

# What Does Undergrad Micro Theory Say about Music Downloading

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“Most of us would never even consider stealing something, say a picture or a piece of clothing from a friend’s house. Our sense of right and wrong keeps most of us from doing something so selfish and antisocial. Yet when it comes to stealing digital recordings of copyrighted music, people somehow seem to think the same rules don’t apply even though criminal penalties can be as high as five years in prison or \$250,000 in fines. Contrary to popular opinion, illegally downloading or copying copyrighted music is the same as stealing; there is no difference.” - Christian Music Trade Association ([www.cmta.com](http://www.cmta.com))

“No, I’d say that of the world’s economies, there’s more that believe in intellectual property today than ever. There are fewer communists in the world today than there were. There are some new modern-day sort of communists who want to get rid of the incentive for musicians and movie makers and software makers under various guises. They don’t think that those incentives should exist.” - Bill Gates Cnet interview ([news.com.com/Gates-taking-a-seat-in-your-den/2008-1041-3-5514121.html](http://news.com.com/Gates-taking-a-seat-in-your-den/2008-1041-3-5514121.html))

“Because of the ad skips.... It’s theft. Your contract with the network when you get the show is you’re going to watch the spots. Otherwise you couldn’t get the show on an ad-supported basis. Any time you skip a commercial or watch the button,

you're actually stealing the programming.” - Jaimie Kellner, CEO  
Turner Broadcasting

“Music is everybody’s possession. It’s only the publishers who  
think people own it.” - John Lennon

Despite the righteousness of the Christian Music Association, there is an important difference between a picture or a piece of clothing and a music file. When you steal a picture or a sweater of mine, I don’t have them anymore. If you download a file from my computer, you can’t diminish my enjoyment of the same song on the same file at all. Neither do I hurt you in any way if I copy a software program from your computer, or watch the same TV show as you. No matter how rhetorically attractive this sounds to a music company’s lawyers, you can’t steal digital music or a television show. Whether or not we want to stop ‘piracy’ is an economic issue not a moral one.

Courts – especially in the United States – have supported large corporations who have tried to sue file swappers. This hasn’t apparently had much impact on file sharing in general, but has shutdown websites associated with file sharing; for example, Napster is long gone, though it has resurfaced from time to time trying to sell music. Pirate Bay is in an apparently endless process of begin shut down then starting up again at a different location (as this is written it is Ascension Island ([thepiratebay.ac](http://thepiratebay.ac)). Canada’s best know (even iconic) bittorrent site isohunt.com has shut down after agreeing to pay the RIAA \$110 million dollars. The motivations of the Recording Industry Association of America (RIAA) are clear in trying to close these websites: they feel that most people who download music over the Internet would pay the record company if they could not get the song for free. It seems the American courts agree with this and feel the recording companies are entitled to their money.<sup>1</sup>

Since only communists – according to Mr. Gates – could possibly disagree with strong copyright legislation being applied to music and software, you might expect simple microeconomic theory to make all of this pretty easy

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<sup>1</sup>Jammie Thomas was sued by the RIAA in 2006 for downloading 24 songs. After 6 years of litigation, she was found liable and fined \$220,000 dollars (<http://www.guardian.co.uk/technology/2012/sep/11/minnesota-woman-songs-illegally-downloaded>). Joel Tennenbaum, a Boston area graduate student, downloaded 30 songs and was fined \$675,000.

to understand. In particular, basic micro theory – as it is currently taught in, say, second-year university courses – must show why copyright is such a fundamental part of capitalist economics. It would also be nice to have this explanation in a form that could be freely downloaded using bittorrent instead of paying a lot of money to a publisher. This short article is the result.

The bottom line is the same as it often is in economics. Strong copyright legislation might be beneficial and it might be extremely harmful. It benefits some people greatly, and hurts others. Finally, ‘strong copyright’ always comes with a cost. As it is implemented in the US, copyright implies monopoly. Monopoly power will typically be used to restrict output and make it difficult for competitors to enter. In this sense, copyright must always work against the provision of music and software at the same time that it works for it. Whether copyright is good or bad depends on whether the monopoly effect is bigger or smaller than any incentive effect. This will vary with the product involved, so copyright may be good for music and bad for software or conversely.

The first part of this reading simply shows the basic logic behind copyright as applied to music downloading. When a musician creates a piece of music, one of the ways that people enjoy that music is by listening to recordings. The music companies used to produce albums and cds containing those recordings, and consumers would pay a lot of money for them. According to Rolling Stone magazine, physical cds sell for around \$18. About \$10 of this money goes to the record label, about \$2.00 goes to the artist who recorded the music. It isn’t hard to see why the record labels would want to keep this cushy arrangement going, even though cds are now obsolete. A more modern way to purchase music is to buy it on iTunes. Lobbying and the US court system still allow the record labels to do pretty well. When a consumer buys (or rents or whatever it now amounts to) a \$1.28 song on iTunes, the record label gets \$0.60 and the recording artist only \$0.02. But Apple takes \$0.40 out of this. If you bought 12 songs from iTunes, you would pay about the same thing you would pay for a physical cd - which is a bit surprising given it is so much cheaper to offer digital files. You may also be surprised to learn that you don’t actually own your iTunes collection (or for that matter, any of the eBooks you might have thought you purchased). The fee you pay to Apple is just a license fee that gives you access to the songs, and this license isn’t transferable. You can’t donate your eBooks or mp3 files to the library, or give them away. You might wonder why Apple and a recording label get

such a big chunk of money for restricting your access to a musical recording.

From my perspective, the music downloading problem is a nice way to illustrate the principles behind public goods. I'll describe the public goods problem using a 'common agency' model that is popular in the microeconomics literature. I'll relate this back to the older models involving Lindahl pricing and voluntary contributions games. We can use the approach to think about the distributional consequences of copyright protection and the role of the RIAA.

As you will see, it is possible that musicians left to their own accord will produce too little music. At a theoretical level it is equally plausible that musicians will produce exactly the right amount of music without any copyright protection at all. Which of the two possibilities is true is an empirical issue which can't be decided by theory alone.

However, it is bound to be true that strong copyright protection that can be sold to record companies makes it possible for these companies to restrict output, prevent entry and redistribute surplus (to themselves mostly). The main problem with copyright legislation is that it grants monopoly powers to the copyright holder. If the copyright holder then tries to maximize profits, he or she will restrict output and raise price, which partly (or possibly completely) defeats the purpose of the copyright legislation in the first place. Of course, no musician really wants to restrict the number of people who listen to his music. Yet, he will typically sell the copyright to a corporation who has exactly this intention in mind. These costs associated with monopoly power must be weighed against the incentive effects of copyright before the public interest can be determined.

## 1 What is Wrong with Leaving Things Alone

Let's start with a situation where everyone is left to their own devices: musicians make music, everybody else does what they do. Musicians aren't going to disappear because people download music files. Some people argue that musicians like file sharing because it gives more visibility to their music.

Our story will eventually involve four interested parties, two music consumers, a musician, and a record company. The musician produces music from her endowment  $\omega^m$  according to a linear technology. In particular, each unit of her endowment that the musician spends on music production produces exactly 3 units of music. You can think of a unit of music here as

a recording. The more of her endowment that the musician spends making music, the more recordings she makes. For notation, let's use  $y$  to represent the number of recordings the musician makes. We'll use  $x$  to represent the musician's consumption of other stuff and assume that the musician, like the two consumers, has utility function

$$u(x, y) = x + \ln(y).$$

The fact that the consumer hears the music for free doesn't mean he won't pay the musician. The consumers will go to the musician's performances and pay for tickets, t-shirts, beer, and even cds that the musician sells at her concerts. Let's model this in the following simple way. Suppose there is some threshold level of utility  $\gamma$  below which consumers simply aren't interested in going to the musician's concerts. If  $\ln(y) < \gamma$ , the consumer just listens to and enjoys the music, but never goes to concerts.

Once this threshold is met (i.e.  $\ln(y) > \gamma$ ), the consumer suddenly starts to enjoy the concerts. In fact, let's assume that the consumer needs to go to concerts in order to enjoy the additional music. What I mean by that is that a consumer gets payoff

$$\min[\ln(y), \gamma]$$

if she doesn't go to concerts. Her payoff from going to concerts is  $\max[0, \ln(y) - \gamma]$ . This gives her a total payoff of  $\ln(y)$ .

The difference between concerts and records is that the musician can charge for them. If the musician makes  $y$  recordings, then she can charge up to  $\ln(y) - \gamma$  to each consumer to attend her concerts. The more recordings the musician makes, the more the consumer is willing to pay to go to her concerts. The revenues from these concerts will be given by  $t^1(y)$  and  $t^2(y)$  for consumer 1 and consumer 2 respectively. Of course,  $t^1(y)$  and  $t^2(y)$  are both 0 if the musician produces fewer than  $y^\gamma$  where  $y^\gamma$  is the number of recordings such that  $\ln(y^\gamma) = \gamma$ .

When the musician tries to decide how much music to produce, she chooses  $y$  to maximize

$$\omega^m - \frac{y}{3} + \ln(y) + t^1(y) + t^2(y). \quad (1)$$

The logic is that if she decides to produce  $y$  recordings, it will cost her  $\frac{y}{3}$  from her endowment  $\omega^m$ , but she will be compensated by the consumers who will attend her concerts,  $t^1(y)$  from person 1 and  $t^2(y)$  from person 2. Further, she enjoys the music herself, so this adds another  $\ln(y)$ .

How well or poorly this 'market' performs depends on what  $t^1$  and  $t^2$  are. We'll consider a simple version here that illustrates all the principles involved. We are going to assume that musicians price their concerts to extract all the surplus the consumers get from the concert. In other words, if a musician produces  $y > y^\gamma$  recordings, then her concert tickets will cost the consumer exactly  $\ln(y) - \gamma$ . The consumer enjoys concerts a lot in this story, but the money he pays to attend the concert is just equal to the benefit he gets, so we don't need to think about concerts when we evaluate his payoff.

The musician's payoff is then relatively simple. It is given by

$$\pi^m = \begin{cases} \ln(y) + 2(\ln(y) - \gamma) - \frac{y}{3} & \text{if } y > y^\gamma \\ \ln(y) - \frac{y}{3} & \text{otherwise.} \end{cases} \quad (2)$$

Notice that the revenue the musician earns at her concerts depends on how many recordings she produces. Whether or not this provides here with enough incentives to produce recordings is what we are interested in.

Notice that with the log utility function we are using, musicians will always produce music, since their payoff when there is no music at all is  $-\infty$ . The number of recordings the musician produces is determined by maximizing (2) above. The solution to the problem depends on the threshold utility level  $\gamma$ . If she produces enough recordings to get people interested in her concerts, then the number of recordings she should produce is found by setting the derivative in the first line of  $\pi^m$  to zero. This occurs where

$$-\frac{1}{3} + \frac{3}{y_m} = 0,$$

or  $y^m = 9$ . Notice that if she actually produces this much music, the sum of the marginal benefits to all three consumers of music is  $\frac{3}{9}$  which is exactly equal to the marginal cost of producing the music,  $\frac{1}{3}$ . So this outcome satisfies the Samuelson efficiency condition from production of the public good that we studied in the last chapter. In other words, this outcome is pareto optimal.

The musician at this outcome earns revenue from two consumers and gets her own utility from producing recordings. The consumers get the benefit of all the recordings the musician makes whether they go to concerts or not. However, when the musician becomes well known they receive an additional benefit from going to her concerts.

For this to be the solution to the problem, we have to check two things. First, it has to be the case that the critical utility level above which consumers

start going to concerts is no larger than  $\ln(9) \approx 2.2$ . Otherwise, the musician would have to produce more than 9 recordings to get consumers to go to his concerts and she doesn't want to do this even when she is paid everything her concerts are worth.

Secondly, the musician has to prefer producing 9 recordings (given the concert revenues she expects) to doing the youtube thing and producing for her own entertainment. If she does that, her payoff is  $\ln(y) - \frac{y}{3}$ , which is maximized when she produces 3 recordings. That means that we need,

$$\ln(9) - 3 + 2(\ln(9) - \gamma) > \ln(3) - \frac{1}{3}.$$

This will be positive if  $\gamma < \frac{1}{2}(\ln(3) + 2\ln(9))$ , or if  $\gamma$  is less than 5.5 approximately.

Since  $\ln(9) \approx 2.2$  is the upper bound beyond which consumers won't go to concerts anyway, we know something about what music will be produced. If  $\gamma$  is bigger than 2.2, then the musician won't bother with concerts and will produce only 3 recordings. If  $\gamma$  is less than 2.2, she will produce 9 recordings and both consumers will attend her concert.

It would be nice to have a term to describe each situation. I'll call the case where  $\gamma < 2.2$  the 'pop' music case. If  $\gamma > 2.2$ , I'll refer to that as the 'indie' music case. Pop music is intended to sound like other pop music which people enjoy. In this sense one pop musician can borrow the popularity of another and attain the concert threshold more easily. An indie musician has to build a following for her music from the ground up, so maybe her threshold is higher. Whether that argument is right or wrong, I'll use those terms to describe the two situations.

Notice that with our assumption about concert pricing, the consumer seems to be indifferent about whether or not he attends concerts. He likes them well enough, but he has to pay a lot for them. If he quits going to concerts, he still enjoys the band's music as before. However, if he no longer attends concerts, the musician's revenue from concerts falls, and she no longer produces as many records. It is pretty easy to check that if you change the 2 to a 1 in (2) to reflect the fact that one of the consumers stops attending concerts, then the musician will reduce the number of recordings she makes to 6. That will make the consumer worse off. Maybe that is why each of us feels that we are the 'biggest fan' of someone. Maybe they really wouldn't be the same without us.

So it doesn't make sense for a consumer to stop going to concerts if they think this will influence the bands behavior. It could also work the other way around. If you would like to hear more from a band, and you would be willing to pay for it, you can convince them to do it for a reasonable amount of money because you know that the records they produce will generate concert revenues from others. Many wealthy individuals do exactly this. For example, the classic rock band Journey, was paid half a million dollars by the Republican party to perform at the Republican National convention in 2012.

Suppose consumer 1 tries this, and offers the musician a contract that promises to pay the musician a fee  $p$  if she would just produce one more record. He could bolster his argument here by claiming that this will make consumer 2 pay more as well, since he will attend more concerts. Additionally, the musician is a musician, so she gets her own utility from producing music. The fee  $p$  might not have to be so high for this reason.

With the fee schedules  $t^1$  and  $t^2$  we are using, the musician produces 9 units of music. The value to the musician of another piece of music is  $\frac{1}{9}$ , the fee schedule for consumer 2 contributes  $\frac{1}{9}$ , and the extra music costs  $\frac{1}{3}$  to produce. So consumer 1 would have to offer at least  $\frac{1}{9}$  to convince the musician to produce more, and we know she isn't willing to do this.

## 1.1 Is the outcome fair?

There is something that you might not like about this equilibrium. It isn't that musicians don't have enough incentives, they do. It is possible, however, that musicians end up paying a large proportion of production costs. For example, in our efficient equilibrium, the musician pays  $\frac{9}{3} = 3$  out of her own pocket to make music. She gets some of this back in the form of concert revenues. Yet if  $\gamma$  is close to  $\ln(9)$ , these concert revenues won't be very large. For example if  $\gamma$  is 2, she will only get .2 from each of the consumers in concert revenues. (Of course, if there were more consumers she would get more revenue - another reason it might be better to be a pop musician than an indie musician).

This resembles a bit the situation with open source software. It is true with software that the more useful programs you write the more revenue you will earn from people who will pay you to install and service your software. For the most part, however, open source software emerges from the needs of the people who write the software to solve their own internal problems.

Software developers probably do okay on their own, but musicians (apart from megastars like Justin Bieber and aging classic rock icons like U2) just aren't very wealthy, especially when they are starting out. Since we like artists of all kinds, we might just want them to have more income. Then a perfectly legitimate role of copyright would be to redistribute income from non-musicians to musicians.

Traditionally, Canada has had a relatively balanced approach to copyright protection. Until recently downloading music from the Internet was perfectly legal as long as the download was for personal use. The supreme court hadn't definitively ruled against making music available for others. However, policy did exist to redistribute income to artists. There has been a longstanding tax imposed on media that are used to record digital versions of music, tapes, CD's hard disks etc. These taxes are remitted to the Canadian Private Copying Collective (<http://cpcc.ca>), which is supposed to distribute the money. The proceeds of the tax were around \$28 million in 2002/3.<sup>2</sup> This money is passed on to organizations representing artists. For example, 18.9% of these revenues were to be distributed to performers, 15.1% to record companies, and the rest to authors and publishers. The ACTRA Performers' Rights Society received about \$7 million of this money to distribute to their members. For a variety of reasons, less than 1% of this money was actually paid out to performers and artists (the figures are given at <http://www.actra.ca>), nonetheless, the money is there in principle. At least, ACTRA tells you what they do with the money. I haven't had any luck figuring out what the record companies do with the money they receive from CPCC – they no doubt pay it to their lawyers.

Second, Canada directly subsidizes music through programs like the Sound Recording Development Program (see <http://www.canadianheritage.gc.ca> for a description) and through CRTC Canadian Content Restrictions which force Canadian broadcasters to use a minimum proportion of 'Canadian Content'.

There is one reason to be wary of this kind of argument. The basic problem the musician faces in producing music is that there is a relatively high fixed cost associated with producing music. You have to spend a lot of time doing it until people notice you and start paying. This is basically true for every business that was ever created. Once you decide you should subsidize because of that, you might expect every other business (who can

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<sup>2</sup>Total CD sales in Canada by comparison, were about \$600 million (<http://www.cria.ca>).

afford lawyers) to get in line and start lobbying for the same kind of subsidy.

## 2 Copyright

In the summer of 2012, Canada passed a copyright law that was more in line with the American approach to copyright.<sup>3</sup> Needless to say, downloading music from the internet is now 'stealing' in Canada as it is anywhere else that trades with the US. So we might as well use our simple model above to try to understand what copyright does.

Notice that in the 'pop' music model we described above, everyone does pretty much what they want and everything works out fine without any copyright protection. Consumers pay the musician by going to concerts that they are perfectly free not to attend. Musicians are free to produce as much or as little music as they want. Everything works out as we would like, except that musicians would like to have more income, while consumers wish that the price of concerts were lower.

This doesn't mean that there isn't money to be made from all this. There is a great story that conveys the main idea. In 2008 a company called Larrikin Music sued a band from Australia called Men at Work. They had recorded a song called "Down Under" in the early 1980's that contained a couple of bars of a well know Australian Folk song called "Kookaburra". If you asked anyone growing up in North America at that time what they knew about Australia they would say, "they have Kookaburra's", then they would hum the line from the folk song. The song was played as an iconic symbol of Australia at the closing ceremonies of the 2000 summer Olympic games in Sydney.

The song "Kookaburra" was written in 1934 by Marion Sinclair, who was alive when Men at Work used the bar from her song in their song. "Down Under" was such a big hit that Ms. Sinclair probably knew about it. She probably got a big charge out of "Down Under", as did most Australians. When she died in 1990, Larrikin Music acquired the rights to the song which, due to the wisdom of the Australian government in emulating the US and trying to extend copyright protection for the life of the author plus forever, was still (and probably still is) under copyright protection. Larrikin was awarded 5% of the Bands royalties on the song.

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<sup>3</sup>A great source of information on current Canadian copyright legislation is <http://www.michaelgeist.com>.

The story indicates what a great job copyright does at promoting music and redistributing money to musicians. In the 'pop' music case, copyright redistributes the surplus that consumers enjoy to record companies. Part of this surplus could be end up in musicians' pockets if they are astute enough at bargaining.<sup>4</sup> This might not be so bad since we tend to like our well known musicians. The problem is that it comes with bad incentive effects.

In the model we have so far, musicians make music which consumers enjoy for free. A recording company that wants to make money from all this needs to have some way to make people pay for things that are free. In the old days, they had an easy way to do that since no one could hear music without having some kind of plastic plate, like a cd, to play it from. Etching mp3 files onto plastic plates was easy and cheap, so the record companies needed something to prevent competitors from making the same cds and offering them at a lower price. The 'something else' was copyright. The argument was that a recording should be treated like a piece of property owned by the musician. The musician could sign a contract with a recording company giving that recording company the exclusive contract to produce cds with music on them. If any other company tried to sell cds with the same music, then the company with the contract could sue and recoup any profits it lost.

Of course, there is no need for cds now - music is just placed on digital files which can be freely distributed thanks to bitorrent. Since consumers no longer needed cds to hear music, they didn't need either the recording company, or its competitors any longer. The recording companies contract to be the exclusive distributor of plastic plates for the musician was no longer valuable. The record companies needed something to replace the cd, so they invented digital piracy and enlisted the courts and governments to collect their revenue for them.<sup>5</sup>

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<sup>4</sup>The ancient acts that do manage to negotiate a big chunk of the surplus for themselves typically become big proponents of strong copyright. For example, when Britain extended copyright protection on music recordings in 2011 from 50 to 70 years, the best known proponent of the law was Sir Cliff Richard, who made successful recordings in the 60s. Two arguments seemed to win the day, the first is that aging pop performers from the 60's had no other source of income (since they obviously don't produce hits anymore). Since their hits were recorded more than 50 years ago, their income would fall. The second was the amazing argument from the music companies that if copyright expires on these recordings their revenues would fall - thats it - when copyright ends it ends, which must be bad because if it wasn't we wouldn't have had it in the first place I guess.

<sup>5</sup>Some hilarious examples, in 2007 the RIAA sued a lady called Jammie Thomas-Rassert for downloading 24 songs to her computer. A jury found her guilty of copyright

In order to understand who it is that a digital pirate 'robs', lets stick with cds and go back to 'pop' music example above where the musician is producing 9 units of music and each of the consumers is spending  $\ln(9) - \gamma$  going to concerts.

The record company puts the music onto cds so consumers can listen to it. Apparently, it cost about 7 cents per cd to do this. What the record company brings to this market isn't cheap plastic, it is copyright. So lets just ignore the cost of the cd.

In this 'back in the day' world, a consumer has to buy a cd in order to listen to music. We will assume the record company attains the copyright and charges  $p$  for each record the musician produces. The musician could give the cds away, since they don't really cost anything to produce. If instead, the musician agrees to give copyright to the record company, the first thing that happens is that the consumers have to start paying for the recordings they used to listen to for free. One of the implications of this is that the decision about how many records to produce is taken away from the musician and given to the consumer who now chooses  $y$  to maximize

$$\ln(y) - py.$$

This is maximized when the consumer chooses to buy  $y = \frac{1}{p}$  recordings. One of the interesting implications of this is that the revenue that the record company earns from each consumer is 1 not matter what price it charges for records.<sup>6</sup>

So the record company could support the same number of recordings as before by charging  $\frac{1}{9}$  for each record. The only complication in all this is that the amount the musician can charge for her concerts falls from  $\ln(9) - \gamma$  to  $\ln(9) - \gamma - 1$  because the consumer has to buy 9 cds before she can benefit by going to the concert, so has less money to pay for tickets.

There are a number of different possibilities here depending on the value of  $\gamma$ . To make the argument as starkly as possible, lets assume that  $\ln(9) - \gamma$  is exactly equal to 1. So concert revenues for the musician disappear. If

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enfringement and ordered her to pay \$9250 per song in damages (\$222K). The first trial was thrown out, the retrial ordered her to pay \$1.92 million dollars, an appeal court reduced it to \$54K, another appeal reinstated the \$222K original award in 2012, after 5 years of rich legal fees.

<sup>6</sup>More generally, marginal revenue will be declining in price and there will be only one price that maximizes the record companies revenues. We don't need to worry about that complication here.

the musician has any foresight, she won't want to sell her copyright to the recording company without some compensation.

In fact, her lost concert revenues are exactly 2 in this example, so the record company would have to pay the musician all their profits in order to convince her to give up her copyright. At first glance it doesn't seem to matter whether or not there is copyright here.

However, we can redo the calculation a bit. The musician is producing 9 recordings. She has no concert revenues anymore, but she receives a payment 2 from the record company. This puts her in exactly the same position she would be in if she gave away her music and received all her revenue from concerts. Writing it down, her profit is

$$\ln(9) - \frac{9}{3} + 2.$$

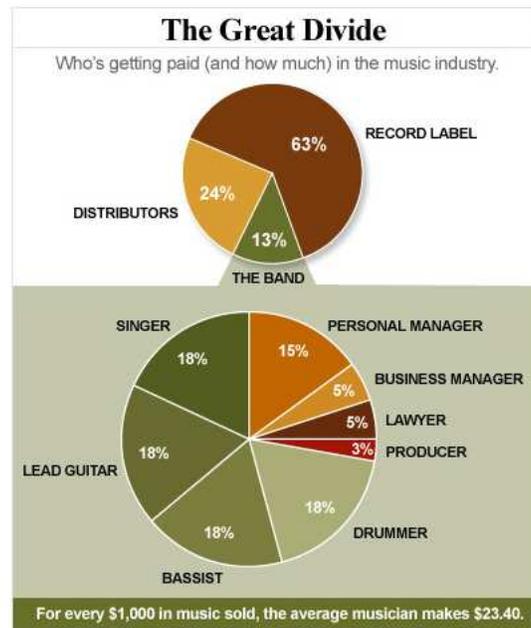
Suppose now the recording company proposes instead that she produce 3 records instead of 9. The recording company will raise the price of records from  $\frac{1}{9}$  to  $\frac{1}{3}$  and their revenues will remain constant at 1 per consumer. However, since  $\ln(3) - \frac{3}{3} > \ln(9) - \frac{9}{3}$ , the total payment the record company needs to make to the musician to make it worth her while under this new arrangement is strictly less than 2. Suddenly the record company has manufactured a profit for itself, left the musician in the same position she would have been in had she refused the offer and continued to earn money from concerts.

This new arrangement has transferred surplus from consumers to musicians and record companies, but now there is a big cost - the amount of music being produced has fallen, and concert revenues are down considerably.

You might think that a musician could astututely bargain and get some of this surplus for themselves. Here is a picture that appeared in the online magazine The Root.<sup>7</sup>

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<sup>7</sup>[http://www.theroot.com/articles/culture/2010/07/the\\_root\\_investigates\\_who\\_really\\_gets\\_paid\\_in\\_the\\_music\\_industry.html](http://www.theroot.com/articles/culture/2010/07/the_root_investigates_who_really_gets_paid_in_the_music_industry.html)



It does appear that a lot of people make money in the music industry, but not the musicians. It is ironic that the large reward the music industry earns comes from their diligent efforts to make it harder for people to hear music.

This is just a simple model with special assumptions. If you want to hear a more detailed discussion of how napster affected concert revenues more broadly (filesharing not surprisingly raises concert revenues) you can look at “Supply Responses to Digital Distribution: Recorded Music and Live Performances” by J.H. Mortimer, C Nosko, and A. Sorenson (2012).<sup>8</sup>

One might think that in the indie music case where live shows generate little revenue and there are fewer recordings, that copyright protection might promote incentives. In the special log utility model here that isn't the case. Copyright protection has no impact whatsoever on the level of output. It is a similar argument to the one above, so we won't go through it here. However, the record companies do earn profit by expropriating the consumers' surplus.

<sup>8</sup>Oddly enough, despite the claims of record companies, not all economists agree with the assertion that cd sales have fallen. For example “The Effect of File Sharing on Record Sales, by Olberholzer and Strumpf (2004). Of course, record companies pay lawyers a lot of money to lobby for copyright protection. I guess from revealed preference they must be losing money.

As above, some of this surplus might go to musicians. If it does, copyright does at least redistribute income toward people we like.

The jist of the example discussed here is fairly straightforward. Copyright redistributes income from consumers to record companies and possibly musicians. The downside is that it does this at a potentially great cost by reducing the number of recordings that are produced. The argument is often made that copyright protection improves incentives. The reason it can't really accomplish that is because it tries to accomplish this by granting a monopoly which makes profits by reducing output exactly as we described above. Perhaps the music industry really isn't big enough for it to matter one way or the other to most of us. However, when the same blanket 'protection' is extended to software, books, movies and even to images that you see every day of your life (Apple managed to sue Samsung successfully in the US by claiming that Samsung had violated Apple's patent on 'rounded edges'. Japan threw this silly case out), then it starts to become a bit worrisome.

If the arguments you have heard in this note were protected by copyright, they never would have been written down. You would be studying Alfred Marshall or Karl Marx simply because it would be too costly for your professors to acquire the right to write something else down without paying a royalty to a holding company who acquired the rights to their works 50 years ago.

If you want to learn more about copyrights and patents from an economics perspective, a very entertaining (and free) book is "Against Intellectual Monopoly" by DK Levine and M. Boldrin (2007), which is available at <http://levine.sscnet.ucla.edu/general/intellectual/against.html>.