> A small number of contracts provides for a percentage between 75 and 100 if certain volume targets are achieved.

<sup>5</sup> The relevance of the cap will depend on the number of tracks on the CD. The contracts during this period typically specify that the artist must deliver an album with a minimum and maximum number of tracks, where the minimum is lower than the cap.

33. Finally, I understand that testimony during the direct phase of this proceeding showed that songwriters who are not subject to controlled composition clauses may nonetheless agree to controlled rates when their songs will be featured on albums by artists whose contracts contain such clauses.<sup>6</sup> However, the fact that songwriters enter into such agreements is not evidence that the statutory mechanical rate exceeds the market rate. Basic economic theory dictates that, even in a marketplace in which prices are mandated to be below the market-clearing level, some suppliers will be willing to engage in transactions below the free-market price. This is because sellers differ in their willingness to sell. What characterizes a market-clearing price is that sellers are willing to supply the entire market demand at that price, not that all sellers will supply at no lower price.<sup>7</sup>

## V. CONCLUSION

34. Based on economic theory and my review of the evidence, I conclude that the decline in sales and prices of CDs does not mean that there should be a corresponding reduction in the statutory mechanical rate. I also conclude, based on my review of EMI contracts, that controlled composition clauses do not provide an appropriate benchmark for determining the statutory mechanical royalty rate.

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<sup>6</sup> See, e.g., 1/28/08 Tr. at 209:22 – 212:4 (Carnes).

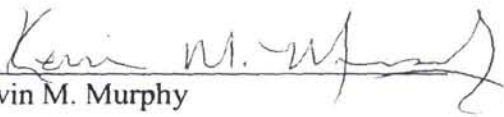
<sup>7</sup> The classical analysis of the impact of price controls provides a simple example of this principle (see, e.g., M. Friedman and G. J. Stigler, “Roofs or Ceilings? The Current Housing Problem,” published by Foundation for Economic Education in “Popular Essays on Current Problems” series, September 1946).



***Declaration***

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: April 3, 2008

  
Kevin M. Murphy

### **Errata to the Expert Report of Kevin Murphy**

The last sentence of paragraph 19 on page 8 reads: "Second, since songwriter inputs are fixed costs per recording supplied, their relative compensation must increase in order to maintain the relative incentive to supply those inputs."

That sentence should instead read: "Second, since songwriter inputs are fixed costs per song supplied, their relative compensation must increase in order to maintain the relative incentive to supply those inputs."





## *Curriculum Vitae*

### **Kevin M. Murphy**

March 2008

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#### **Education**

University of California, Los Angeles, A.B., Economics, 1981  
University of Chicago, Ph.D., 1986  
Thesis Topic: *Specialization and Human Capital*

#### **Honors and Awards**

2007: Kenneth J. Arrow Award (with Robert H. Topel)  
October 2005: Garfield Research Prize (with Robert H. Topel)  
September 2005: MacArthur Foundation Fellow  
1998: Elected to the American Academy of Arts & Sciences  
1997: John Bates Clark Medalist  
1993: Fellow of The Econometric Society  
1989 – 1991: Sloan Foundation Fellowship, University of Chicago  
1983 – 1984: Earhart Foundation Fellowship, University of Chicago  
1981 – 1983: Fellowship, Friedman Fund, University of Chicago  
1980 – 1981: Phi Beta Kappa, University of California, Los Angeles  
1980 – 1981: Earhart Foundation Fellowship, University of California, Los Angeles  
1979 – 1981: Department Scholar, Department of Economics, University of California, Los Angeles

**Other Affiliations** Faculty Research Associate, National Bureau of Economic Research

#### **Research and Academic Positions**

July 2005: Present: George J. Stigler Distinguished Service Professor of Economics,  
Department of Economics and Graduate School of Business, University of Chicago  
2002: George J. Stigler Professor of Economics, Department of Economics and Graduate

School of Business, University of Chicago

1993 – 2002: George Pratt Shultz Professor of Business Economics and Industrial Relations, University of Chicago

1989 – 1993: Professor of Business Economics and Industrial Relations, University of Chicago

1988 – 1989: Associate Professor of Business Economics and Industrial Relations, University of Chicago

1986 – 1988: Assistant Professor of Business Economics and Industrial Relations, University of Chicago

1983 – 1986: Lecturer, Graduate School of Business, University of Chicago

1982 – 1983: Teaching Associate, Department of Economics, University of Chicago

1979 – 1981: Research Assistant, Unicon Research Corporation, Santa Monica, California

### Selected Publications

#### Books

Social Economics: Market Behavior in a Social Environment with Gary S. Becker, Cambridge, MA: Harvard University Press (2000).

Measuring the Gains from Medical Research: An Economic Approach edited volume with Robert H. Topel, Chicago: University of Chicago Press (2003).

#### Articles

“Government Regulation of Cigarette Health Information,” with Benjamin Klein and Lynne Schneider, 24 *Journal of Law and Economics* 575 (1981).

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- "Industrialization and the Big Push," with Andrei Shleifer and Robert W. Vishny, 97 *Journal of Political Economy* 1003 (1989).
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- "Efficiency Wages Reconsidered: Theory and Evidence," with Robert H. Topel, in *Advances in the Theory and Measurement of Unemployment*, pp. 204-240. ed. Yoram Weiss and Gideon Fishelson. London: Macmillan, (1990).
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- "Human Capital, Fertility, and Economic Growth," with Gary S. Becker and Robert F. Tamura, 98 *Journal of Political Economy*, S12 (1990).
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- "The Role of International Trade in Wage Differentials," with Finis Welch, in *Workers and Their Wages: Changing Patterns in the United States*, pp. 39- 69, ed. Marvin Koster. Washington, D.C.: American Enterprise Institute (1991).
- "Why Has the Natural Rate of Unemployment Increased over Time?" with Robert H. Topel and Chinhui Juhn, 2 *Brookings Papers on Economic Activity* 75 (1991).
- "The Allocation of Talent: Implications for Growth," with Andrei Shleifer and Robert W. Vishny, 106 *Quarterly Journal of Economics* 503 (1991).
- "Rational Addiction and the Effect of Price on Consumption," with Gary S. Becker and Michael Grossman, 81 *American Economic Review* 237 (1991).
- "Wages of College Graduates," in *The Economics of American Higher Education*, pp. 121-40, ed. William E. Becker and Darrell R. Lewis. Boston: Kluwer Academic Publishers (1992).
- "Changes in Relative Wages, 1963-1987: Supply and Demand Factors," with Lawrence F. Katz, 107 *Quarterly Journal of Economics* 35 (1992).

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**EXHIBIT B**  
**DOCUMENTS CONSIDERED BY PROFESSOR MURPHY**

1. Written Direct Statement of National Music Publishers' Association, Inc., et al. (November 30, 2006).
2. Introductory Memorandum of The Recording Industry Association of America, Inc. (November 30, 2006).
3. Introductory Memorandum of The Digital Media Association ("DiMA") et al. (April 10, 2007).
4. *Amended Expert Report of William M. Landes on behalf of NMPA et al.* (October 29, 2007).
5. Deposition of William M. Landes
6. Hearing testimony of William M. Landes, February 7 and 11, 2008.
7. Testimony of Professor David J. Teece, November 30, 2006.
8. Deposition of David J. Teece, October 11, 2007.
9. Hearing testimony of David J. Teece, February 19, 2008.
10. Testimony of Linda McLaughlin, November 30, 2006.
11. Deposition of Linda McLaughlin, October 8, 2007.
12. Hearing testimony of Linda McLaughlin, February 13, 2008
13. Testimony of Cary H. Sherman, November 30, 2006.
14. Testimony of Margaret Guerin-Calvert, November 30, 2006.
15. Deposition of Margaret Guerin-Calvert, October 3, 2007.
16. Hearing testimony of Margaret Guerin-Calvert, February 13, 2008.
17. Testimony of Richard Boulton, November 28, 2006.
18. Hearing testimony of Richard Carnes, January 28, 2008.
19. IFPI Digital Music Report 2008.
20. Exhibits COA 0009 and COA 0010.
21. CO Trial Ex. 41.
22. RIAA 0003518-3543.
23. RIAA 0004260-4303.
24. RIAA 0017380-7487.
25. RIAA 0017546-7610.
26. RIAA 0017488-7545.
27. RIAA 0045314-5348.
28. RIAA 0045349-5401.
29. RIAA 0045261-5313.
30. EMI contracts (see attached list)

Exhibit B - Continued

RIAA Artist Contracts					
	Date	Artist	RegNo	EndNo	Record Company
1	4/1/1953	Frank Sinatra	RIAA 0004872	RIAA 0004914	Capitol
2	3/23/1953	Hank Mobley	RIAA 0003704	RIAA 0003724	Blue Note
3	9/3/1957	Lee Morgan	RIAA 0003970	RIAA 0003974	Blue Note
4	2/29/1960	Horace Parlan Jr.	RIAA 0003723	RIAA 0003735	Blue Note
5	6/28/1961	The Lettermen	RIAA 0006237	RIAA 0006282	Capitol
6	5/1/1962	Glen Campbell	RIAA 0004650	RIAA 0004671	Capitol
7	7/16/1962	The Beach Boys	RIAA 0004409	RIAA 0004532	Capitol
8	11/15/1965	Lee Morgan	RIAA 0003975	RIAA 0003978	Blue Note
9	9/11/1969	Wayne Shorter	RIAA 0004236	RIAA 0004259	Blue Note
10	7/28/1970	Helen Reddy	RIAA 0005102	RIAA 0005136	Capitol
11	8/31/1971	Lou Donaldson	RIAA 0003979	RIAA 0003981	Blue Note
12	5/25/1972	Grand Funk Railroad	RIAA 0004915	RIAA 0005064	Capitol
13	10/27/1972	Donald Byrd	RIAA 0003612	RIAA 0003622	United Artists Records
14	10/29/1974	Bobby Hutcherson	RIAA 0003321	RIAA 0003345	United Artists Records
15	11/15/1974	Horace Silver	RIAA 0003736	RIAA 0003774	United Artists Records
16	9/9/1977	Peabo Bryson	RIAA 0005862	RIAA 0005935	Capitol
17	3/20/1979	Barry McGuire	RIAA 0004393	RIAA 0004407	Sparrow Records
18	4/9/1979	John Talbot	RIAA 0006911	RIAA 0006925	Sparrow Records
19	10/6/1980	Scott Wesley Brown	RIAA 0006885	RIAA 0006896	Sparrow Records
20	10/14/1981	Steve Miller	RIAA 0006102	RIAA 0006160	Capitol
21	4/14/1983	Tina Turner	RIAA 0006283	RIAA 0006360	Capitol
22	11/1/1984	Twila Paris	RIAA 0007105	RIAA 0007123	Starsong Records
23	12/6/1984	Katrina and the Waves	RIAA 0005257	RIAA 0005355	Capitol
24	2/27/1985	Kenny Burrell	RIAA 0003994	RIAA 0003969	Manhattan Records (Capitol)
25	12/13/1985	(Anthony) Tony Williams	RIAA 0004179	RIAA 0004235	Manhattan Records (Capitol)
26	12/20/1985	Bobby McFerrin	RIAA 0003346	RIAA 0003413	Manhattan Records (Capitol)
27	4/28/1986	Don Pullman Quartet	RIAA 0003560	RIAA 0003611	Manhattan Records (Capitol)
28	6/23/1986	Great White	RIAA 0005065	RIAA 0005095	Capitol
29	5/22/1985	Heart	RIAA 0005096	RIAA 0005101	Capitol
30	7/8/1986	Megadeth	RIAA 0005409	RIAA 0005516	Capitol
31	7/9/1986	Richard Marx	RIAA 0004100	RIAA 0004178	Manhattan Records (Capitol)
32	6/1/1988	Tramaine Hawkins	RIAA 0007067	RIAA 0007074	Sparrow Records
33	6/23/1988	M.C. Hammer (Kirk Burrell)	RIAA 0005356	RIAA 0005408	Capitol
34	9/15/1988	Elaine Elias	RIAA 0003623	RIAA 0003677	Blue Note
35	12/1/1988	Michael Card	RIAA 0004783	RIAA 0004790	Sparrow Records
36	3/1/1989	Susan Rae Hill	RIAA 0006904	RIAA 0006910	Sparrow Records
37	10/10/1989	John Scofield	RIAA 0003912	RIAA 0003933	Blue Note
38	12/5/1989	Benny Green	RIAA 0003277	RIAA 0003291	Blue Note
39	11/1/1990	Steve Green	RIAA 0006897	RIAA 0006903	Sparrow Records
40	3/15/1991	Richard Smallwood	RIAA 0006842	RIAA 0006854	Sparrow Records
41	4/15/1991	Jimmy Abegg (Jimmy A)	RIAA 0006722	RIAA 0006734	Sparrow Records
42	11/1/1991	Joe Lovano	RIAA 0003823	RIAA 0003874	Blue Note
43	9/9/1992	Carman Liccardello	RIAA 0006448	RIAA 0006542	Liberty Records
44	12/12/1992	Cassandra Wilson	RIAA 0003414	RIAA 0003517	Blue Note
45	6/1/1993	Jaron Jackson	RIAA 0003810	RIAA 0003822	Blue Note
46	3/21/1994	Spearhead	RIAA 0005517	RIAA 0005594	Capitol
47	6/29/1994	Everclear	RIAA 0004723	RIAA 0004779	Capitol
48	1/1/1995	The Newsboys	RIAA 0006791	RIAA 0006817	Jubilee Communications
49	4/1/1995	Diane Reeves	RIAA 0003544	RIAA 0003559	Blue Note
50	4/12/1995	John Hiatt	RIAA 0005178	RIAA 0005256	Capitol
51	10/20/1995	The Jesus Lizard	RIAA 0006161	RIAA 0006236	Capitol
52	1/31/1995	Mark Linkous (Sparklehorse)	RIAA 0006035	RIAA 0006101	Capitol
53	9/1/1996	DC Talk	RIAA 0006543	RIAA 0006620	Virgin Records America
54	11/11/1996	Steven Curtis Chapman	RIAA 0006855	RIAA 0006884	Sparrow Records
55	10/1/1997	Delirious?	RIAA 0006621	RIAA 0006655	Sparrow Records
56	10/1/1997	Nichole Nordeman	RIAA 0006818	RIAA 0006841	Jubilee Communications
57	6/19/1998	Joe Lovano	RIAA 0003875	RIAA 0003878	Blue Note
58	10/1/1999	Twila Paris Wright	RIAA 0007075	RIAA 0007104	Sparrow Records
59	4/10/2001	Ok Go	RIAA 0005687	RIAA 0005761	Capitol
60	1/5/2001	Norah Jones	RIAA 0003962	RIAA 0004065	Blue Note
61	4/24/2001	OTEP	RIAA 0005762	RIAA 0005861	Capitol
62	7/6/2001	Aaron Spiro	RIAA 0006361	RIAA 0006392	Sparrow Records
63	9/17/2001	Bill Chazlap	RIAA 0003292	RIAA 0003320	Blue Note
64	8/2/2002	Fisherspooner	RIAA 0004780	RIAA 0004858	Capitol
65	3/4/2003	Annie Stela	RIAA 0004340	RIAA 0004408	Capitol
66	4/30/2003	Wynston Marsalis	RIAA 0004260	RIAA 0004303	Blue Note
67	5/2/2003	Shelby Lynne	RIAA 0005972	RIAA 0006034	Capitol
68	10/7/2003	Amos Lee	RIAA 0003209	RIAA 0003276	Capitol
69	6/20/2004	Morningwood	RIAA 0005595	RIAA 0005686	Capitol
70	1/9/2004	Raul Szterling	RIAA 0004056	RIAA 0004099	Manhattan Records (Capitol)
71	1/8/2004	Eric Darius	RIAA 0003678	RIAA 0003703	High Octave Music
72	6/8/2005	Jeremy Camp	RIAA 0006689	RIAA 0006721	Tooth and Nail
73	7/6/2005	Bella Liza	RIAA 0004304	RIAA 0004339	Capitol
74	7/34/2005	Reeve Oliver	RIAA 0005936	RIAA 0005971	Capitol
75	11/3/2005	The Colour	RIAA 0006926	RIAA 0006968	EMI Christian Music Group
76	1/20/2005	Edison	RIAA 0006656	RIAA 0006688	EMI Christian Music Group
77	5/24/2006	Charles Tolliver	RIAA 0003518	RIAA 0003543	Blue Note
78	5/30/2006	This Beautiful Republic	RIAA 0006969	RIAA 0007017	Forefront Records
79	5/30/2006	Jason Moran	RIAA 0003775	RIAA 0003809	Blue Note
80	7/24/2006	Joe Lovano	RIAA 0003879	RIAA 0003911	Blue Note
81	7/24/2006	Brittany Waddell	RIAA 0006408	RIAA 0006447	Sparrow Records
82	8/1/2006	Interpol	RIAA 0005137	RIAA 0005177	Capitol
83	12/4/2006	TobyMac	RIAA 0007018	RIAA 0007066	Forefront Records
84	1/1/2007	Mandisa	RIAA 0006735	RIAA 0006782	EMI Christian Music Group