

## BLACK OR WHITE

The traditional view of peer-to-peer music sharing has been one of illegality. Namely, that peer-to-peer file sharers are nothing more than pirates, infringing copyrights and stealing revenue<sup>1</sup>. Furthermore, the entire online arena is nothing more than a traditional black market. There is another point of view, however. This view takes the traditional free rider problem rational and uses it to explain the loss of revenue by the RIAA (recording industry of America). If one adopts this view then the loss of revenue incurred by the music industry is actually there own fault.

### I. TRADITIONAL VIEW

#### A. Online music sharing is an abatement of property rights and as such illegal; it is a traditional black market.

Private property is defined as: an individual's rights to the use of the resources he owns are exclusive and voluntarily transferable.<sup>2</sup> Peer-to-peer music sharing interferes not only with the exclusive use but also the voluntary transferability of the goods.

Peer-to-peer music sharing interferes with the exclusive use of the resources because other individuals are using the owners resources and do not have the owners explicit permission to do so. Let us assume you have a lawn mower, a piece of private property. As such you have the exclusive use of that item; i.e. only you can use it. Let us further assume your neighbor comes along and uses your lawnmower whenever he wants without your permission. He has violated your private property rights. Music sharing works the same way. The owner of the music is the

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<sup>1</sup> <http://www.riaa.com/issues/music/default.asp>

<sup>2</sup> Coase, Ronald H., "The Problem of Social Cost," *Journal of Law and Economics*, October 1960, 3, 1-44

individual who has created the work; the copyright owner.<sup>3</sup> He has the exclusive right to grant a license to reproduce, distribute, perform, or display the copyrighted work and to obtain a royalty for granting the right.<sup>4</sup> When an individual downloads music he violates these rights. Music downloading also violates the right of voluntary transferability.

Private property is voluntarily transferable. This means that it is up to the owner of the property to decide when, how, and if he wants to transfer his property. Using our previous example you have the right to sell or lend your lawnmower to whomever you choose. Let us again assume that your annoying neighbor comes along and instead of using it himself he lends it to another annoying neighbor; your property has been involuntarily transferred to another individual. This right of voluntary transferability is also built into the copyright scheme. The owner of the copyright has the exclusive right to either transfer the entire copyright or grant a license for reproduction of the good<sup>5</sup>. Downloading music violates this right because the copyright owner has not consented towards the transfer of his property and has no control over the dissemination of his property. Private property has harked on these two points because without these two fundamental rights there would be no incentive for investment in innovation.

Exclusive use and voluntary transferability are necessary for investment because they create stability. By assuring these two rights an investor has a sense of stability; he knows which rules

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<sup>3</sup> copyright protection attaches to the stated subject matter when an original work of authorship is fixed in any tangible medium of expression.

**Stanley M. Besen; Leo J. Raskind.**, "An Introduction to the Law and Economics of Intellectual Property," *The Journal of Economic Perspectives*, Vol. 5, No. 1 (Winter 1991) 11, 3-27

<sup>4</sup> *Id.* 14

<sup>5</sup> *id*

apply and what the outcome of those rules will be. If similar products can be cloned or private copying by individuals is widespread the rules of the game change and stability is lost<sup>6</sup>.

For example:

You are investor A

There are 10x

And x grows by a factor of 2 every year for 3 years.

Let us assume that demand also grows by a factor of 2 every year and the initial demand is also for 10x.

Thus the investor knows that in the first year 10x will be sold, in the 2<sup>nd</sup> year 20x will be sold, and in the 3<sup>rd</sup> year 40x will be sold.

If, however, copies can easily be made, i.e. there are no or weak property rights, this certainty is gone and the following is likely to occur:

- 1) the amount of x can no longer be calculated because it is no longer in the hands of the producer but in the hands of various individuals and furthermore the motivation of these individuals is different than the producer; i.e. not all of them seek to maximize profit.
- 2) Since x, the supply in the system, is variable so to will demand. Since demand is correlated to supply and thus determines price one will be unable to determine the optimal price of a system.

This situation is what is commonly called a black market.

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<sup>6</sup> *id* 5

In a traditional black market scenario any change in supply will divert supply to or from the official market, with a corresponding shift in demand.<sup>7</sup>; i.e. black market demand is directly correlated to black market supply. For example:

A needs 10x

There is 15x in our system.

Y= the amount in the official system

15-Y= amount in black market

Thus every unit lost in the official market is one unit gained in the black market.

Assuming that the black market costs less than the official market and A has no inhibitions towards black market goods A will purchase 10x from the black market as long as 10x is available. For every unit under 10x available in the black market A will have to purchase that in the regular market.

**B. Music file sharing is not a traditional black market because there is no direct correlation between supply in the official market and the black market.**

Using our previous example:

A needs 10x.

Y= the amount in the official system

Z= amount in black market

Notice the difference:

- 1) There is no longer a fixed supply; i.e. there can be an infinite number of x in our system.

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<sup>7</sup> page 219  
*The Theory of Black Market Prices* Emre Gonesay  
*Economica*, New Series, Vol. 33 No. 130; 219 - 225,

2) There no longer is a correlation between the black market and the official market in terms of supply.

Even this system, however, can be classified as a black market; in fact it is the most optimal black market. What makes peer-to-peer file sharing different from a traditional black market are the results. If our previous assumption holds true, that A has no inhibitions towards purchasing goods on a black market, then the official market should cease to exist and the price of x should drop down to zero. This, however, has not occurred and thus peer-to-peer file sharing is not a black market.

### **1. The X-efficiency construct**

**The behavior of music downloaders can only be understood if we look at their personalities.**

X-efficiency was created by Leibenstein to supercede the limitations of neo-classical thought. Leibenstein wanted to portray a more complex man; one whose economic choices were influenced by his personality and not just simply by utility maximization.<sup>8</sup> The axiom of selective rational asserts that individuals choose the extent to which they deviate from maximizing behavior, with the degree of deviation determined by the personality of the individual and the economic context.<sup>9</sup> Thus, an individual's economic choices are not just

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<sup>8</sup> The view behind this paper is that although Neoclassical micro theory works some of the time, there are areas of experience to which it is not applicable. As a consequence it is desirable to develop models, which are more general than the neoclassical framework, which fit economic realities, and into which the neoclassical framework fits as a special case.

**Leibenstein, Harvey**, "On the Basic Proposition of X-Efficiency Theory," *American Economic Review Proceedings*, May 1978, 68, 328-34.

<sup>9</sup> **Leibenstein, Harvey**, "X-Efficiency: From Concept to Theory," *Challenge*, September/October 1979, 22, 13 – 22.

simply a factor of utility maximization but that his personality also plays a role. Leibenstein defined personality in terms of : b) a taste for responsiveness to opportunities and constraints w/ in certain standard of behavior and c) a simultaneous taste for ‘irresponsible’ or ‘unconstrained’ behavior.<sup>10</sup> Our personality then is in essence a Hobsonian dilemma between security and freedom; on one hand we want security and stability but on the other hand we want to be unrestrained and free. We are in essence a self-regulating machine; our social side tempers our wealth maximization behavior.<sup>11</sup> As such the problem of peer-to-peer music sharing will be self regulating if all parties follow a social agreed upon system of justice; i.e. there are no free-riders.

## II. THE FREE-RIDER PROBLEM

**The losses of the music industry, and the corresponding “illegality” of peer-to-peer music sharing, is due to the music industries free ridding off of the general public.**

### 1. The advent of the Internet has turned music into a “public good”.

In order for there to be a free rider problem there must be a public good.<sup>12</sup> A public good is defined as: “any good such that, if any person  $X_i$  in a group of  $X_1, \dots, X_i, \dots, X_n$  consumes it, it cannot feasibly be withheld from others in that group.”<sup>13</sup> For example:

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<sup>10</sup> **Leibenstein, Harvey**, “A Branch of Economics is Missing: Micro-Micro Theory,” *Journal of Economic Literature*, June 1979, 17, 477-502.

<sup>11</sup> An individual’s attentiveness to opportunities for gains and to constraints that can impose losses depends on his personality and on the economic context. That is, there is selective rationality rather than maximizing (or minimizing) behavior.

**Leibenstein, Harvey**, “On the Basic Proposition of X-Efficiency Theory,” *American Economic Review Proceedings*, May 1978, 68, 328-34.

<sup>12</sup> **927 Gerald Marwell; Ruth E. Ames**, “Experiments on the Provision of Public Goods. II. Provision Points, Stakes, Experience, and the Free-Rider Problem,” *The American Journal of Sociology*, Vol. 85, No. 4 (Jan., 1980), 926 – 937

<sup>13</sup> *id* 927

A, B, C own a house.

A decides to mow the lawn.

$X_i = A$

The group ( $X_1 \dots X_n$ ) consists of three people ( $X_3$ ): A, B, C

The public good is a mowed lawn.

A's enjoyment of the benefit, e.g. running through it, does not prevent B and/or C from doing the same or enjoying it in another matter.

Let us apply this to peer-to-peer music sharing:

A owns a CD and shares it with B and C

$X_i = A$

The group ( $X_1 \dots X_n$ ) consists of three people ( $X_3$ ): A, B, C

The public good is happiness derived from listening to the CD.

By A listening to the CD it prevents neither B nor C from listening to it.

Prior to the Internet music was not a public good, or more precisely the fiction of music not being a public good could be sustained. Prior to the Internet the consumption of the good, i.e. A buying a CD, allowed that good, the CD, to be withheld from B and C. Even if A gave the CD to B or C, he no longer possessed it and thus it was feasibly withheld from him. The Internet, however, changed this. The consumption of the good by A, no longer prevents B or C from enjoying it because A can simply share it online. When A shares it in this manner he still possesses the copy and at the same time B and C have a copy of it. Thus, the Internet no longer made it feasible to withhold music, and as such music became a public good.

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## **2. Since music has become a public good a traditional free rider problem has been created.**

The free-rider hypothesis states: except under certain specifiable conditions the provision of public goods either will not occur at all or will be suboptimal. The group will provide either no public good at all or less than it would provide if it were a single individual making an economic decision on how to act under the same circumstances.<sup>14</sup> To better understand this concept one must view the music industry and peer-to-peer music downloaders as two firms. Basic economics tells us that if you cut output, i.e. diminish supply, and demand remains constant, then price will increase. This leaves our two hypothetical firms, A and B, with four options:

- 1) A or B unilaterally cuts output
- 2) Neither cuts output and the status quo remains.
- 3) Both cut output and both enjoy a reciprocal price gain
- 4) One cuts output while the other does not

These are listed in terms of profitability for companies A and B; 1 is the least profitable while 4 is the most profitable. A can unilaterally cut output but it knows that if it does this the increase in profit will be very small, because B will maintain its output. A or B is much better off waiting for the other to cut its output and leaving its own output unchanged; i.e. free ride off of the increased price. If both A and B think this way then scenario 2 occurs, neither slash output, and no public good is created, i.e. price is not increased. This is our traditional free rider problem. One can use this theory to explain the losses of the music industry.

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<sup>14</sup> *id* 927



Before we address the similarities of the two systems a key difference must be addressed. The interesting component of the music downloading scenario is that there are two, mutually exclusive public goods. The music industry believes that the public good is higher prices while the individual downloaders believe that it is lower prices. As a result the music industry will slash output, as it has done, while individual downloaders will increase output, as they have done. The result will be less revenue for the music industry because if a company reduces their outputs while its competitor's supply remains stagnant profits for the first company will decline do to reduced sales.<sup>15</sup> The music industry thus blames its lost revenue on music downloaders because they have illegally increased supply and not allowed the music industry to increase their revenue. The downloaders reply that if the music industry had not cuts its supply it would not have suffered any harm and thus the harm that has been inflicted is do to the greed of the music industry and not piracy by music downloaders.

### **III. THE NUMBERS**

#### **A. The RIAA case**

**The RIAA believes that the harm caused is due to music piracy.**

From 2000 to 2001 the number of cd units shipped dropped from 942.5 to 881.9 a change of 6.41%<sup>16</sup>. CD units shipped continued to decline in 2002 going from 881.9 in 2001 to just 803.3 in 2002 a drop of 8.9%.<sup>17</sup> As a result from 2000 to 2001 there was a 2.3% loss in sales of

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<sup>15</sup> *id* 927

<sup>16</sup> The Recording Industry of Association of America's 2002 Yearend Anti-Piracy Statistics  
*see supplement page 2*

<sup>17</sup> The Recording Industry of Association of America's 2002 Yearend Statistics  
*see supplement page 1*

cds (13,214.5 to 12,909.4) and this trend continued in 2002 further dropping CD sales to 12,044 a loss of 6.7% from 2001.<sup>18</sup> The RIAA claims that this loss is primarily a result of piracy.

In 2001 there were 121,939 counterfeit / pirate CDs while in 2002 the number jumped to 246,452 an increase of 102.1%.<sup>19</sup> There were 2,795,693 counterfeit/Pirate CD-Rs in 2001 and this number jumped to 5,298,368 a 89.5% change<sup>20 2</sup>. The RIAA believes that these statistics are a clear indication of the harm created by piracy. Furthermore the RIAA is claiming a loss of 4 billion dollars do to piracy: “Global piracy on the physical side costs the recording industry over \$4 billion\* a year. That doesn't even include losses on-line. While the physical piracy problem is not new, our markets continued to expand. Now that consumer purchasing is threatened as well, the impact of all piracy is greater.”<sup>21</sup> If one looks at the economic situation and the numbers a little closer, however, one can find a milieu of different reasons why sales dropped by the percentage that they did.

**B. The decline in sales, as alluded to before, is do to a cut in production.**

Previously we hypothesized that the reason there was a decline in sales was do to a free rider problem; i.e. the music industry cut production while the online market increased it. The

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<sup>18</sup> The Recording Industry of Association of America's 2002 Yearend Statistics  
*see supplement page 1*

<sup>19</sup> The Recording Industry of Association of America's 2002 Yearend Anti-Piracy Statistics  
*see supplement page 2*

<sup>20</sup> The Recording Industry of Association of America's 2002 Yearend Anti- Piracy Statistics  
*see supplement page 2*

<sup>21</sup> [www.azoz.com/music/features/0008.html](http://www.azoz.com/music/features/0008.html)

numbers bare this out. In 1999 the music industry released 38900 new releases but in 2000 and 2001 they cut that number by 12,000 releasing only 27,000 in each year.<sup>22</sup>

### **C. The Great Pink Elephant**

#### **1. The RIAA's piracy numbers do not support a 4 billion dollar loss.**

Even if we take the piracy numbers as they are for 2001 and add Counterfeit/Pirate CDs (121,939)<sup>23</sup> with Counterfeit/ Pirate CD-Rs (2,795,693)<sup>24</sup> and multiple these by the average cost of a cd (\$14.23)<sup>25</sup> you only get \$41,517,903 for 1991 and using a similar calculation you come up with 78,902,789 for 2002. Maybe we should look at different numbers.

#### **2. The CD single numbers do not correlate to the RIAA's 4 billion dollar loss.**

If we assume what people download from the internet is equivalent to CD singles and even if we use the highest grossing year for CD singles 1997 at 272.7<sup>26</sup> million it would still take around 20 years for this number to equal 4 billion. So where does this number come from?

#### **3. The RIAA is using the misleading factor of total units shipped as opposed to total units sold.**

When the RIAA calculated its numbers it used the misleading figure of total units shipped as opposed to total units sold. Why is this distinction important? The answer is because nothing

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<sup>22</sup> <http://www.azoz.com/music/features/0008.html>  
*see supplement page 3*

<sup>23</sup> *see supplement page 2*

<sup>24</sup> *see supplement page 2*

<sup>25</sup> *see supplement page 4*

<sup>26</sup> *see supplement page 1*

has been sold, only shipped, and there is good likelihood that some of this stuff will come back. So let us look at total retail units.

If one looks at the total retail units, one sees a different picture. The RIAA claims a number of 859.6<sup>27</sup> million for the total number of units shipped in 2002. But, only 675.7 million were sold<sup>28</sup>. So there is a 183.9 million unit difference between the two numbers. What accounts for this difference? The answer is there is no answer and no real way of discerning one. The impact of this difference, however, is very important.

To understand the importance of the distinction between units sold and units shipped the following calculations must be undertaken:

- 1) The total units shipped in 2002 (859.6) is subtracted by the total retail units in 2002 (675.7) to get the total units unaccounted for (183.9)<sup>29</sup>
- 2) 183.9 (total units unaccounted for) is then multiplied by the average retail price for 2002 (17.09) to arrive at the total retail value (3,142.9)<sup>30</sup>
- 3) Repeat this process for the preceding years<sup>31</sup>:

\* starting at step 2

1998: 273.9 \* 14.31= 3,919.5

1999: 290.9 \* 15.00= 4363.9

2000: 290.6 \* 16.11= 4,681.63

2001: 235.4 \* 16.90= 3,142.9

- 4) Add these five numbers (3,919.5; 4363.9; 4681.6; 3,978.3; 3,142.9) = 20,086.2 million

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<sup>27</sup> see supplement page 5

<sup>28</sup> see supplement page 6

<sup>29</sup> see supplement page 7

<sup>30</sup> see supplement page 8

<sup>31</sup> see supplement page 8

- 5) Divided this 20 billion by 5 to arrive at 4 billion or the exact number alleged by the RIAA to be due to piracy.

### **III. CONCLUSION**

The general assumption has been that illegal online music downloading is nothing more than a traditional black market. This paper has strived to show that what it is in fact is an indication of the true demand. Illegal downloading is occurring mainly do to the fact that the RIAA price structure is out of alignment with consumer demand. As a result its strategy, to cut production in order to increase prices, has actually lead to a decline in prices.

The Recording Industry Association of America's  
**2002 Yearend Statistics**

1330 Connecticut Avenue, NW, Suite 300, Washington, D.C. 20036  
 202-775-0101

**Manufacturers' Unit Shipments and Dollar Value**  
 (In Millions, net after returns)

	1993	1994	1995	1996	1997	1998	1999	2000	% CHANGE 1999-2000	2001	% CHANGE 2000-2001	2002	% CHANGE 2001-2002
(Units Shipped)	495.4	662.1	722.9	778.9	753.1	847.0	938.9	942.5	0.4%	881.9	-6.4%	803.3	-8.9%
(Dollar Value)	6,511.4	8,464.5	9,377.4	9,934.7	9,915.1	11,416.0	12,816.3	13,214.5	3.1%	12,909.4	-2.3%	12,044.1	-6.7%
<b>CD</b>	7.8	9.3	21.5	43.2	66.7	56.0	55.9	34.2	-38.8%	17.3	-49.4%	4.5	-74.1%
<b>CD Single</b>	45.8	56.1	110.9	184.1	272.7	213.2	222.4	142.7	-35.8%	79.4	-44.4%	19.6	-75.4%
<b>Cassette</b>	339.5	345.4	272.6	225.3	172.6	158.5	123.6	76.0	-38.5%	45.0	-40.8%	31.1	-30.9%
	2,915.8	2,976.4	2,303.6	1,905.3	1,522.7	1,419.9	1,061.6	628.0	-41.0%	363.4	-41.9%	209.8	-42.3%
<b>Cassette Single</b>	85.6	81.1	70.7	59.9	42.2	26.4	14.2	1.3	-90.8%	-1.5	-215.4%	-0.5	-68.0%
	298.5	274.9	236.3	189.3	133.5	94.4	48.0	4.6	-90.4%	-5.3	-215.2%	-1.6	-70.3%
<b>LP/EP</b>	1.2	1.9	2.2	2.9	2.7	3.4	2.9	2.2	-24.1%	2.3	4.5%	1.7	-23.7%
	10.6	17.8	25.1	36.8	33.3	34.0	31.8	27.7	-12.9%	27.4	-1.1%	20.5	-25.2%
<b>Vinyl Single</b>	15.1	11.7	10.2	10.1	7.5	5.4	5.3	4.8	-9.4%	5.5	14.6%	4.4	-20.8%
	51.2	47.2	46.7	47.5	35.6	25.7	27.9	26.3	-5.7%	31.4	19.4%	24.9	-20.6%
<b>Music Video</b>	11.0	11.2	12.6	16.9	18.6	27.2	19.8	18.2	-8.1%	17.7	-2.7%	14.7	-17.2%
	213.3	231.1	220.3	236.1	323.9	508.0	376.7	281.9	-25.2%	329.2	16.8%	288.4	-12.4%
<b>DVD Audio</b>	-	-	-	-	-	-	-	-	N/A	0.3	N/A	0.4	63.8%
	-	-	-	-	-	-	-	-	N/A	6.0	N/A	8.5	41.3%
<b>DVD Video*</b>	-	-	-	-	-	0.5	2.5	3.3	32.0%	7.9	139.4%	10.7	34.8%
	-	-	-	-	-	12.2	66.3	80.3	21.1%	190.7	137.5%	236.3	23.9%
<b>Total Units</b>	955.6	1,122.7	1,112.7	1,137.2	1,063.4	1,123.9	1,160.6	1,074.2	-7.0%	968.5	-10.3%	859.7	-11.2%
<b>Total Value</b>	10,048.6	12,068.0	12,320.3	12,533.8	12,236.8	13,711.2	14,584.7	14,323.7	-1.8%	13,740.9	-4.1%	12,614.2	-8.2%
<b>Total Retail Units</b>					817.5	850.0	869.7	788.6	-9.3%	733.1	-7.0%	675.7	-7.8%
<b>Total Retail Value</b>					10,785.8	12,165.4	13,048.0	12,705.0	-2.6%	12,388.8	-2.5%	11,549.0	-6.8%

\* While broken out for this chart, DVD Video Product is included in the Music Video totals

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 202-775-0101

<b>Counterfeit/Pirate Seizures</b>	<b>2001</b>	<b>2002</b>	<b>% change</b>
Counterfeit/Pirate Cassettes	151,830	145,274	-4.3%
Counterfeit/Pirate CDs	121,939	246,452	102.1%
Counterfeit/Pirate CD-Rs	2,795,693	5,298,368	89.5%
Counterfeit/Pirate/Bootleg Labels	21,189,477	72,822	-99.7%
<b>Bootleg Seizures</b>	<b>2001</b>	<b>2002</b>	<b>% change</b>
Cassettes	0	18,279	#DIV/0!
CDs	16,795	1,863	-88.9%
CD-Rs	93,520	200,239	114.1%
Videos	6,698	13,356	99.4%



**New Releases / Dollar per Release**

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Total Dollars (millions)	9024	10046.6	12068	12320.3	12533.8	12236.8	13723.4	14651	14404	13700
New Releases	18400	20300	36600	30200	30200	33700	33100	38900	27000	27000
Dollars per release (Note)	490,434.78	494,906.40	329,726.78	407,956.96	415,026.49	363,109.79	414,604.23	376,632.39	533,481.48	507,407.41



Year End Statistics -- Net after returns -- All data in millions except Avg. Unit Price												
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
CD Units	286.5	333.3	407.5	495.4	662.1	722.9	778.9	753.1	847	938.9	942.5	906.6
CD Dollars	3451.6	4337.7	5326.5	6511.4	8464.5	9377.4	9934.7	9915.1	11416	12816.3	13214.5	12900
Avg Unit Price	12.05	13.01	13.07	13.14	12.78	12.97	12.75	13.17	13.48	13.65	14.02	14.23
Cassette Units	442.2	360.1	366.4	339.5	345.4	272.6	225.3	172.6	158.5	123.6	76	45.6
Cassette Dollars	3472.4	3019.6	3116.3	2915.8	2976.4	2303.6	1905.3	1522.7	1419.9	1061.6	626	363
Avg Unit Price	7.85	8.39	8.51	8.59	8.62	8.45	8.46	8.82	8.96	8.59	8.24	7.96
Vinyl LP/EP Units	11.7	4.8	2.3	1.2	1.9	2.2	2.9	2.7	3.4	2.9	2.2	2.3
Vinyl LP/EP Dollars	86.5	29.4	13.5	10.6	17.8	25.1	36.8	33.3	34	31.8	27.7	27.4
Avg Unit Price	7.39	6.125	5.869	8.83	9.368	11.4090	12.689	12.333	10	10.965	12.590	11.913
Music Video	9.2	6.1	7.6	11	11.2	12.6	16.9	18.6	27.2	19.8	18.2	18.2



Units																			
Music																			
Video	172.3	118.1	157.4	213.3	231.1	220.3	236.1	323.9	508	376.7	281.9	281.9							
Dollars																			
Avg																			
Unit	18.728	19.36	20.71	19.39	20.63392	17.4841	13.970	17.4139	18.6764	19.025	15.489	15.489							
Price																			
DVD																			
Units									0.5	2.5	3.3	7.9							
DVD																			
Dollars									12.2	66.3	80.3	190							
Avg																			
Unit									24.4	26.52	24.33	24.05							
Price																			
Total	7182.8	7504.8	8613.7	9651.1	11689.8	11926.4	12112.9	11795	13402.3	14312.92	14174.43	13596.35							
Dollars																			



Manufacturer's Unit Shipments  
 In Millions, net after returns..... Source:  
 RIAA

	1998	1999	2000	2001	2002
CD	847.0	938.9	942.5	881.9	803.3
Cassette	158.5	123.6	76.0	45.0	31.1
Music Video	27.2	19.8	18.2	17.7	14.7
Other	91.2	78.3	42.5	23.9	10.5
Total Units	1123.9	1160.6	1079.2	968.5	859.6

\*Other is a composite of CD singles, cassette singles, LP/EPs and Vinyl Singles

\*\* DVD Video entry is cut out





Source: RIAA -- All data in millions except Avg. Retail Unit Price

	1998	1999	2000	2001	2002
Total Units Shipped	1123.9	1160.6	1079.2	968.5	859.6
Total Retail Units	850	869.7	788.6	733.1	675.7
Total Retail Value	12165.4	13048.0	12705.0	12388.8	11549.0
Avg Retail Unit Price	14.31	15.00	16.11	16.90	17.09



**Units Unaccounted For (Units Shipped minus Retail Units)**

All data in millions except Avg. Retail Unit Price

	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>Total</b>
Total Units	273.9	290.9	290.6	235.4	183.9	1,274.7
Avg Retail Unit Price	14.31	15.00	16.11	16.90	17.09	
Total Retail Value	3,919.5	4,363.9	4,681.6	3,978.3	3,142.9	20,086.2

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