

**Charles University in Prague**  
**Faculty of Social Sciences**  
Institute of Economic Studies

**Bachelor Thesis**

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Faculty of Social Sciences

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## **Impact of the Digital Revolution on the Music Industry**

*Bachelor Thesis*

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v Praze dne 24. 5. 2009

David Antoš

## **Abstrakt**

Bakalářská práce „Dopad digitální revoluce na hudební průmysl“ analyzuje důsledky změn ve způsobu distribuci hudebních nahrávek na společenský blahobyt. Popisuje odlišné vlastnosti tohoto specifického statku a navrhuje model obsahující všechny relevantní faktory. Vedle rozvoje pirátství zachycuje druhou významnou změnu vyplývající z digitální revoluce – nový způsob propagace hudby. Dochází tak k závěru pochybným škodlivost digitální revoluce na úroveň společenského blahobytu generovaného hudebním průmyslem.

**Klíčová slova:** autorské právo, hudební produkce, internet, společenský blahobyt

**Klasifikace JEL:** D23, L82, O34, P37

## **Abstract**

Bachelor thesis „Impact of the Digital Revolution on the Music Industry“ deals with the consequences of changes in the music distribution on the social welfare. The specific attribute of this good are described and a model capturing all relevant factors is proposed. In addition to the rise of piracy we describe the second important digital revolution change – new forms of the music marketing. Thus the alleged welfare-harmfulness of the digital revolution is disputed.

**Keywords:** copyright, music production, Internet, welfare

**JEL Classification:** D23, L82, O34, P37

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# Chapter One

## 1 Introduction

The accelerating technological development confronts us with new challenges. The digital revolution attacks many barriers of the old physical world, shortens distances, erases borders. Concepts like „property“ and „scarcity“ lose their clear meanings in the digital environment. In the rising scale we have to deal with such kind of goods where the classic economic and legal measurements are unusable. Goods joint with high transactional costs. Goods which are non-excludable and non-rivalled. Rights which are legally unenforceable. Goods which I would call *ideas*<sup>1</sup>.

Those terms are not new, economics knows the concept of externalities and public goods well. Also the legal regulation of ideas exists since the 19<sup>th</sup> century at least, the intellectual property law is a well-developed legal branch with both extensive theory basis and practical guidelines. However, the digital revolution changes bring a massive-scale intellectual property (IP) infringements and we must decide once again whether we should can continue with old approach if the conditions have changed. We keep asking ourselves – how would we set up the intellectual property if we could start from the scratch and would we even need this institution?

In the last years the intellectual property has been a very popular subject of economic and other scientific papers. So far, in the public space is the most heard the call of the entertainment industry for preservation or even enlargement<sup>2</sup> of the current level of intellectual property protection. As a strong and organized interest group with big influence on media the entertainment industry can easily present its point of view. But in the academic world no consensus has emerged. While some consider the current regulation as the only possible one which can provide enough incentives for creative intellectual activity, increasing number of authors propose various changes ranging from obligatory registrations for copyrighted works<sup>3</sup> to the abandonment of intellectual

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1 Johnson (2005) stresses the fundamental importance of ideas in today's society: „If we take health, education, and leisure to be the relatively idea-intensive categories of consumption, we see that the share of these idea-intensive categories has quadrupled over the past 120 years from only 20% then to 80% now.“ p. 4.

2 John Kennedy, the chief executive of IFPI in IFPI (2009) calls for more action on the part of governments. „The big question for 2009 –with the focus in particular on France and the UK - is what real action will result and how quick and how effective it will be in reversing the devaluation of recorded music and helping return the industry to growth.“ p. 3.

3 Posner (2005) argues: „One reform, responding to the problem of transaction costs ... would be to require copyright owners who wanted to enforce old copyrights ... to reregister them in a form that would make it easy for creators of

property protection as such<sup>4</sup>.

But intellectual property is not a monolith, copyright, patent and trademark are fundamentally different packs of right which we cannot treat in the same manner. Even inside of each of those institution we need to make distinctions. Production of music, movies or books do not occur under same conditions. Hence it seems logical that neither the public policy concerning these segments should be the same. The ambitions of this paper are limited to provide a framework for discussion about the music industry which is under-way. I chose music because there the erosion of the intellectual property is the furthestmost. Thus we have enough empirical and theoretical background to fully elaborate all important factors. I follow with short description of the current concept of intellectual property and particularly copyright and sum up the important statistics about dynamics of the music industry in recent years. Then I discuss the character of the music recordings market before the digital revolution. In the final model I try to catch the important properties of music production which are in most analyses missed and how the industry is affected by the changes of consumers' behavior in the new environment. Instead of trying to find some „optimum“ under new conditions directly, I try to compare the initial situation with the new one from the point of view of all participants and to find possible implications for the public policy. While the paper is mostly theoretical, its ambition is to concentrate all the various ideas relevant to the topic and put them into a single framework.

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*new expressive works to identify the current copyright owner.“*

4 The clearest expression of this voice is Boldrin, M., Levine, D. (2008): „*Our conclusion is that creators' property rights can be well protected in the absence of intellectual property, and that the latter does not increase either innovation or creation. They are an unnecessary evil.*“ p. 7.

# Chapter Two

## 2 Concept of the Intellectual Property

### 2.1 Theft Is Theft

Theft is theft, that is the common answer of intellectual property defenders against anybody who refuses to consider so-called Internet pirates – who do not care about the IP at all – as thieves. The producers benefiting of the existence of IP successfully keep this strict view in the public discussion – the pirates steals properties of legal owners. Before we start with the analysis of the music production itself, we should shortly clear up what is our purpose. Which information we can gain to make a decision about the IP legal framework settings this way? Is there even any space for decisions? Isn't every theft a theft?

### 2.2 What Is Property?

The notion of *owning* and what are the consequences for the owner and all the others we encounter in an early childhood. The concept of property is so ubiquitous and ancient that everybody feel intuitively what it means. All sophisticated societies in the history in some way had to deal with property<sup>5</sup> and almost everybody accept the necessity of property for peaceful and effective societal cohabitation. In the world of many people and limited goods certain rules need to be applied to solve who may or may not do what and with which. Any such arrangement could be regarded as a distribution of property, property in sense of any set of rights (and corresponding liabilities). In both common and legal language the term property denotes something more specific though; a more or less precise bunch of absolute rights towards an object. Since the theoretical concept of property has not changed much during the thousands of years, we might confidently use the concept of property from the Roman law:

*„...the sum of rights, privileges, and powers that a legal person could have in a thing was called dominium or proprietas (ownership). ... Once the Roman system had identified the proprietas, it tended to prevent him from conveying anything less than all the rights, privileges, and powers that he had in the thing.“<sup>6</sup>*

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5 Communism is based on the idea of „communal ownership“ which challenges the usual sense of ownership, but the communistic states have limited themselves merely to the state-ownership of productive capital.

6 Encyclopædia Britannica (2009) „property law“, *Encyclopædia Britannica Online*, 23 April <http://www.britannica.com/EBchecked/topic/479032/property-law>.

In practice it meant: „*The owner had a physical control of the thing i.e. he could possess it, use it, use the products of it or destroy it. (ius possidendi a ius utendi).*“<sup>7</sup>

If we choose the modern definition we won't shift out too much:

„*Property is any physical or virtual entity that is owned by an individual or jointly by a group of individuals. An owner of property has the right to consume, sell, rent, mortgage, transfer and exchange his or her property.*“<sup>8</sup>

In spite of how absolutely those basic definitions sound, real applications of property were and always are far from perfect. „Property“ and even „thing“ is merely an abstraction of human mind which encounter various limitations in the real world. E.g. not many things in the world we can enclose perfectly enough that the execution of absolute ownership rights to this thing would have no effect on the executability of other owners' „absolute“ right to their things. Even if possible, the society in many cases consider it better to limit the owner's power or even exclude certain things off the ownership institution. Even the Roman lawyers had already known the concept of absolute rights<sup>9</sup> in another's property (*iura in re aliena*), e.g. right of passage, right of defense against inhalations. Many present-day European legal systems includes the institute of expropriation giving the state a right to withdraw someone's property. In some areas the enforcement of property rights shows to be so unrealizable that the law simply accepted the reality a resigned, that is the case of externalities.

But let's put aside the legal issues, we settle for the rough definition of property rights (to possess, to use, to harvest its fruits, to transfer and to destroy). Important ascertainment is that neither the property of physical objects necessarily implies unlimitness of the accruing rights. I should also mention that the Roman law did not have any concept of „intellectual property“, the idea of „mind creation“ ownership would not make any sense to the Roman lawyers.

### 2.3 What Is the Intellectual Property?

The notion that besides tangible there are some intangible objects which can be owned and that we call this ownership the intellectual property is quite new<sup>10</sup>. In the past, terms like patents, copyrights and trademarks were used without any general term including them all. Indeed, these categories of rights have a little in common and their regulation differs broadly. In Czechia, the

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7 Iuridictum (2009) „Římské právo“, *Iuridictum*, 23 April, [http://iuridictum.pecina.cz/w/%C5%98%C3%ADmsk%C3%A9\\_pr%C3%A1vo#Vlastnick.C3.A9\\_pr.C3.A1vo](http://iuridictum.pecina.cz/w/%C5%98%C3%ADmsk%C3%A9_pr%C3%A1vo#Vlastnick.C3.A9_pr.C3.A1vo).

8 Wikipedia (2009) „Property“, *Wikipedia*, 23 April, <http://en.wikipedia.org/wiki/Property>.

9 Absolute in sense of *erga omnes*, enforceable against every violator directly.

10 Lemley, M. (2005): „*The modern use of the term intellectual property as a common descriptor of the field probably traces to the foundation of the World Intellectual Property Organization (WIPO) by the United Nations.*“, p. 1033

intellectual property is managed by a large number of national laws, European legislature and international treaties which usually employ its interest only with one particular area. What everything have in common is that the intellectual property rights are *erga omnes*. The construction of the intellectual property is also significantly different from the one of physical property. The definition of World Intellectual Property Organization is:

*„Intellectual property refers to creations of the mind: inventions, literary and artistic works, and symbols, names, images, and designs used in commerce. Intellectual property is divided into two categories: Industrial property, which includes inventions (patents), trademarks, industrial designs, and geographic indications of source; and Copyright, which includes literary and artistic works such as novels, poems and plays, films, musical works, artistic works such as drawings, paintings, photographs and sculptures, and architectural designs. Rights related to copyright include those of performing artists in their performances, producers of phonograms in their recordings, and those of broadcasters in their radio and television programs.“<sup>11</sup>*

To compare with Wikipedia:

*„Intellectual property (IP) are legal property rights over creations of the mind, both artistic and commercial, and the corresponding fields of law.[1] Under intellectual property law, owners are granted certain exclusive rights to a variety of intangible assets, such as musical, literary, and artistic works; ideas, discoveries and inventions; and words, phrases, symbols, and designs. Common types of intellectual property include copyrights, trademarks, patents, industrial design rights and trade secrets. The majority of intellectual property rights provide creators of original works economic incentive to develop and share ideas through a form of temporary monopoly.“<sup>12</sup>*

The first difference of physical and intellectual property is self-evident – the demarcation of what is included under the IP protection is way less precise. Both our definitions instead of being general use an enumerative induction. While generally speaking the IP covers the creations of mind, it does not protect all and with the same force. We could sum up the main difference:

- Physical world's things are usually relatively easily definable, they exist as entities with borders which we are able to localize both in space and time. That applies to movables as well as immovables. Intangible things are definable only vaguely. The seriousness of this issue is well illustrated by a recent controversy about exercising the copyright on chess moves<sup>13</sup>. Do journalists have a right to publish a record of a chess match? Or is it an intellectual property which belongs to the players?

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11 WIPO (2009) „What Is Intellectual Property?“, *WIPO*, 23 April, <http://www.wipo.int/about-ip/en>

12 Wikipedia (2009) „Intellectual Property“, *Wikipedia*, 23 April, [http://en.wikipedia.org/wiki/Intellectual\\_property](http://en.wikipedia.org/wiki/Intellectual_property).

13 See Moll, A. (2009).

- Not matter what the campaign against the Internet piracy states – no, copying is really not equally to the theft of tangible object. Physical object is stolen when someone occupy its possession and consequently cut off the legal owner from access and usage. Copying is far from that. Typical IP infringement leads to the creation of new copy of the original object which does not restrict the owner to use his original copy. In case of patents, the IP infringement means that someone use the same idea or process, but he does not limit the patentee. That's the reason why Boldrin, M., Levine, D. (2008) prefer to use a term „intellectual monopoly“ instead of „intellectual property“ since it expresses the fundamentals of this institution more accurately.

- Intellectual property in most of its major forms with the exception of trademark is temporally limited. The IP creates artificial scarcity<sup>14</sup> in area, where we often observe close-to-zero marginal costs, and inevitably leads to dead-weight loss caused by the monopolistic position of the right holder. From the utilitarian point of view that loss should not exceed the loss of not creating the work<sup>15</sup> (if the author would not get rewarded enough to compensate his costs without the temporary monopoly) and the protection should be as short as possible to assure that.

- Intangible things are complicatedly interlinked with each other. It is hard to distinct the different between merely a copy and a new, independent creation with independent existence and rights. Science, art as well as simple technical development are based on stacking new ideas on the previous ones<sup>16</sup>. The question of what extent of similarity is tolerated has been a source of unstoppable line of legal hassles<sup>17</sup>.

- Another trouble which springs from the difficult definition of the intangible object is

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14 Lang, B. (1997) jokes about the irony of such behavior comparing it to the behavior of mathematician in the story: „Well, there is that story about how a mathematician will cook a hardboiled egg, given a water tap, a pan, a burning stove and of course a raw egg. He does it more or less like you would, or I, i.e. he fills the pan with water, puts it on the stove, and when the water boils he drops the egg in it for 10 or 12 minutes. The interesting part of the story is a second problem : the mathematician is given a water tap, a raw egg, a burning stove and a pan full of boiling water. Any good mathematician will react instantly by throwing away the boiling water (in the sink because they are all nice people), so as to reduce this new problem to the previous one he already solved.

15 That's why the intellectual property is often considered to be a way, how to promote private creation of public goods. See Liebowitz, S., Watt, R. (2006), p. 2.

16 Boyle, J. (2008) argues: „As has frequently been pointed out, information products are often made up of fragments of other information products; your information output is someone else's information input. These inputs may be snippets of code, discoveries, prior research, images, genres of work, cultural references, or databases of single nucleotide polymorphisms—each is raw material for future innovation. Every increase in protection raises the cost of, or reduces access to, the raw material from which you might have built those future products. The balance is a delicate one; one Nobel Prize-winning economist has claimed that it is actually impossible to strike that balance so as to produce an informationally efficient market.“, p. 48.

17 One of the most publicised one in recent month is the trial between Coldplay and Joe Satriani caused by new Coldplay's song Viva La Vida. See BBC (2009) „Guitarist Satriani sues Coldplay“, *BBC News*, 22 May, <http://news.bbc.co.uk/2/hi/entertainment/7766683.stm>.

the difficult enforcement of the IP rights. The object of protection cannot be pointed at. If someone steals your bicycle, you notice you do not have it and the police can try to find it out. That's impossible when we talk about IP. Thus it might be hard (and expensive) to put the normative world of law and the real world in harmony, what we definitely demand from a respectable legal system.

## 2.4 Raison d'être

In the theory of the intellectual property two salient philosophic approaches has emerged. The first group sees the IP as a natural law. They claim that it is an essential right of a man to possess absolute control over his own creation. If we choose this perspective, there are not many open issues left. The IP protection should simply be as extensible as possible, likely also „eternal“. Welfare analysis plays no role in the decision-making<sup>18</sup>.

Contradictory perspective was held by Thomas Jefferson. According to him: „*stable ownership of even tangible property is a 'gift of social law'*“<sup>19</sup> So there is no natural law concerning the property, just social arrangement and agreement. The position of the IP is even weaker because of its specific characteristics: „*While it is a moot question whether the origin of any kind of property is derived from nature at all, it would be singular to admit a natural and even an hereditary right to inventors. It is agreed by those who have seriously considered the subject, that no individual has, of natural right, a separate property in an acre of land, for instance. By an universal law, indeed, whatever, whether fixed or movable, belongs to all men equally and in common, is the property for the moment of him who occupies it, but when he relinquishes the occupation, the property goes with it. Stable ownership is the gift of social law, and is given late in the progress of society. It would be curious then, if an idea, the fugitive fermentation of an individual brain, could, of natural right, be claimed in exclusive and stable property.*“<sup>20</sup>

Adam Smith would be similarly critical to the today's concept of the IP based on its monopolistic character: „*Monopolies that carry on long after they were needed to encourage some socially beneficial activity, he said, tax every other citizen 'very absurdly in two different ways: first, by the high price of goods, which, in the case of a free trade, they could buy much cheaper; and, secondly, by their total exclusion from a branch of business which it might be both convenient and profitable for many of them to carry on.*“<sup>21</sup>

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18 Interestingly enough even some authors considering property as a natural law oppose the intellectual property. See Šuster, M. (2008) „Autorská práva: legitimní vlastnictví, či monopolní privilegia? (část 1)“, *Leblog*, 22 May, <http://leblog.cz/?q=node/307>.

19 Boyle, J. (2008), p. 19.

20 Boyle, J. (2008), p. 19.

21 Boyle, J. (2008), p. 23.

Such paradigm is the one which I choose to adhere to in this paper. I hold the utilitarian view that every regulation needs a *raison d'être*, must be justified as a mean how to achieve the goals which the society decided to follow. And that there are no natural axioms which goals we must choose. During the normative decision-making we evaluate alternative societal arrangements through our values. „Theft is theft“ is not an argument *per se*, we ask what exactly the „theft“ means (see the distinction between theft and copying), why we should oppose it and whether the world wouldn't be better if we tolerate it. That opens the space for an economic welfare analysis as a clue which stance to take.

## **2.5 Types of the Intellectual Property**

As I have already claimed the intellectual property protection is divided into various subsets with mostly independent, complex regulation. Now I choose only three of them – trademarks, patents and copyrights – to describe their basic differences from the legal and technical point of view.

### **2.5.1 Trademarks<sup>22</sup>**

The role of trademark is to identify products and services of a producer and distinct them from the offer of others. Thus the consumer gains a guarantee that he deals with the same producer with which he might have a previous experience. Trademark needs to be graphically representable and unique enough, generic names such as „milk“ cannot (independently) create a trademark. The protection begins with the official registration for 10 year term, it is possible to prolong it without any final restraint.

The difference between trademark and patent lies mainly in its purpose. In the case of trademark it is not a motivation of creative activity, but a tool to ease off the incomplete information problem at markets so consumers are able to easily create estimations about the quality of purchased goods. That is also the reason why theoretically there are no time thresholds. Still, trademarks are an important part of our topic since they sometimes could work as an alternative to patents or copyrights if their were unavailable.

The Mickey Mouse cartoon character is protected by a copyright but unless the legislation changes once again, that copyright will eventually expire. Then the possibility to apply a trademark shows up.

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<sup>22</sup> Most of the regulation concerning trademarks in the Czech legal system is included in the law 441/2003 Sb., 22 May, [http://portal.gov.cz/wps/portal/\\_s.155/701?kam=zakon&c=441/2003](http://portal.gov.cz/wps/portal/_s.155/701?kam=zakon&c=441/2003).

## 2.5.2 Patents<sup>23</sup>

„Results of creative work“ are the objects of patents. The right is constituted by the official decision of state agency. The letters patent provides the exclusive right to use the patented invention and forbid anybody else to create, use or sell the patented invention for 20 years. To gain and maintain the patent the owner must pay a fee. The invention must be new in relation to the world-wide state of technology, must be a product of creative inventive activity (hence not a merely obvious result of current level of knowledge), must be industrially usable. Neither discovery nor software are patentable by the Czech law.

Patents give the inventor a limited reward in the form of temporary monopoly. On the other hand the applicant is obliged to publicise his whole documentation and concrete specification of his invention. Compared to copyright the patent protection is shorter. Because the scientific research is built like a pyramid, it is assumed that sooner or later someone else would simultaneously get the same idea. Thus patent is also a barrier for further progress<sup>24</sup>.

## 2.5.3 Copyrights<sup>25</sup>

Copyrights cover the literary and other artistic and scientific works. The work must be a result of author's creative activity expressible in perceivable form, it, however, also protects software and databases. Protection is not applied to the sole scientific or artistic form (idea, procedure, method, theory, equation) but only to its particular expression. Boyle, J. (2008) gives an example: „*Boy meets girl, falls in love, girl dies*‘ is not supposed to be owned. The novel *Love Story* is.“<sup>26</sup> That is the fundamental difference between copyright and patent. The conditions to obtain copyright are accordingly looser. The copyright is not being formally registered and the author need not to pay any fee. Its existence is assumed automatically. The period of protection is also longer, typically between 50-70 years<sup>27</sup>

The distinction between copyright and patent is, however, more blurred than it seems. In music the common method of new song production is to remix old sounds. Since the number of pleasantly sonorous tunes and rhythms is limited, their combinations are used over and over again.

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23 Most of the regulation concerning patents in the Czech legal system is included in the law 527/1990 Sb., 22 May, [http://portal.gov.cz/wps/portal/\\_s155/701?l=527/1990](http://portal.gov.cz/wps/portal/_s155/701?l=527/1990).

24 Boldrin and Levine (2008) mention an interesting fact against the mere existence of patents. If we assume that patents are a good way how to promote innovation from public sources, we should observe some sort of patents in the sectors fully controlled by private companies, e.g. sport events. Innovation is the engine behind consumers' satisfaction in various sports such as American football (or F1). But in neither of them any patent-like institution has emerged.

25 Most of the regulation concerning copyrights in the Czech legal system is included in the law 121/2000 Sb., 22 May, [http://portal.gov.cz/wps/portal/\\_s.155/701?kam=zakon&c=121/2000](http://portal.gov.cz/wps/portal/_s.155/701?kam=zakon&c=121/2000).

26 Boyle, J. (2008) p. 123.

27 In some cases counted from the day of author's death.

There is a significant difference between the famous song O Fortuna from Carmina Burana and its techno remix from Apotheosis. Likely, these versions do not compete for the same fans at all. Still Apotheosis became a target of a successful copyright infringement complaint submitted by the original version copyright possessors<sup>28</sup>. Boyle, J. (2008) write about many similar cases<sup>29</sup> when copyright blocks the creativity. Copyright with the relation to the music industry will be our subject of interest for the rest of the paper.

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28 Soupl, G. describes: „*The estate of Carl Orff (Orff himself being long dead) believed it was undignified that the Carmina Burana be reworked into popular culture, and immediately sued to stop the distribution of O Fortuna.*“, *MacEdition: Soup Says!*, 22 May, [http://old.macedition.com/soup/soup\\_20000627b.shtml](http://old.macedition.com/soup/soup_20000627b.shtml).

29 Boyle, J. (2008) pp. 122-159.

# Chapter Three

## 3 Music Industry Overview

Before we try to propose a suitable model of the market with music recordings and music production as such, description of the basic market characteristics (size, structure and dynamics) is handy. Besides the intrinsic characteristics given directly by the attributes of the chosen goods and the state of technologies (especially the widely claimed non-excludability and non-rivalry of consumption), we observe other characteristics derived from the very market. In the next chapter we will see how these findings determine which model we decide to prefer and how it affects our public policy implications.

### 3.1 Size of the Market with Music Recordings

Figure 1 shows the evolution of the recorded music sales in the retail value. Additionally to the world-wide numbers I also use the number for the USA as many interesting data exists for this market. Given the importance of the US market I consider them to be globally relevant. The value is expressed in USD, every year the by-then actual exchange rates were used. Thus the figure is partly skewed by the relative fall in value of USD. That's just another reason why to use the US statistics too.

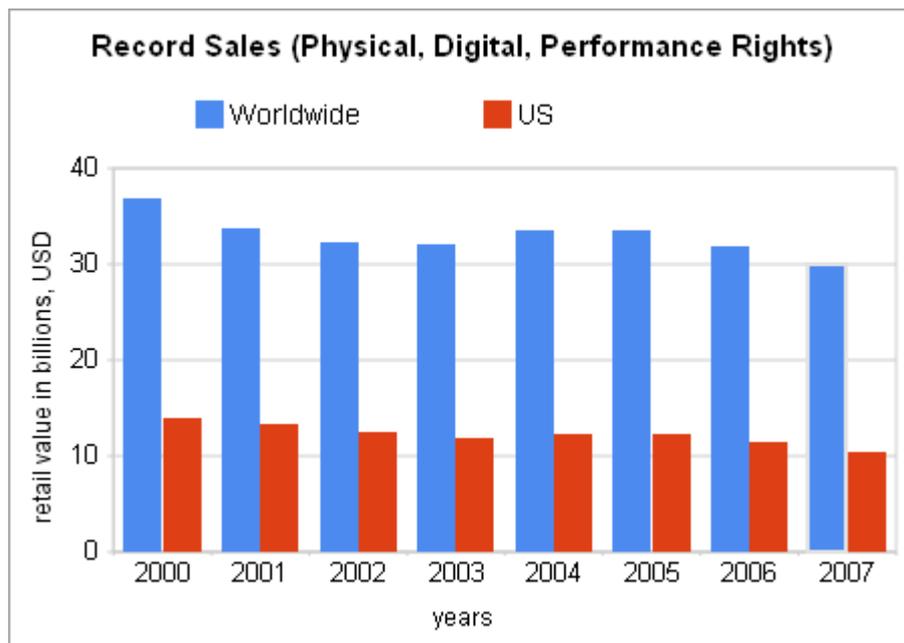


Figure 1<sup>30</sup>

<sup>30</sup> IFPI (2000-2008), see also Appendix 1.

The values present the aggregate of all revenues from music recordings sold on physical formats, in digital versions and accessory revenues from performance rights. Until 2005 IFPI did not track this structure, that's why in Figure 2 I was able to show only the recent years. In Figure 1 the year 2008 is missing, because IFPI changed its methodology during these years from measuring record sales in the retail value to the trade value. For couple years IFPI published both values, but in the year 2008 they present only the trade value. We, however, use the data from this year in following figures.

The values in Figure 1 are not adjusted to the inflation. Without the adjustment during the period the revenues fell by 19% from USD 36.9 billion to 29.9 billion world-widely and by 25.7% from 14 billion to 10.4 billion. The adjustment increases the fall to 32.1% and 37.7%. We should also consider, that we overall consumption of entertainment and music has risen a lot during the period which apparently is not reflected by the industry revenues<sup>31</sup>.

### 3.2 Structure of Revenues

Figure 2 shows the structure of revenues for years 2004, 2005, 2007 and 2008 expressed in the trade value. It clearly illustrate that the massive drop in revenues from physical formats which is not balanced by the increase in revenues from digital copies and performance rights. Although both of these revenue sources see a very healthy surge.

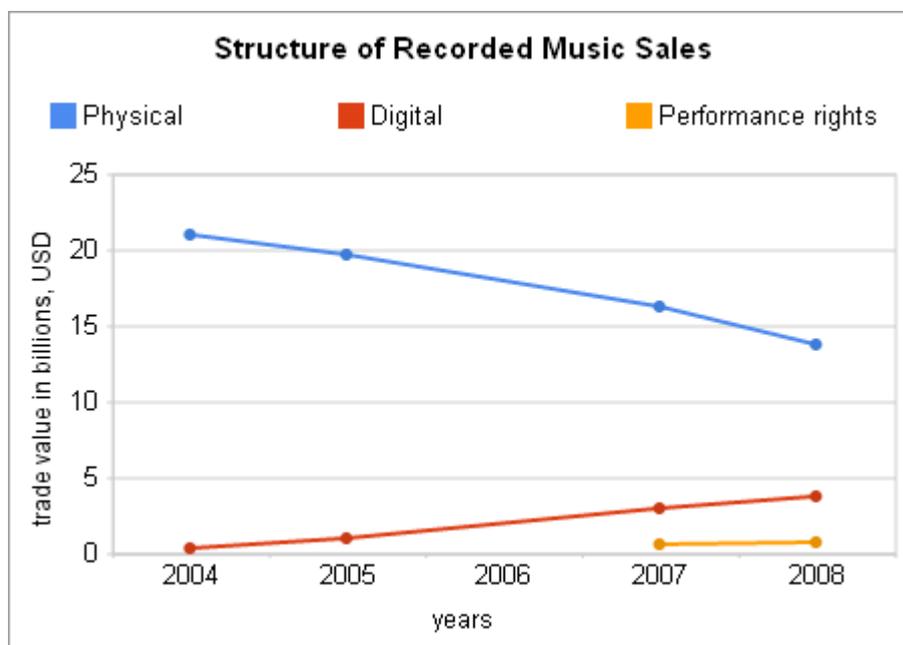


Figure 2<sup>32</sup>

Figure 3 uses the same data but transform them to show better the evolution in the structure of

31 The fall seems a lot less grave when we look at longer series, see Rothenbuhler, E. and McCourt, T. (2004), p. 230.

But even then we would normally expect a massive boost, not contraction.

32 IFPI (2000-2008), see also Appendix 2.

revenues. We see, that although physical format revenues fall sharply, they are still the dominant part of total revenues. That explains why the music labels move so slowly in embracing new business models, they cannot afford to cut off the dying, but still huge source of revenues.

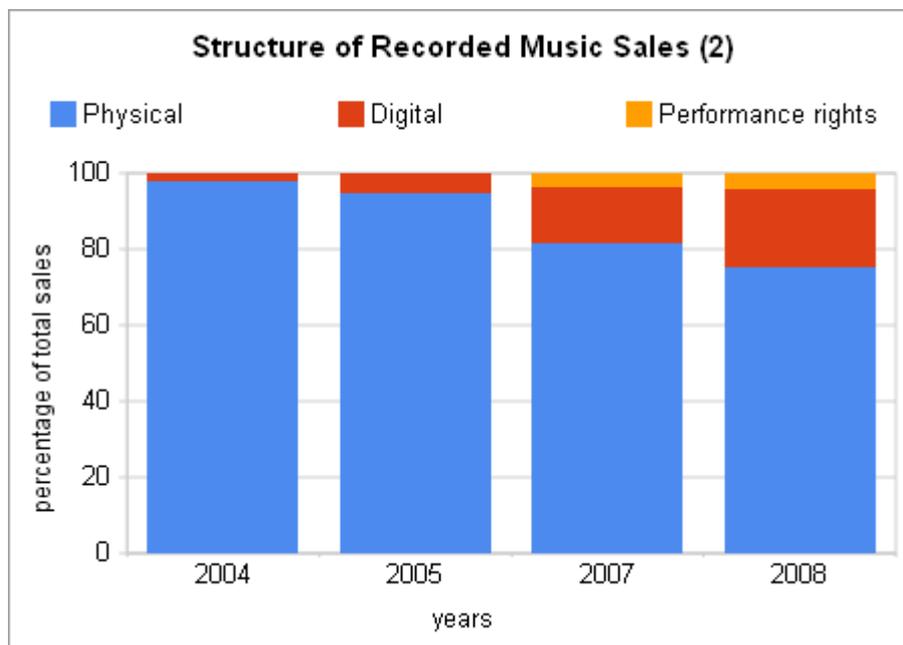


Figure 3<sup>33</sup>

Figure 4 shows another statistics, which give us another knowledge about the music industry – geographical distribution of revenues. According to IFPI two largest markets in 2008 were the US (26.6%) and European (39.1%), surprisingly high revenues come from Asia (25.5%). Other regions are negligible. What is even more interesting are the differences in the sources of revenue<sup>34</sup>. 3.8 billion is the total global revenue from digital sales, but the US market alone generates 1.7 billion. On the other hand performance rights revenues constitute 0.8 billion and 75% comes from the Europe. These differences are probably caused by different technological development, local legislation and individual approach of labels to the each market.

33 IFPI (2000-2008).

34 See Appendix 3.

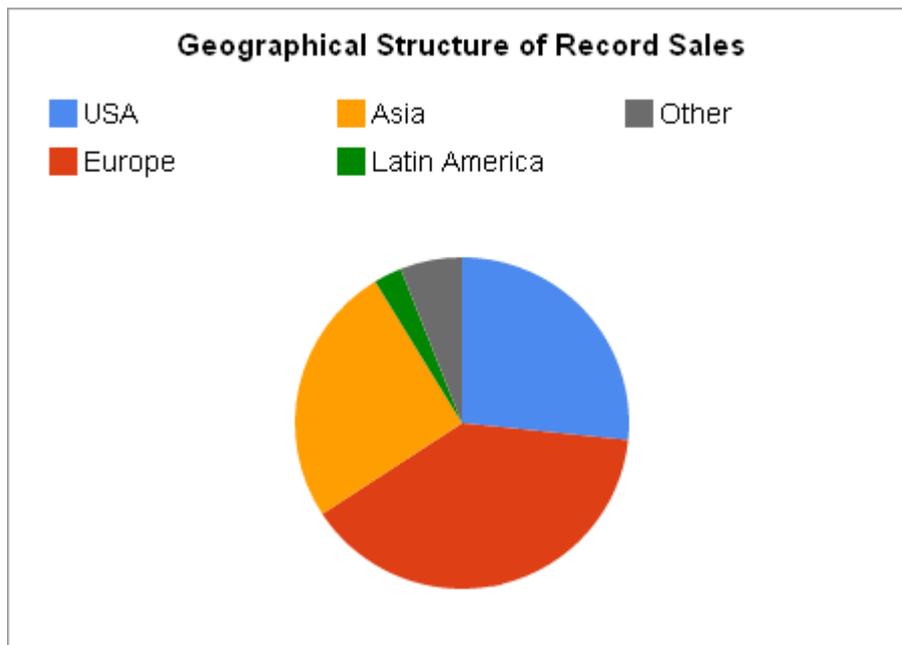


Figure 4<sup>35</sup>

Statistics of American RIAA shows the changes of last years from a different angle. Instead of measuring the value of sold music recordings, Figure 5 shows the physical units. Since the prices also move, this view better capture the changes in the structure of demand. I have excluded music video (DVD) and cassettes from the figure to make the picture lucid. The drop in demand for CD albums is dramatic, during those 5 years the shipment fell from 767 million to 384.7 million. The decrease seems to be balanced with increased digital downloads. But while most of purchased CDs are whole albums, people download mostly single tracks from the Internet. Although even the sales of digital albums have risen from 4.6 million in 2004 to 56.9 million in 2008. 1033 million singles were downloaded in 2008. If we count the price of one album as approximately equal to ten singles, we can simply count, that the fall of revenues of them music industry is caused by the shift of demand from albums to singles.

35 IFPI (2000-2008), USA 26.6%, Europe 39.1%, Asia 25.6%, Latin America 2.7%, other 6%.

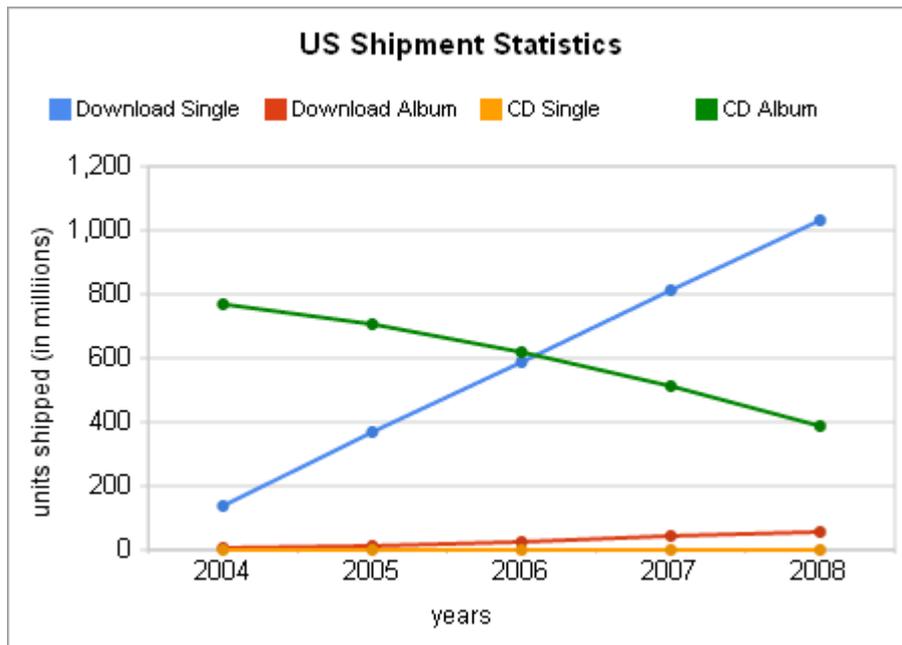


Figure 5<sup>36</sup>

While physical formats are perfect for bundling additional songs with the main hit, the digital revolution brings in the possibility to mix individual singles in any manner and the consumers' behavior is changing. Producers can no longer bundle less attractive songs with those which the consumer want and thus increase their sales. On the other hand the end of bundling do not necessary leads to lower revenues – music labels could possibly increase the prices of their best-selling songs. That nothing like that have happened so far we can probably explain the best by other effects which are in play – the pressure from P2P networks and the strong bargaining position of Apple and his shop with digital music iTunes.

Figure 6 (which again omits some marginal sources of revenue) gives a clear picture of the change which music labels have to face.

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36 RIAA (2008).

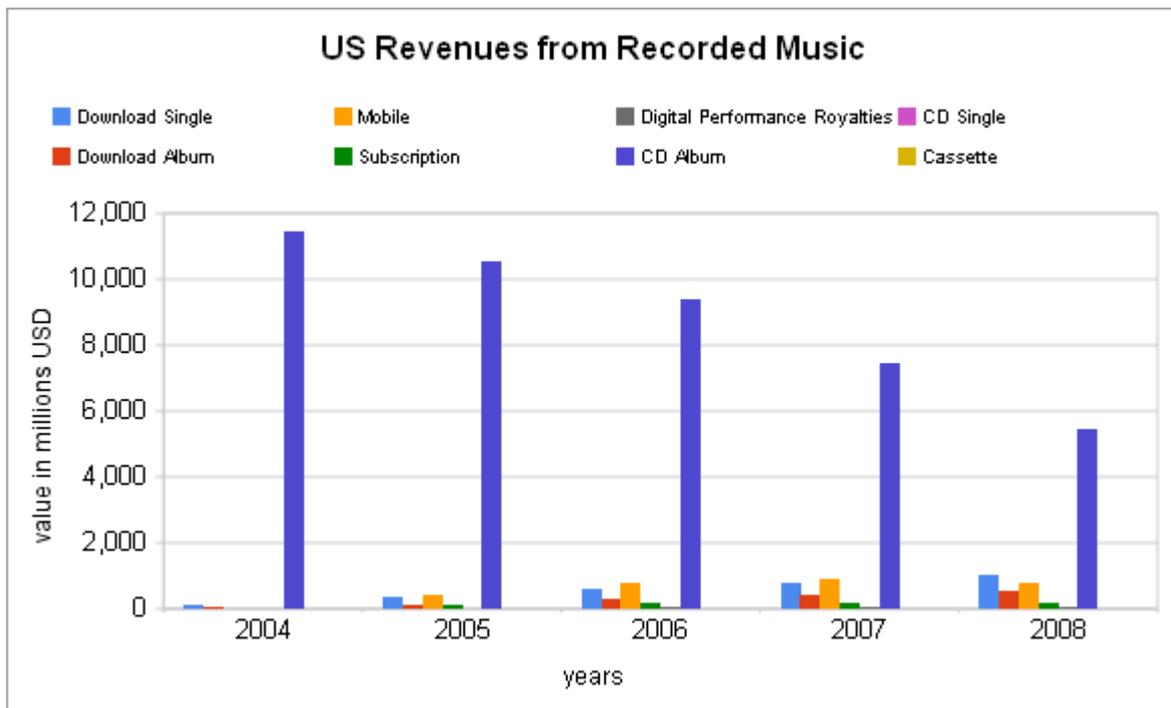


Figure 6<sup>37</sup>

Ironically, the music industry is one of the most progressive in the re-orientation on digital world from the media and entertainment industries as Table 1 shows. Music industry's 20% is in stark contrast with the related film industry which gains only 4% of revenues from the digital sources. We can safely predict, that these number are going to each significantly in the coming years and those industries might be hit even harder than the music one.

Global digital revenues by industry (2008)	
Industry	Digital share
Games	35%
Music	20%
Newspapers	4%
Films	4%
Magazines	1%

Table 1<sup>38</sup>

### 3.3 Market Shares

The music industry is not only about authors, writers and interprets. A wide scale of other professionals are present too, from sound engineers to managers and marketing specialists. Specific institutional arrangement has evolved to coordinate such an extensive division of labour. Between the artist and consumer strong labels exist which take care about almost everything related to the production, distribution and marketing of music recordings. The market is so concentrated that we

37 RIAA (2008), see also Appendix 4.

38 IFPI (2009), p. 4.

can call it oligopolistic.

Rothenbuhler, E. and McCourt, T. (2004)<sup>39</sup> describe two significant signs of this oligopoly – vertical integration of everything between the artist and consumer, and conglomeration in sense of ownership-based links with companies from other entertainment and media industries (film, television etc.) They believe, that those two factors lead to stable environment, where the companies are not challenged by intensive competition from small players or new-comers. Rothenbuhler and McCourt speculate, that the music industry embodies large economies of scale which lead to natural concentration. Traditional distributional and promotional system suffers of significant entry barriers. Although the very entry into the world of artistic creation is quite inexpensive with low direct costs of making a song, the distributional channels is impossible to bypass so the whole industry is fully controlled by the labels. To get a song into radios, the CD to shops, simply to create a star is not possible without label's assistance.

I consider this thought to be fundamental for our analysis and use it in the next chapters. If we imagine the music production to be divided into two separate markets – first between authors and labels, second between labels and consumers, the traditional approach to the copyright analysis needs to be modified. Our notion of strong labels seems to be supported by the evidence. The artists usually get around 12% out of every purchased recordings<sup>40</sup>. I consider it pretty low and assign it to the weak bargaining power of authors.

Popular opinion is, that the oligopolistic structure with middlemen – labels – depends on the traditional way of distribution and the digital revolution should shake it up. Indeed, there are examples of musicians who have left their labels and started with a different distributional model – e.g. Madonna<sup>41</sup>, Nine Inch Nails<sup>42</sup>. Through modern communication channels like YouTube, Facebook and Twitter it is a lot easier to get directly to the fans. But if we turn our attention to Figure 7, we really do not recognise any big movement towards fragmentation of the market. Obviously, we should be careful because the figure shows only the revenues from recordings hence it is still dependent on the physical format sales to the large extent and do not feature non-pecuniary ways of obtaining music. Anyways, the top four music labels hold together more than 87% of the US market and in recent 4 years we do not observe any change<sup>43</sup>.

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39 pp 229-236.

40 Mortimer, J. and Sorensen, A. (2005), p. 5.

41 See „Madonna ditches record label to sign up with concert promoter“, *The Independent*, 19 April, <http://www.independent.co.uk/arts-entertainment/music/news/madonna-ditches-record-label-to-sign-up-with-concert-promoter-394672.html>.

42 See „Nine Inch Nails Dumps Record Labels, Going Directly to Fans“, *Gizmodo*, 19 April, <http://gizmodo.com/gadgets/burn/nine-inch-nails-dumps-record-labels-going-direct-to-fans-308409.php>.

43 Data from 2005 which adjudges more than 18% to indie labels are suspicious. The possible mistake is probably caused by the indirect source of my numbers from different sources (although the original source is in all cases the

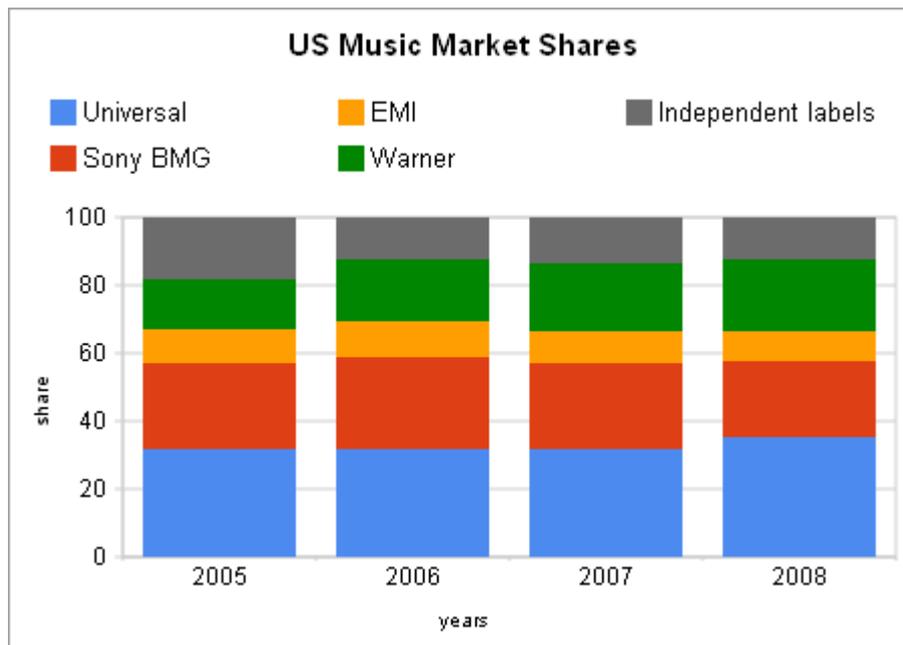


Figure 7<sup>44</sup>

So although the market concentration could be unstable for the future, at the present time we do not see any fundamental shifts. Just to mention – at Czech market the four largest labels hold 80%, the six largest more than 97% as is depicted at Figure 8.

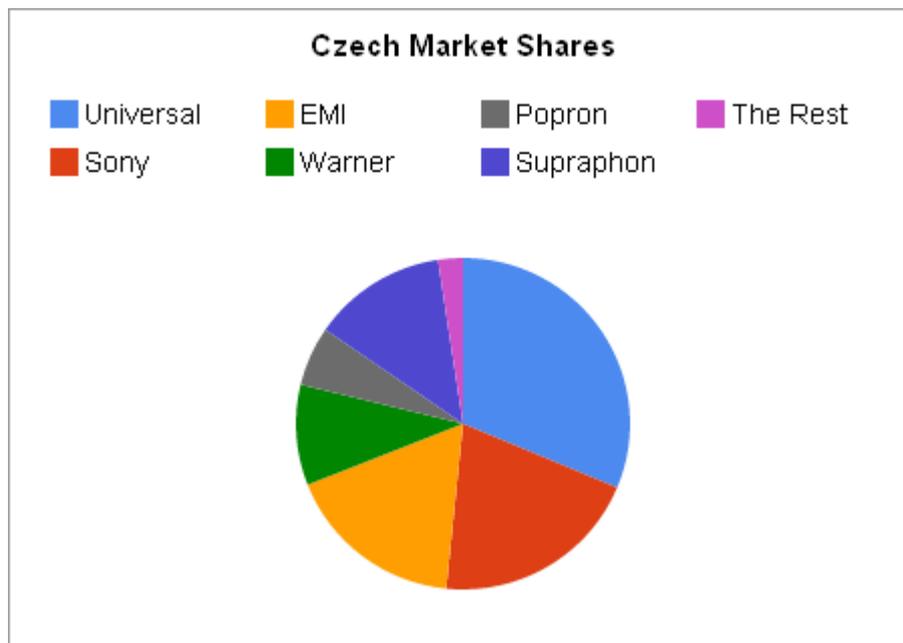


Figure 8<sup>45</sup>

same). I've still decided to include this figure into the paper because its general meaning is clear – indies do not significantly grow.

44 „Music industry“, *Wikipedia*, [http://en.wikipedia.org/wiki/Music\\_industry](http://en.wikipedia.org/wiki/Music_industry), „Music market shares in October 2008“, *IT Facts*, <http://blogs.zdnet.com/ITFacts/?p=15060&tag=rbxccnbzd1>, „Music market shares in US in 2007“, *IT Facts*, <http://blogs.zdnet.com/ITFacts/?p=13599&tag=rbxccnbzd1>, 19 April, see also Appendix 5.

45 IFPI ČR (2009), Universal Music 31.3%, Sony Music 20.3%, EMI 17.4%, Supraphon 13%, Warner Music 9.8% and Popron Music 5.8%..

### 3.4 Other Revenues

But the market with music recordings is not the only source of revenues for the music industry. Historically, the labels control everything what is related to recordings, but their contracts with artists do not involve concerts. The organization of concerts is being handled by different companies and artists are in a stronger position there, they usually get 85% and more from the ticket price.

That means, that the authors are not necessarily worse off the decline of recordings revenue if it is balanced with the generally increased music consumption. Concerts are often considered to be complementary to recordings, then we can recordings take as a kind of advertisement. Therefore if the music spreads to more people, even through illegal channels, the interest in concerts should only increase and authors have a much bigger share from this sort of revenue. And really, our intuition appears to be true, Figure 9 depicts the tripling of ticket sales in the US market in past 10 years. If in 2007 the revenues from tickets amounted to 3.9 billion and the retail value of record sales was 10.4 billion, we find the concerts as the main source of profit for interprets nowadays. If our information about they shares from both revenue sources is correct, they gain 3.3 billion from concerts and only 1.2 billion from records. This straightforward computation is definitely very simple and do not take into account that different kind of music are differently suitable for live performance. Some music is consumed mostly live, some is almost entirely consumed in the form of recordings. Nevertheless, it is a clue for further thoughts.

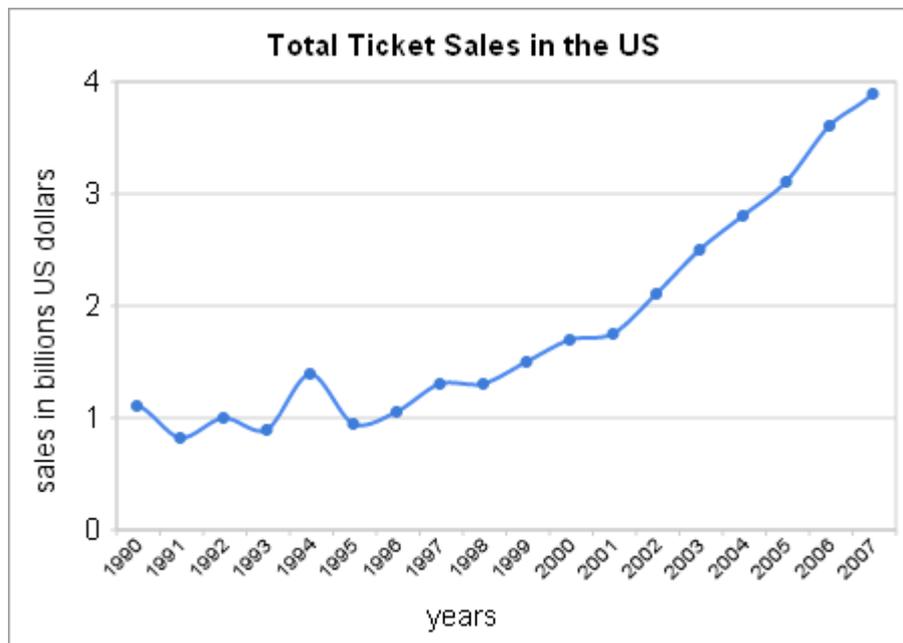


Figure 9<sup>46</sup>

Interesting to notice is the decreasing share of the top 100 tours as showed at Figure 10.

<sup>46</sup> Walters, D. (2008), p. 27, see also Appendix 6.

Again, that suggests an increasing diversity in the music supply caused by the digital revolution changes, which we can consider beneficial for consumers. It also contradicts the claim, that „piracy kills the music“ and especially young, unknown interprets. On the other hand from the comparison of top 100 vs. else we cannot derive any fundamental conclusions.

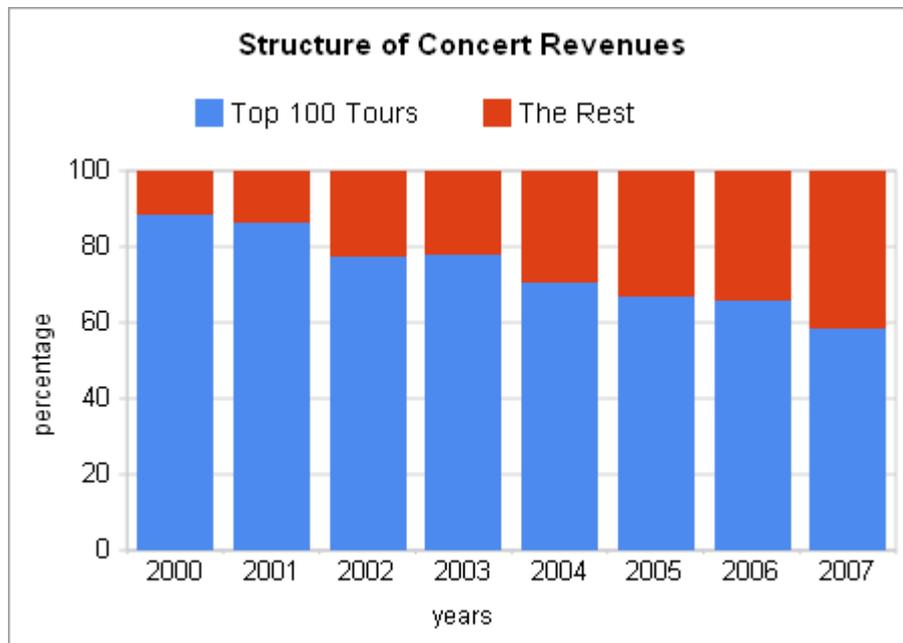


Figure 10<sup>47</sup>

### 3.5 Piracy

To estimate reliably the magnitude of the music „piracy“ is impossible. Most of the copies are undetectable and it is also uneasy to recognize legal and illegal copies. Some numbers might be suggestive, though. Pouwelse, J., Garbacki, P., Epema D. and Sips, H. (2008) offer some of them. Figure 11 shows different types of Internet protocols and the evolution of their share of the total Internet traffic. The huge climb of P2P networks signals that sharing is far from being a marginal fun for geeks. And we should add that a vast majority of the content at P2P networks infringe someone’s copyright rights.

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47 Walters, D. (2008).

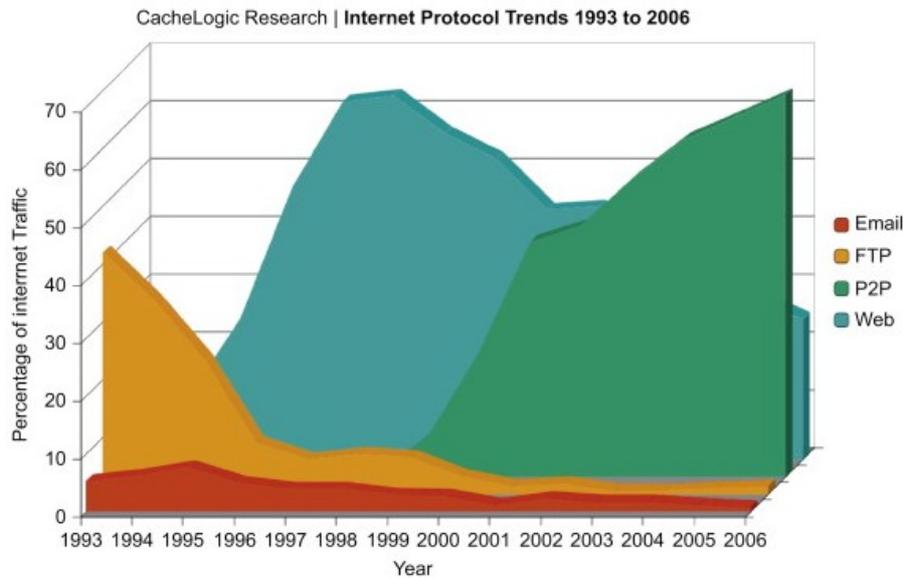


Figure 11<sup>48</sup>

But we cannot derive much information out of this figure about the music. The connection speed is today fast enough to allow sharing of much larger video files. Even in smaller amount (in terms of physical units) they easily beat all the music files. Another problem is that the data ends in 2006. Then we have no information about the effects of web-streaming services such as YouTube<sup>49</sup>. To put these numbers into the perspective of how many users are involved in this activity – allegedly 35% of all computer in the world have installed some P2P software.

Technicalities of different sharing methods are not important for this paper<sup>50</sup>, but to imagine the difficulties of fighting with Internet piracy and to see which methods were tried and how they worked we could briefly sketch the basic principles. The important characteristics of every P2P network is the degree of its centralization. As seen, the number of passive downloaders is huge and their elimination is not directly enforceable. Therefore the labels and governments concentrate the most at the other side, the side of uploaders and service providers. The P2P concept itself has been born as a response to the pressure on the first pirate method – FTP servers. FTP worked centralised – files were saved at some central computer from which all users downloaded them. This kind of sharing is quite easily discoverable and can be eliminated without high costs through the legal process, it is also limited because of the traffic costs, which grow way too high when only one provider pays for all.

P2P programs transmit the connection between users and their local discs and let them exchange the files. They differ in the extent how much they are engaged in the transfers themselves.

48 Pouwelse, J., Garbacki, P., Epema D. and Sips, H. (2008) .

49 But they are full of unauthorized content themselves, so they really don't constitute a rundown of piracy.

50 Biddle, P., England, P., Peinado, M. and Willman, B. (2003) offers an interesting overview and correct prediction, that DRM will show up futile.

The biggest problem of first-generation P2P networks was free-riding. Most of the users tried to only passively download, not many of them were keen to offer uploads too – because of the costs and the possibility of being punished for law-breaking. That led to the deterioration of transmission speeds. Table 2 shows how badly the once most popular P2P network Kazaa suffered of free-riding, R denotes the ratio between upload:download.

Percentage of users	Sharing ratio R
38.7%	$R < 0.04$
34.6%	$0.04 < R < 0.5$
14.2%	$0.5 < R < 2$
22.5%	$2 < R$

Table 2<sup>51</sup>

The modern P2P networks based on the BitTorrent protocol work differently and eliminate free-riding effectively enough. The shared file is being „cut“ into small pieces, each of them is shared independently and agglutinated after the whole file is downloaded. During the process every user automatically work as a source for the others. Thus the speed is usually only faster when more people start to download.

Another shift, which is apparent in recent years, is the come-back of centralised solutions which are often more comfortable from the user’s point of view. Almost any song is downloadable straightly from the web and the user needs only Google or other search engine to find it. With the boom of small personal websites the labels have lost a chance to monitor them all. But this is more and more true about movies too – Rapidshare works as a huge anonymous storage and is used mainly for piracy purposes. The labels are so far pretty unsuccessful in their effort to fight the piracy. While they try to create new legal and technical barriers<sup>52</sup>, the pirates move nearly as fast and the P2P networks keep up acceptable user friendliness to be accessible for wide range of users.

Finally if we demand some estimation of the piracy magnitude, IFPI (2009) claims, that 95 % of all digitally distributed songs are downloaded from illegal sources. If we consider, that those 5 % made 20.7% of all recordings sales in 2008, the upper boundary of the nominal value of pirated music is incredible 414fold of all labels’ revenues. Although I consider this number to be heavily overshoot, even diametrically lower figure would be still very impressive. We should stress that this number does not include non-Internet methods of sharing such as burning of CDs and direct transfers between friends.

51 Pouwelse, J., Garbacki, P., Epema D. and Sips, H. (2008), p. 8.

52 Example of a huge failure is the so-called DRM protection. An attempt to disable to possibility of creating copies from purchased recordings which only crippled the legally bought product in comparison with DRM-free files downloadable from P2P networks.

# Chapter Four

## 4 Model of the Music Market with Perfectly Enforceable Copyright

In the chapter two I have outlined the legal concept of copyright, in the previous one the basic characteristics of the music industry and its dynamics. In this chapter I finally discuss, how to model the music recordings market as it worked before the digital revolution.

Intellectual property infringement in form of spreading unauthorized copies of music recordings was until recently rare enough. The copyright infringement was mostly limited to organized pirates who were creating and distributing illegal copies for commercial purpose, individual piracy was prohibitively expensive. The first break-through happened when cheap CD burning machines appeared, but that still was not the fatal punch in labels' faces. The transaction costs of obtaining pirated copy fell down enough only with the P2P network such as Napster and its followers. The unenforceability (or decreased enforceability) of law fundamentally changes the framework of music distribution. That is the reason why in this part we will focus only at the traditional market environments with perfectly enforceable law

In the chapter two I declared the preference of the utilitarian approach to evaluation of the IP. I, however, do not deny the legitimacy of other approaches, even non-economic. But my analysis is based on this arbitrary value choice. The optimality we will judge from the Kaldor-Hicks efficiency paradigm, the less strict version of Pareto optimality. Being aware of its weaknesses and its criticism, I believe in its suitability and usefulness for our purpose.

This chapter is devoted to the evaluation and description of the music market which we inherited from the period before the digital revolution. That might allow us to compare it with the new situation in terms of welfare improvement or deterioration in the chapter five, to give us a hint whether we should regret or welcome the digital revolution, whether we need to fight it or facilitate. Because I chose a topic which is hard to examine by the methods of empirical analysis, different models of the music market with different implications for the public policy exist. I will sketch some of them and try to argue, which one we should prefer.

### 4.1 Perfect Competition

We start with the market how it would look like if the producer was not protected by the

copyright at all. The specific character of music recordings in all forms is that the creation of additional copy is very cheap and constantly costly. Moreover, the copy has an identical quality as the original and could be used to create another copies. That implies two important characteristics of the market without copyright protection:

1. The costs of the original producer we can divide to the fixed costs (*FC*) and variable costs which are the same as marginal costs (*MC*). Fixed costs<sup>53</sup> cover the „real“ costs of creating a recording as well as the opportunity costs of the effort and time. Variable costs cover the costs on every additional copy, they are constant. Yoo, C. (2004) argues that it is the constant marginal costs which are way lower than the fixed costs what distinguish the analysis of the music market from the markets of more traditional commodities. The non-rivalry of consumption (i.e. that marginal costs could be even zero) he does not consider to be important, the analysis is not changed because of that. We will, however, in the next chapter talk about the transaction costs which distinguish zero price from all positive price levels.

2. Small copy costs (*MC*) secure the free-entry for other „producers“ (or copy seller). Their mere existence depends on the first producer, without him entering to the market they have nothing to copy and sell. Meanwhile only he faces the fixed costs.

In this case we can simply apply the model of perfect competition, its assumptions we claim to be fulfilled:

- Large number of buyers and producers implying the price-taking behavior of the producers. We may derive it directly from our free-entry assumption. .
- Unrestricted mobility of inputs between sectors, no artificial barriers of entry and exit. Creative work is fully individual voluntary activity which the musician can abandon anytime. Without copyright there are no limits of entry.
- Homogeneity of the product, assured by the identical character of original and its copy
- Complete information about relevant factors – we can assume it at least in the long term, for the model we need it in the short term too, though. The problems connected with this assumption we will discuss at the end of this part.

Because the perfect competition model is notoriously known, I will demonstrate it solely by the Figure 12. The equilibrium market price of the recording is equal to marginal costs. If we assume, that the competitors of the original producer join the market in the same moment as he does, he has no chance to cover his fixed costs. The red rectangle denotes his loss (the shape is a

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<sup>53</sup> The term „first-copy costs“ is often used instead of fixed costs, see Yoo (2004), p. 215.

matter of choice, we have no information about his market share; but the area is still the same). If he knows which market environment he will face, he stays away of the market, not producing at all. Such result we may call a market failure since the pareto-optimal exchange do not occur just because of the market settings. The magnitude of this loss is not clear from the figure because we didn't model the whole market with the recording or even with the music as such, only the conditions of the first producer.

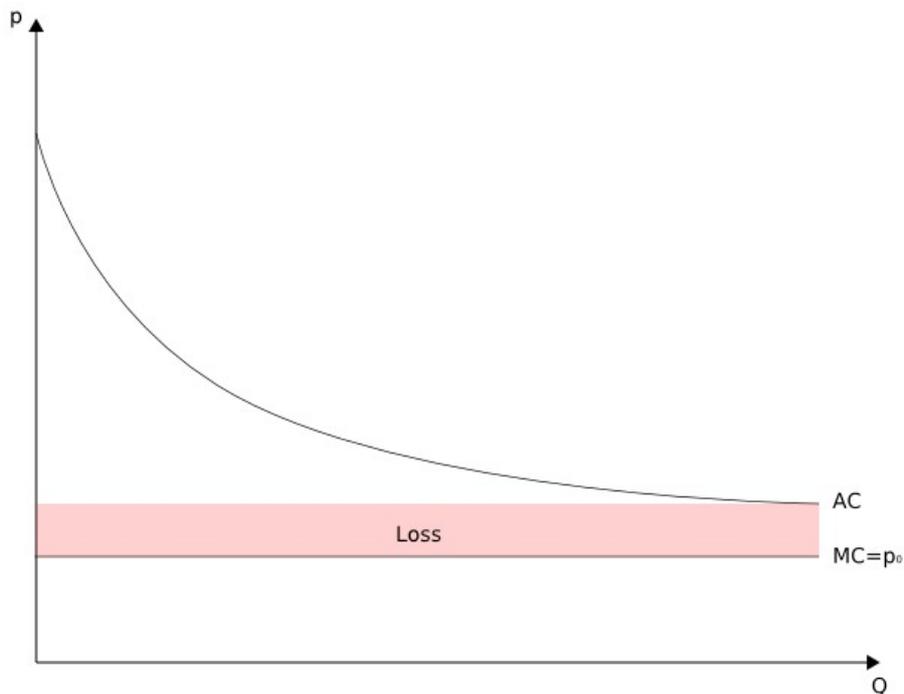


Figure 12

Perfect competition is usually regarded as the ideal market environment. Why it fails now? The constant, small marginal costs cause the forever decreasing slope of the average costs (AC) curve which never intersect the line of marginal costs (and price). In this model we usually assume the U-shape of the *AC* and *MC* curves. The long-term perfectly efficient price equilibrium lays in the intersect of *AC* and *MC* curves. In relatively small levels of production the amortization of *FC* and economies of scale cause the decreasing shape of the *AC* curve. With growing production the effect of amortization weakens and we assume a growth of the *MC* which eventually rise above the *AC* and cause the rise of this curve too.

The original producer is disadvantaged in the competition with his followers and cannot achieve not even a zero profit. What out approach does not capture are the other motivations of music production than solely the profit from recordings – like the joy of artistic creation, fame and others. If recordings and concerts are complements, he can gain a profit from the increased interest of his tickets. And it's only the original producer who enjoys this type of indirect (or even

impecuniary) profit.

We mentioned that the complete information and immediate entry of competitors is unrealistic. The creator possess a full control over his work until he publishes it. The creation and distribution of its copies costs some time, so the first producer always enjoys a headstart usable to temporarily set higher prices to cover the fixed costs. In fact, even in the long term the original producer might be able to set prices above his competitors if some of the consumers value the original higher than copies for any reason. I will discuss this aspects in the next chapter.

## 4.2 Monopoly

But if we exclude these thoughts from our analysis, in the position of the public regulator we face the question whether and how to correct the market failure. The seemingly easiest solution is to provide a tax-financed subsidy covering the fixed costs. But direct subsidies generate a possibility of rent-seeking. The regulator is not able to effectively compare the fixed costs with the costs of non-creation for each song, moreover before its very creation.

Therefore it is believed, that the second-best solution with better results is the copyright protection. It is assumed, that copyright reduces (or eliminates) the competitors and provides the original producer a chance to charge a price above marginal costs and to cover his fixed costs. The traditional analysis includes some degree of inefficiency which arises simply from the above-marginal-costs price. Thus some consumers are excluded from the consumption even though they would be willing to pay for their additional copy more, than its creation costs<sup>54</sup>. We illustrate the model by Figure 13. The line D denotes the market demand depending on the price which the monopolist set up. We assume it is decreasing since the music is probably a normal good, and for purely practical reason we draw it as a straight line. People will demand less with higher price because of the income or substitution effect.

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54 We talk about a trade-off between „access“ and „incentives“. Yoo, C. (2004): *„In the extreme case in which producing an additional copy of a creative work is essentially costless, allowing authors to charge anything for their works necessarily excludes some consumers even though the benefits they would derive from obtaining access to the work would exceed the costs of allowing them to do so. Conversely, pricing such works at efficient levels would lead them to be priced at zero, in which case they would generate no revenue whatsoever and authors would be unable to cover their first-copy costs.“* , p. 216.

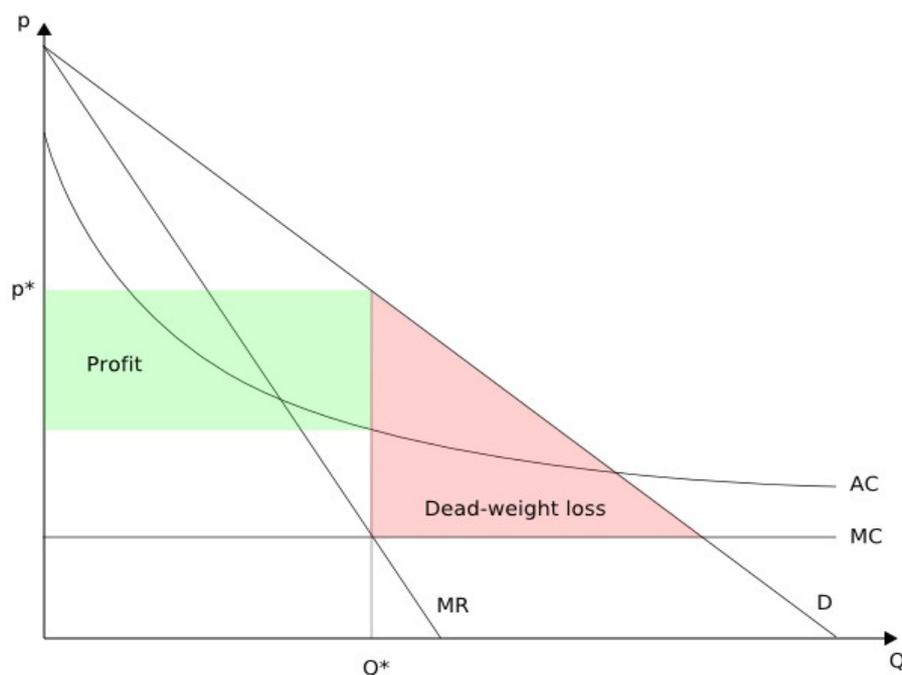


Figure 13

The producer sets the price (and quantity) in order to maximize his profit which is demonstrated by the green rectangle. He will produce the amount, where the *MC* curve intersects the marginal revenue (*MR*) line. The red triangle is the dead-weight loss – the potential surplus of trade exchange, which do not occur. If the monopolist was able to apply the price discrimination, i.e. to set individual price to every consumer and capture the whole surplus, the problem of dead-weight loss would disappear. Ignoring the welfare distribution effects we would consider the result to be optimal. Although the producer have some opportunities to apply the discrimination, it is always imperfect in the real world and a large part of dead-weight loss stays present.

The traditional utilitarian theory implies, that the regulator should calibrate the protection to eliminate the dead-weight loss as much as possible and yet do not force to producer to leave the market. Practically, that means to eliminate the supracompetitive profit of the producer. The regulator's tool is the intensity of copyright protection. He can limit its time force or withdraw certain types of usage of the recording from the producer's power. For example in the United States the radio station do not pay any fees for broadcasting the songs<sup>55</sup>. Both these actions affect our model by shifting the line of demand to the left, by decrease of the demand. In the best case as much as to erase the whole producer's profit, then the price is equal to the average costs as Figure 14 shows.

55 Although this arrangement is probably going to end, see Wilson, D. (2009) „RIAA vs. Public Radio – Performance Rights Moves Ahead“, *ZeroPaid*, 22 May, <http://www.zeropaid.com/news/86235/riaa-vs-public-radio-performance-rights-act-moves-ahead>.

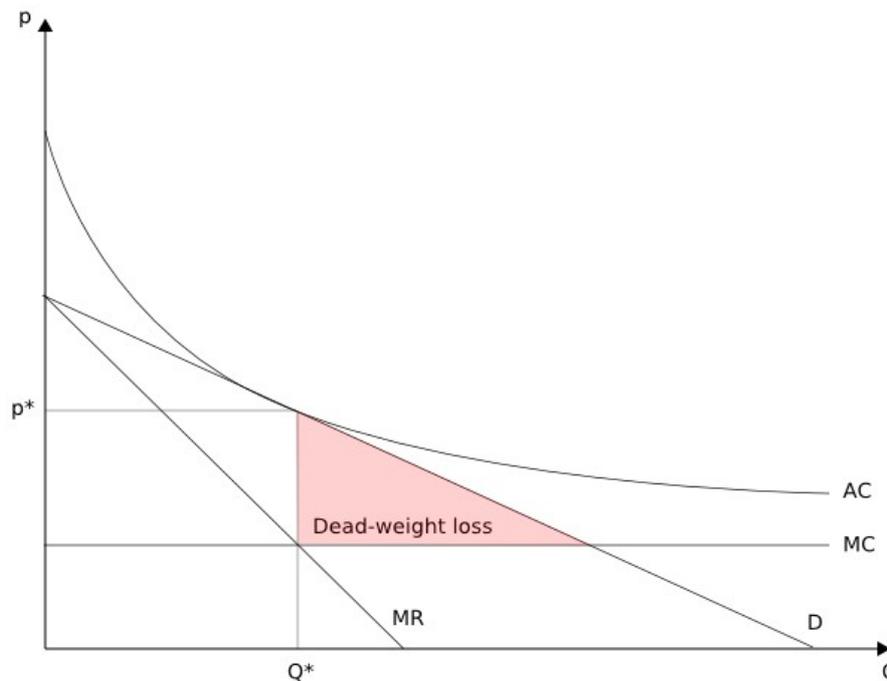


Figure 14

That utmost possible situation when the producer stays at the market, is if the demand is a tangent to the *AC* curve. If the protection was weakened even more, the whole demand line would be below the *AC* curve and the producer wouldn't be able to compensate his *FC*. Notably, even now we observe some dead-wight loss which is unavoidable when the price exceeds marginal costs and perfect price discrimination is impossible.

If this model described the reality properly and the regulator possessed complete information, he would be able to individually calibrate the optimal protection level for each producer to eliminate his profit. In reality the law is never constructed as such, the transaction casts would be prohibitive. The law regulates larger groups. And while our model is strictly individual, describing the position of one single producer with one product, the law regulates the whole music industry. Then it's obvious that the demand and cost curves will vary significantly across different music producers. Certain level of copyright protection might just covers the fixed costs of one producer, but leads to a profit for other and is insufficient for just another, which both implies excessive welfare losses.

Therefore not even theoretically simple method of setting the optimal protection under this model does exist. From the utilitarian point of view the protection should be such to minimize the welfare losses caused by either excessive price or non-producing. In the optimal point the dead-weight loss of its elevation should be the same as welfare loss of its reduction. But such optimization is nothing but a fantasy as viable as the individual protection adjustments. Exactly this uncertainty is behind the unending discussions and political lobbying without stronger than

intuitive grounding. Everything gets even more worse if we admit that the songs are substitutes to each other. Then the welfare analyses must calculate the costs of non-producing much more complicatedly. But we won't further develop this idea at this point.

### 4.3 Monopolistic Competition

The defect of monopolistic model is the limitation to the behavior of one single, isolated producer. The model do not deal with the interaction of more producers at the music market. The producer faces some demand function dependent on his price, but the behavior of producers selling closer or more distant substitutes plays no role. But it's very likely that their decision-making will affect even his behavior.

Yoo, C. (2004) proposes another attractive model – monopolistic competition. He states: „...*the exclusivity granted by intellectual property protection creates monopoly power only if substitutes are unavailable and entry barriers prevent the emergence of any such such substitutes in the foreseeable future.*“ If we assume the (almost) non-existence of entry barriers for music production, the monopolistic competition model might appear to be more suitable. Yoo argues for the assumption by the dichotomy of idea and its specific expression which is only covered by copyright. He believes, that the dichotomy guarantees sufficiently enough that „*any competitor willing to undertake the same fixed-cost investment as the original author remains free to create alternative works with the same functional characteristics as any existing work.*“<sup>56</sup>

#### 4.3.1 Basic Outline

Once again, we won't formalize the well-known model, its main characteristics are expressible in the graphical form. We imagine a number of „monopolists“ who sell similar, but not identical products<sup>57</sup>. The quantity of a specific product which consumers demand depends on its price, but also on the prices of other products and their similarity. The demand function which the producer faces in the short term is modelled by a *ceteris paribus* demand function dependent solely on the price-setting of the monopolist as Figure 15 illustrates.

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<sup>56</sup> Yoo, C. (2004) p. 218.

<sup>57</sup> Guoqiang, T. (2005).

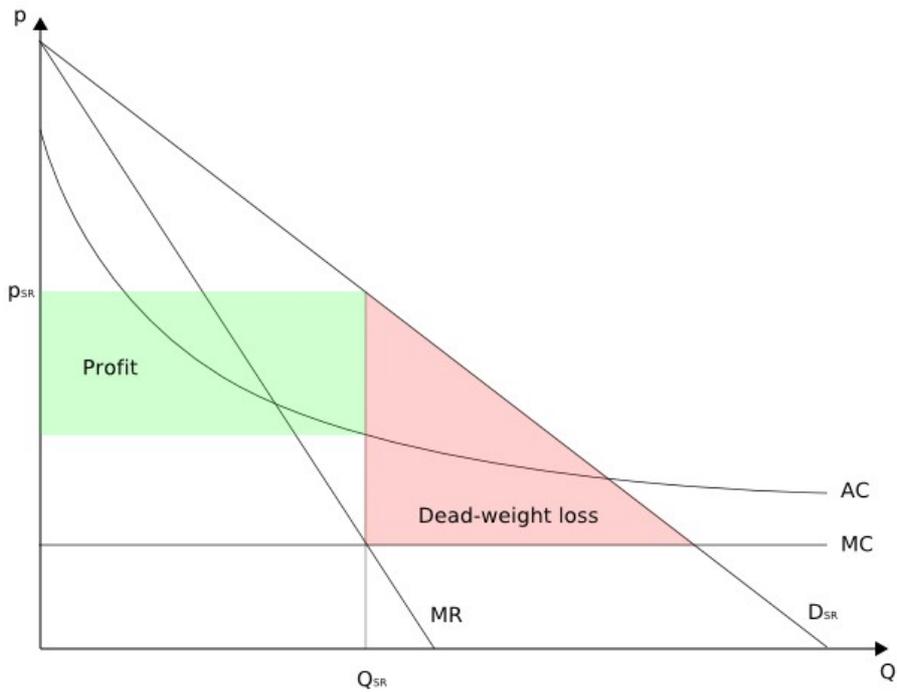


Figure 15

The picture is identical with the one used for the monopolistic model, because in short term the behavior is the same. The difference lies in the long term. Monopolistic competition model assumes the free-entry to the market with imperfect substitutes. As the monopolist achieve supracompetitive profit other producers are attracted to enter the market. We assume, that those new-comers suppress the original producer's profit as far as to zero which Figure 16 shows.

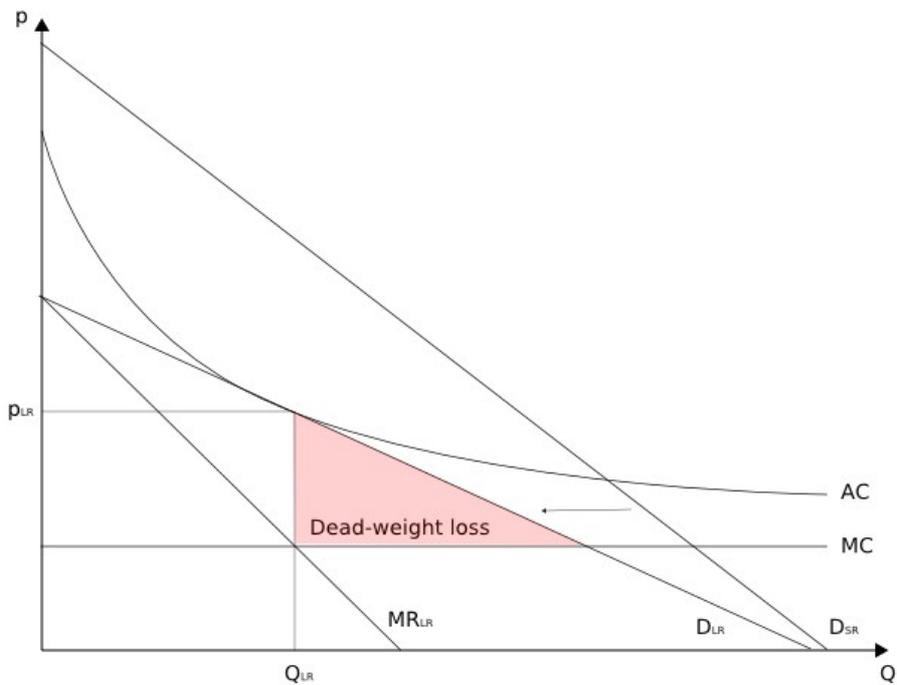


Figure 16

Being the figure a merely illustration, I used the same picture as the to optimal solution of

copyright calibration in the monopolistic model. But in this case the identity is purely arbitrary, both „methods“ might lead to different demand curves (lines in our case) The leftward shift we can explain simply by the transfer of consumers to the new competitors. Besides we assume, that the price elasticity of demand has increased and the demand curve has flattened with higher competition.

What both situations shares is that the demand line is a tangent to the  $AC$  curve, in the long term the producer do not achieve any profit and the price level equilibrium is in the intersect of  $AC$  a  $D$ . Different is, that by calibrating of the copyright protection level we exclude some consumers from the obligation to pay for recording while in this model we achieve similar goals by shifting some consumers to the new-comers and increasing the variety of supply.

The monopolistic competition approach is interesting, because the specifics of music market such as zero or very low and constant marginal costs are not crucial for the analysis. Yoo points out, that in principle the same picture we would draw even if the marginal costs were increasing. Naturally, their shape determine the shape of  $AC$  curve and the possible concrete value in the model, but the principle is the same – in the long term the competition of imperfect substitutes alone suppress the profits to zero. But again – without perfect price discrimination even this model is accompanied by certain dead-weight loss.

#### **4.3.2 Spatial Expression**

To better underscore the different normative implications of this model, the scheme of spatial competition interpretation as shown at Figure 17 is helpful. Yoo uses a one-dimension model with horizontal axis representing a continuum of characteristics from hard rock to easy listening. Vertical axis represents the utility which the consumer in given point attach to the products. We assume the continuity and uniform distribution of consumers' ideal preferences.

The total surplus generated by the product is demonstrated as a triangle, this picture do not deal with its division between producer and consumers. Yoo uses the symmetric preference assumption which means that all works within a group are in an equal competition with one another and a new-coming work „steals“ business from all incumbents evenly. We fulfill this assumption either if all products enter the market in the same moment, or if the entrance of a new product evenly shifts all the already present ones<sup>58</sup>. Finally we assume, that the consumer buys only one song, that of the highest utility.

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58 Yoo, C. (2004), pp. 225, 243.

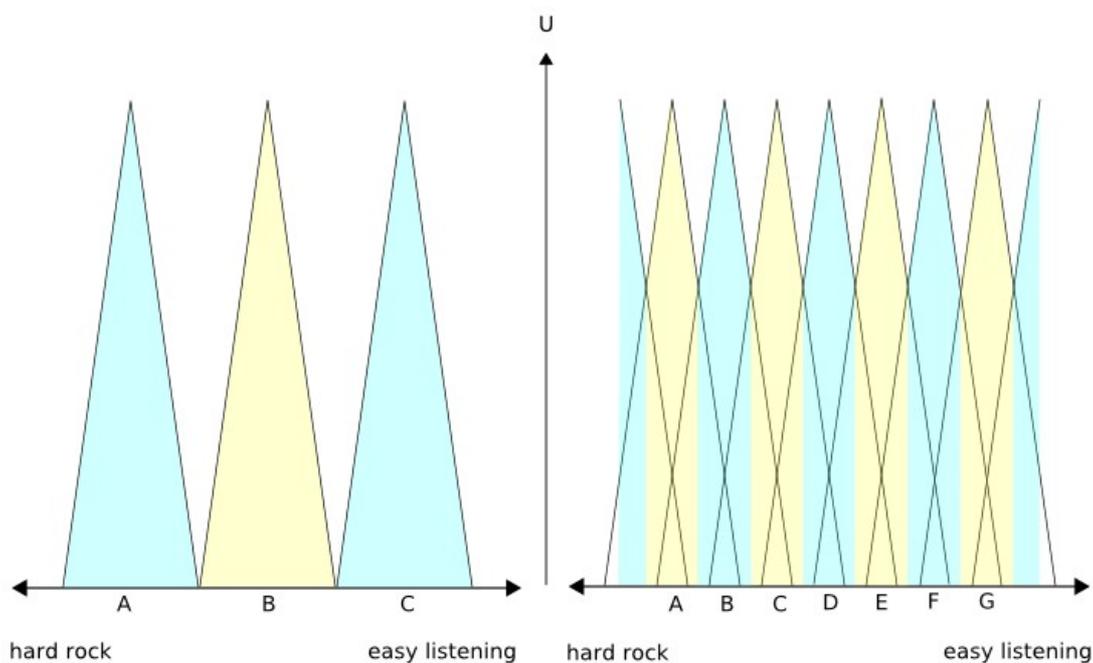


Figure 17

The equilibrium number of producers is such that the surplus captured by producer equals the  $FC$ , we assume identical production cost functions. The left picture represents the situation when the  $FC$  are either high or the producer is not able to capture large part of the surplus and the number of active producers is relatively low. So low, that the differentiation of products is wide and the consumers do not consider the products to be substitutes at all. Each of them is offered to different group of consumers and no competition between them occurs. The right picture represents the opposite situation when the  $FC$  are sufficiently low and surplus capture of producer efficient to attract many competitors. The total surplus generated by each work is depicted by the colored area, the width of it is the market share. The shape is not triangular in this case, because products are close substitutes and they utilities overlay in the continuum.

Yoo from the model concludes that the traditional trade-off between access side and incentive side of regulation copyright is meaningless: „*access can be promoted not by lowering the degree of protection but rather by facilitating entry by similar works*“<sup>59</sup>. The increased competition will suppress the price closer to marginal costs and reduce dead-weight loss. For him, the key variable is the degree of producer’s surplus capture. Only if he captures it completely, the situation when he decides not to produce even though the total welfare would be increased, cannot occur. That’s a similar result which we derived from the monopolistic model. But in this case we do not compare the welfare loss of non-production and dead-weight loss of excessive monopolistic profit – the latter is effectively eliminated by the free entry assumption. Thus Yoo concludes that the copyright protection level should be such to allow the producers maximal surplus exploitation. To capture the

<sup>59</sup> Yoo, C. (2004), p. 253.

whole surplus would be possible only with perfect price discrimination. That could indicate that the music industry suffers of permanent underproduction<sup>60</sup>.

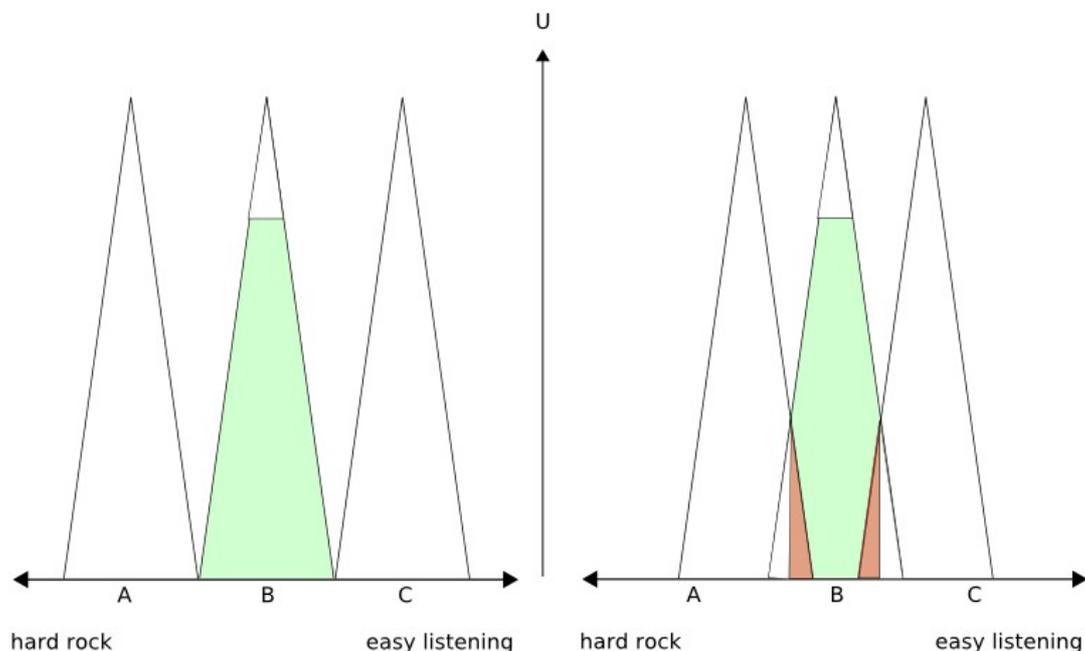


Figure 18

Figure 18 shows the impact of new entrant B on the total surplus. In the left picture producer B do not take over any consumers from earlier producers. We call it demand creation – B attracts new consumers, the surplus generated by his entrance equals to the whole triangle. The green area depicts the arbitrary chosen part of surplus which is captured by the producer<sup>61</sup>. Thus we see that if the *FC* were larger than the green area, B wouldn't join the market even though the total welfare would be increased. But the right picture demonstrates a different situation. The entrance of B does not only create a new demand, but also attracts some current consumers of B's competitors. The red area depicts the demand diversion – the welfare which is captured by the producer but which he did not create – it existed even before his entrance. In such situation it is possible that even if the surplus capture is incomplete, the underproduction is not present. In fact even the opposite may occur: „an author could finance the fixed costs with surplus cannibalized from other producers already in the market rather than incremental surplus generated from new consumers“<sup>62</sup>.

That leads to a seemingly counterintuitive conclusion which is in stark opposite to what the traditional approach recommends. Yoo thinks that the more concentrated the market appears, the higher interest we have to improve the copyright protection and attract new producers. Because the concentration indicates that the market diversion wouldn't be an important issue and the entrance of

60 Yoo, C. (2004), p. 257.

61 The depiction of the uncaptured surplus is chosen arbitrary as a white triangle at the top, but it lay lie anywhere of even be evenly distributed throughout the whole area.

62 Yoo, C. (2004), p. 263.

new producers would generate new welfare.

Moreover, Yoo distinguishes three dimension of copyright protection: 1. number of encompassed surplus-generating activities, 2. ability of the author to appropriate surplus and 3. copyright breadth (which degree of similarity of the competing work means a copyright infringement). His approach indicates that the welfare-generating policy would be to strengthen the protection along first two dimensions and weaken it along the third one. That would enhance the surplus capture while reducing the costs of creating a similar works. However, Yoo points out that the freedom to create close substitutes augments the demand diversion effects and could lead to overproduction. Therefore the third dimension is a space for certain policy calibration. Yoo admits that his thoughts do not include the theory of cumulative creation, but he expresses an opinion, that the recommendation wouldn't be fundamentally different.

#### **4.3.3 Questionable Validity of the Free Entry Assumption**

The preference of Yoo's model before the traditional approach relies on the validity of the main assumption – the possible free entry of new-comers with similar fixed costs. Although I consider his model very attractive and inspirational, well demonstrating certain aspects which the traditional model misses (especially the distinction of demand creation and diversion) I believe the free entry assumption is far from be adequate for the music industry.

The empirical evidence is in contrary to it. Monopolistic competition in Yoo's description should attract so many new producers that any supracompetitive profit would disappear. But we observe huge differences in market shares of interprets. And a small group of the most succesful does capture a significant profit. Figure 10 is a very illustrative example. Such concetration contradicts the model where *„any competitor willing to undertake the same fixed-cost investment as the original author remains free to create alternative works with the same functional characteristics as any existing work.“*<sup>63</sup> Yoo also fails to explain the oligopolistic structure of labels whose market position is evidently strong.

Song is mostly an emotional good. Its utility do not lie in certain practical characteristics which we would be able to name and measure. Song is more than a „sound“. One do not becomes a fan of an interpret because he appreciate his quality tunes, but because he „falls in love“ with him, listening to his music he feels pleasant. Finnish band Lordi is not popular because of an unique „sound“, but because they are a freakish cool metal band which won the pop song competition Eurovision and its members wear scary masks. This story, the image is what transforms a generic

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<sup>63</sup> Yoo, C. (2004), p. 218 but at p. 225 he admits that this assumption do not have to be applicable to all types of the intellectual property as patents pose heavy barriers of entry.

„sound“ into a song, that’s a part of what consumers buy. If they just demanded „Gothic metal“, the competition would be effective enough to suppress the prices, probably to zero. But that’s not the case.

The Beatles are the most successful band in the history, they are incredibly popular even until these days. But are their songs really so much better than anyone’s else? I believe, that success leads to another success. In music we observe significant network effects – it is more valuable to listen the same songs as your friends do, the songs you can talk with them about. That’s the purpose of great stars. The idea, that if we throw thousand boy bands singing about love into the market, the sales of The Beatles will crumble up into thousand small slices is completely out of touch with the real world.

I believe, that the keyword is „attention economy“. In order to transform a „sound“ to song the producers has to attract sufficient attention of the potential consumers. The overall amount of attention, which people are willing to dedicate to music is limited. The channels how to grab their attention and promote the song are limited too. There can be only one winner of Eurovision every year. While the creation of certain number of stars is relatively easy, up from certain point the costs start to be prohibitive. I suppose, that the ability to manipulate with consumers’ attention is the production factor controlled by the labels. Because this factor is naturally limited and could include huge economies of scale, the market power of labels is strong. We will fully develop this idea and its implications in the next chapter. For now I use it as an argument to prefer a different music industry model, a model without free entry.



Lordi<sup>64</sup>

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64 I have included this photo is a deliberate copyright infringement which perfectly underscore the clash between copyright laws and Internet reality. I found it in 10 seconds by Google at an English fan-site. But to find out, who is the true author, discover his contact information, and write him why and how I want to use his creation would cost

#### 4.4 Oligopoly With Product Differentiation

If we refuse the free entry assumption, we might turn our attention to oligopolistic models. Yoo admits: *“If fixed costs are sufficiently high relative to the size of the overall market, the number of sellers will be so small that it is no longer realistic to assume that competitors will not strategically react to other producers’ pricing decisions. When that is the case, differentiated product markets are better modeled as oligopolies.”*<sup>65</sup> But when we weight in our distinction between „sound“ and song and the limited number of songs which can be created, oligopolistic model is well-suitable. We also assume that there are no unused capacities – as many sounds is possible to convert into songs, that many is being converted. Finally we assume, that every song faces only small number of substitutes. I believe this assumption is not unrealistic at all with certain major exemptions – classical music, dance and electro music, Christmas carols and some other segments are probably much more competitive than the rest of the music market. Empirical research in this field would be highly beneficial, but I am not aware of any rigorous attempt which would answer this crucial question.

From the variety of possible models of oligopoly I choose the Bertrand model in a differentiated duopoly as presented in Bester, H. (1992)<sup>66</sup>. The Bertrand model is attractive, because the prices are chosen by the economic agents and they are objects of the competition instead of somehow artificial competition in quantity. We restrict ourselves to the model of duopoly, the model with more producers would only be more intricate. We can intuitively claim, that if the number of competitors was higher, the equilibrium prices would probably be somewhat lower. On the other hand the shift could be erased because of the apparent oligopolistic structure of the music industry and possible collusion. Indeed, we observe a fixation of prices, although we cannot safely claim, that it is a result of the collusion. The goal of our analysis is to find out whether oligopoly leads to prices exceeding marginal costs and what more we can say about the magnitude of the excess.

Let’s have a market with two producers (with indexes  $i = 1, 2$ ) and a continuum of consumers. Each of the producers creates one recording at the same marginal costs  $MC_1 = MC_2$ <sup>67</sup>. Producers compete by setting their price  $p_i$ . Each consumer buys exactly one recording. Thus we assume all consumers evaluate both recordings sufficiently high and have a sufficiently high income that not buying anything is not an option for any possible price equilibrium. In the equation (6) we will

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me hours at least, if I was successful.

65 Yoo, C. (2004), p. 241.

66 This whole part of my work is based on the Bester’s paper, I use his model and deviate only in certain triviality when his model is superfluously too general.

67 The fixed costs we will take into consideration at the end of this part.

show, that there indeed some upper price boundaries, which the oligopolists in equilibrium won't cross, exists. Therefore we assume, that the consumers' reservation valuation is above that boundary.

This strongly simplistic assumption abbreviate our analysis. However, I think that when speaking about the old music market it is not totally unrealistic. It used to be normal to listen music way less than today is. It is a plausible image that people bought a CD from time to time and consumed it for a while, which leads to a pretty similar behavior as we model.

#### 4.4.1 The Model

We characterize each consumer by a preference parameter  $\theta \in \mathbb{R}$  with a distribution represented by a the cumulative distribution function  $F(\cdot)$ . The parameter  $\theta$  is regarded to be an expression how much the consumer prefers the product of producer 2 to the one of producer 1. Specifically, consumer  $\theta$  is willing to pay at most  $\theta$  more units of money for product 2 than for product 1. That means, that if the parameter  $\theta$  is negative, the consumer prefers the producer 1. If  $\theta = 0$ , consumer considers both product as perfectly equal. In summary, consumer  $\theta$  will buy the product 1 only if

$$(1) \quad \theta \leq p_2 - p_1$$

Each of the recordings may be represented by a point  $x_i$  in some space of product characteristics  $X_i$ . The recording is then described as a bundle of characteristics such as genre etc. The consumer preference are defined over the vector  $x$  and a numeraire commodity  $m$  - money. Individual preferences vary and are expressed by a vector  $a \in A$ . Utility is represented by a function  $U(a, x, m)$ . The consumer buys recording 1 if  $U(a, x_1, m - p_1) \geq U(a, x_2, m - p_2)$ . To ensure that all decisions can be represented by (1), we assume quasi-linearity of utility in money i.e. that  $U(a, x_1, m) = U(a, x_2, m')$  implies  $U(a, x_1, m + \Delta) = U(a, x_2, m' + \Delta)$  for all  $\Delta \in \mathbb{R}$ . Then we can reformulate (1) so the consumer buys recording 1 only if  $\theta_a \leq p_2 - p_1$  where  $\theta_a$  is the solution of

$$(2) \quad U(a, x_1, m + \theta_a) = U(a, x_2, m)$$

Thus is the origin of parameter  $\theta$  explained. The market shares are determined by (1) and the distribution function  $F(\cdot)$ . Share of the producer 1 is  $F(p_2 - p_1)$ , share of the producer 2 is  $1 - F(p_2 - p_1)$ . The profits are

$$(3) \quad \begin{aligned} \Pi_1(p_1, p_2) &= [p_1 - MC_1]F(p_2 - p_1) \\ \Pi_2(p_1, p_2) &= [p_2 - MC_2][1 - F(p_2 - p_1)] \end{aligned}$$

To continue we make an assumption about the distribution function  $F(\cdot)$ .

*ASSUMPTION 1.* There is a  $\underline{\theta} < 0$  and  $\theta > 0$  such that  $F(\underline{\theta}) = 0$  and  $F(\theta) = 1$ . Moreover,  $F(\cdot)$  is continuous and twice continuously differentiable on  $(\underline{\theta}, \theta)$  with  $F'(\theta) > 0$  for all  $\theta < \theta < \theta$ .

Thus the support of  $F(\cdot)$  is the compact interval  $[\underline{\theta}, \theta]$ . The profit of producers is a continuous function of their pricing strategies, this assumption precludes atoms in the distribution of  $\theta$ . The assumption implies that  $0 < F(0) < 1$  so both producers have some consumers if they set the same prices. As a measure of concavity we denote the parameter  $\rho(\theta)$  which describes the negative rate of change of the density at point  $\theta$ .

$$(4) \quad \rho(\theta) \equiv -F''(\theta)F'(\theta)$$

Now we examine the price competition. We assume that the producers behave as Nash competitors. Then the prices  $(p_1^*, p_2^*) \geq (MC_1, MC_2)$  represents an equilibrium of the market  $\{F(\cdot), MC_1, MC_2\}$  if  $\Pi_1(p_1^*, p_2^*) \geq \Pi_1(p_1, p_2^*)$  and  $\Pi_2(p_1^*, p_2^*) \geq \Pi_2(p_1^*, p_2)$  for all  $p_1$  and  $p_2$ . For further use we define the parameter

$$(5) \quad z \equiv \max\left[\frac{\bar{\theta} - \underline{\theta}}{F(0)} + MC_2, \frac{\bar{\theta} - \underline{\theta}}{1 - F(0)} + MC_1\right]$$

The proof<sup>68</sup> of the following Proposition 1 would show that it is always optimal for the producers to charge a price lower than  $z$  if the other producers charges a price below  $z$  too.

*PROPOSITION 1.* Let  $-2/(z - MC_1) \leq \rho(\theta) \leq 2/(z - MC_2)$  for all  $\theta < \theta < \theta$ . Then the market  $\{F(\cdot), MC_1, MC_2\}$  has an equilibrium  $(p_1^*, p_2^*)$

This proposition gives us a general condition of the existence of price equilibrium. We might be also interested in its uniqueness

*PROPOSITION 2.* Let  $\theta < MC_2 - MC_1 < \theta$  and  $3[\underline{\theta} - (MC_2 - MC_1)] \leq \rho(\theta) \leq 3/[\bar{\theta} - (MC_2 - MC_1)]$  for all  $\theta < \theta < \theta$ . Then if there exists an equilibrium  $(p_1^*, p_2^*)$ , it is unique.

Because we defined  $MC_1 = MC_2$  and assume  $\theta < 0$  and  $\theta > 0$ , the first condition is immediately fulfilled. The second one demands sufficiently disperse consumer preference, uniform distribution would be applicable. For the symmetric market which we define by adding another

<sup>68</sup> Bester, H. (1992), p. 438. I decided not to include any proof into the text if this paper.

assumption  $F(0) = 1/2$  k  $MC_1 = MC_2$  we have

*PREPOSITION 3. Let  $-1/[\bar{\theta} - \underline{\theta}] \leq \rho(\theta) \leq 1/[\bar{\theta} - \underline{\theta}]$  for all  $\theta < \theta < \theta$ . Then if  $\{F(\cdot), MC_1, MC_2\}$  is a symmetric market, it has a unique equilibrium  $(p_1^*, p_2^*)$  and  $p_1^* = p_2^*$ .*

But we are mainly interested in the price level which will exist in the equilibrium. Following proposition shows the conditions for positive profit, so that when the prices exceeds marginal costs.

*PREPOSITION 4. Let  $\theta F(0) < MC_2 - MC_1 < \theta[1 - F(0)]$ . Then  $\Pi_1(p_1^*, p_2^*) > 0$  and  $\Pi_2(p_1^*, p_2^*) > 0$  in any equilibrium  $(p_1^*, p_2^*)$ .*

With more concrete assumption about the distribution of parameter  $\theta$ , we can get more precise expression of the value of prices and profit. Then let's assume the uniform distribution. From the reaction functions we derive

$$(6) \quad p_1^* = MC - \frac{2\theta}{3} + \frac{1}{3}\theta, p_2^* = MC - \frac{2\theta}{3} + \frac{1}{3}\theta$$

and

$$(7) \quad \Pi_1(p_1^*, p_2^*) = \frac{[\bar{\theta} - 2\underline{\theta}]^2}{9[\bar{\theta} - \underline{\theta}]}$$

$$\Pi_2(p_1^*, p_2^*) = \frac{[\underline{\theta} - 2\bar{\theta}]^2}{9[\bar{\theta} - \underline{\theta}]}$$

Finally we have an interesting observation about the relation of price and substitutability of recordings. Intuitively the oligopolist enjoys a quasi-monopolistic position which depends on how close substitutes he competes with. The closer they are, the lower the monopolistic power is. Let's assume, that we multiply the characteristic  $\theta$  of each consumer by factor  $\alpha > 0$ . then if  $\alpha < 1$  the products become closer substitutes, if  $\alpha > 1$  more distant. We define related distribution function as

$$(8) \quad F_\alpha(\theta) = F(\theta/\alpha)$$

Then the following proposition is valid.

*PREPOSITION 5. Let  $(p_1^*, p_2^*)$  be an equilibrium of the market  $\{F(\cdot), MC_1, MC_2\}$  and let  $MC_1 = MC_2$ . Then the market  $\{F_\alpha(\cdot), MC_1, MC_2\}$  has the equilibrium  $(\hat{p}_1, \hat{p}_2)$  such that  $\hat{p}_1 = \alpha p_1^* + (1 - \alpha)MC_1$  and  $\hat{p}_2 = \alpha p_2^* + (1 - \alpha)MC_2$ .*

Thus is our intuition confirmed.

#### 4.4.2 Evaluation

The model ignores existence of fixed costs which played an important role in the previous models. Their inclusion, however, do not affect the model unless the profit (resulting from the model) is higher than them. If  $FC$  exceed the profit, the producer wouldn't join the market. In the case of monopolist we presented the intensity of copyright protection by shifting the demand function. In the same way we can proceed now. The assumption, that each consumer buys exactly one recording excludes from the model any dead-weight loss, the issue is only the distribution of surplus between consumer and producer. But if we mark the optimum as a situation, when producer generates zero profit (after the inclusion of  $FC$ ), the approach to the copyright regulation remains the same as in the case of monopoly. However, now the impact of weakened protection is more ambiguous, the exclusion of some consumers from the market decreases the demand as such, but also can affect the distribution of parameter  $\theta$  which is crucial determinant of prices and profits.

This model doesn't have ambitions to figure out the optimal level of protection. But it is a quite true representation of the music production environment before the digital revolution and gives us a hint, that labels were able to achieve supracompetitive profits. Therefore, we cannot reject the possibility, that the past music market arrangement embodied significant suboptimality. I will use the conclusions of this model in the next chapter.

# Chapter Five

## 5 Model of Music Production Affected by the Digital Revolution

In the last chapter I summarized the most often ways how to model the music market. We have encountered certain oddities which make the analysis more complicated than the basic models can feature. Some of the structural characteristics of the music market we have specified in the chapter three. In this part I will propose a model sketch which includes various factors omitted by the traditional approaches. On the other hand my proposal will be more vague in certain other aspects. Such formally not precise procedure is in my opinion acceptable because instead of creating a basis for immediate empirical research I attempt to construct a *Gedankenexperiment* to put various factors and arguments into a single framework.

I will distinct two separate markets – one between authors and labels, second between labels and consumers. I assume four categories of market actors – authors, labels, consumers and the regulatory body setting the magnitude of copyright protection. My goal is to capture the dynamics of digital revolution changes and derive possible implications for the regulatory policy.

My model is drawn as symmetric. The production functions of each song and the behavior of all individual actors are identical. To achieve it we make a simplifying assumption of homogeneity of production inputs. We also exclude uncertainty and randomness out of the model, all variables are expressed as expected values (assuming neutrality to risk). The symmetric approach becomes less unrealistic if we image the music market divided into particular parts. The market of techno sets has only small overlays with the market of opera records. Inside of each of them the homogeneity is much less tricky to assume.

We will start with a sketch of the music industry how we inherited it from the past. Then we describe the digital revolution changes and consider the possible effects on the market actors. I've decided to prefer this approach instead of trying to find the optimum totally afresh. All the welfare analyses work with dozens of unknown variable and still look for second-best solutions. Therefore I consider it more useful to describe the initial situation, evaluate the welfare effects of the digital revolution changes and talk about possible welfare-improving changes in regulation.

## 5.1 Authors

In the last chapter I argued that the creation of song demands two inputs – talent to produce „sound“ and investment to grab the attention. Of course, marketing is more or less necessary to sell any product. But I claimed the image in music as crucial.

Authors possess the talent. By paying certain fixed costs they are able to transform it into a „sound“, how I call the incomplete song without attention. Labels hire authors to create sounds for them. We assume that between the talent-holders perfect competition occurs. Labels can change only limited number of sounds into songs. On the contrary the number of talented enough authors, who are able to produce good sound, is very high. Thus I assume that the superior market power of labels leads to the reduction of sound price down to its fixed cost of creation.

Seemingly this claim do not correspond to the empirical observation – some artist eventually builds strong brands and are able to capitalize on it. But we can imagine these authors as rare possessors of both production inputs. Thus the author and label merge into one person. That also explains why the biggest stars sometimes leave the leading labels and manage their rights independently.

Then we assume the homogeneity of talent, every artists posses it in the same quality and quantity. That allows us to preserve the symmetry. Let's consider the cost function

$$(9) \quad C = FC(\textit{protection})$$

The fixed costs include the real costs of sound recording creation and the opportunity costs. We assume the dependency on copyright *protection* variable which we define later on. The stricter the copyright protection is, the higher the fixed costs of creation are<sup>69</sup>.

The cost function must equal to the benefit function expressed as

$$(10) \quad B = s \cdot p \cdot Q_p + \textit{fame}(Q) + \textit{joy}$$

The parameter *joy* expresses the value of impecuniary joy of creative activity. The artistic work is often regarded as a pleasant one, which people are willing to do even without financial motivations. This theme is usually ignored, because simple economic schemes do not include such motivations. But extensive empirical evidence shows how common this behavior is, especially after the digital revolution. Just because of pleasure feelings such projects like Wikipedia could be built, but the scale of noncommercial digital projects is much broader – million of blogs, fan sites and magazines, most of the open-source software. While I am far from claiming that this motivation alone assures efficient production in all creative segments, we definitely cannot ignore it. Many

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69 Boyle, J. (2008), p. 9.

people publish their artistic creations without any hope to actually monetize them. Photo-sharing service Flickr stores 100 million of pictures which are available under some of the free Creative Commons licenses<sup>70</sup> allowing anybody to further use them. The free online publishing is a way which choose many starting authors too. Swedish Basshunter who conquered European radios with Boten Anna song in 2006 started his career by posting the songs on the Internet for free.

The parameter *fame* covers the benefits of being known, being famous. I assume it to be dependent on the total number of distributed recording copies, both purchased or obtained differently. Again, the author have both financial and non-financial reason why to appreciate being famous. The financial ones are mostly concert revenues and merchandising. That's in line with the theory that the whole music industry is composed by various complements and when the price of one falls, the another might rise up. But Liebowitz, S., Watt, R. (2006)<sup>71</sup> point out, that if there was a way to earn more money by giving recordings away for free, the producers would do it voluntarily, what is not the case. Still, this factor is necessary to include among out thoughts<sup>72</sup>.

Finally  $s \cdot p \cdot Q_p$  expresses the slice which author gains out of the record sales.  $p$  is the price,  $Q_p$  the sales and  $s$  the share which the author gets. In the chapter three we said, that  $s$  is approximately equal to 0.12. That would according to our model mean that 12% of the expected value of record sales is exactly the profit, which authors need to break even<sup>73</sup>. But why the authors sell their sounds to labels? We assume, that without the investment into image, into consumers' attention, the demand for the recording is absolutely zero, the label's investment raise this amount to  $Q$  depending on the price setting and the non-market ways how to obtain the copy (both legal and illegal).

## 5.2 Music Labels

The labels operates with the second production factor – the ability to create an „image“, to grab the attention. We assume that every song demands a constant degree of attention  $a$  and that it costs always the same investment  $I$ . All other options are excluded, the label either invests  $I$ , or does not invest at all. Thus we exclude one variable from the model as exogenous. We also assume, that the total available attention is fixed to  $A$ . The possible number of song is then  $n = A/a$ .

In the previous chapter I presented the oligopolistic model which led to the prices above marginal costs (which we will assume to be zero now). In this chapter we won't further discuss the price-setting question, we just assume, that the level of protection is in the initial situation sufficiently high and  $n$  songs are present at the market. The profit function of the label we can write

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70 Thorne, M. (2009)

71 pp 15-16.

72 Gayer, A. and Shy, O. (2006) present a sophisticated model including the concert revenues.

73 Which is really not much, as Oberholzer, F. and Strumpf, K. (2004) point out, p. 25.

as

$$(11) \quad \Pi = p \cdot Q_p \cdot (1 - s) - I(a)$$

Label set price to maximize his profit being aware that he can also change  $s$  if the author gets an additional profit from a different source. Then his profit function is

$$(12) \quad \Pi = p \cdot Q_p + joy + fame(Q) - FC - I(a)$$

### 5.3 Consumers

We assume an uniform distribution of consumers in some space of preference characteristics. We assume, that the recordings are symmetrically distributed throughout the space and their distance from the consumer is expressed by parameter  $\lambda$  which describes the loss of value compared to the highest value  $v^*$  which would be attached to the ideal recording perfectly fulfilling consumer's preferences.

We model the copyright protection as a setting, how many consumers have to pay to legally obtain the song. In the initial situation the formal rules – law – is perfectly in line with the real level of protection. We assume, that the consumer who is not excluded from the market and has to pay in order to get the song purchase it if

$$(13) \quad v = v^* - \lambda \geq p + TC_p$$

Simply if the value the song is above its price and transaction costs while we ignore any substitution or income effects of consumption of other songs. The transaction costs are often not included in the models. It's assumed, that they are efficiently low and exogenously fixed. But songs are cheap goods and precisely transaction costs could make a large part of the costs which consumer perceive. When we talk about the digital distribution, transaction costs include such things like friendliness of the user interface, the ease of manipulation with the purchased file and of the payment process itself. Transaction costs would be boosted by e.g. DRM which prevent the consumer from certain manipulations with the song without additional effort necessary to break it. On the other hand easy use of the shop or existence of fast digital micro-payments would the transaction costs reduce.

Smith, E. (2004) writes that consumers appear to take the price between 75 and 99 cents as almost the same, the discount within this range is not a serious motivation to change the shop. Transaction costs are one possible and plausible explanation why price difference is not the fundamental issue.

The demand function is derivable as a number of consumers, who purchase a song if a certain price is set. We won't describe it further, it is evidently decreasing in price, though, and certain upper price border exists for which the demanding amount will be zero as well a certain maximal demand when the price is zero.

The second group of consumers, which doesn't have to pay for songs because of legal exception will acquire a copy if

$$(14) \quad v = v^* - \lambda \geq TC_{ld}$$

Where  $TC_{ld}$  are transaction costs of legal acquisition which are probably not higher than the transaction costs of purchase.

## 5.4 Regulator

The regulator sets two variables – *law*, and *protection* as the factual fulfilment of the law – those are in the initial situation identical. In our symmetrical model the perfect setting leads to zero profits of labels, to the situation, when they just cover their costs. If we were also able to choose whom to exclude from the obligation of payment, we should choose those, who are not willing to pay the price anyway. But the static analysis is not interesting, we are focused on the comparison of the initial situation and the situation after the digital revolution. But formally we write down the optimal policy as the one which maximizes the general welfare function

$$(15) \quad \sum_i^n (B_i - C_i) + \sum_i^n \Pi_i + \sum (v_p - p - TC_p) + \sum (v_{ld} - TC_{ld})$$

where the first sum denotes the surplus of the authors, the second sum surplus of labels and the last two the surplus of consumers generated by purchased or legally downloaded songs,  $v_p$  denotes the individual values of each purchased song,  $v_{ld}$  the same for the legally downloaded songs. We can claim with good certainty that in the initial situation the protection is not below the optimal. With regard to our experience with the political process we have a good reason to believe, that the protection is per contra higher than the optimal one. Countries around the world have enacted various laws extending the copyright protection in ways which are highly suspicious of rent-seeking. The exemplary case is the US Copyright Term Extension Act (CTEA) from 1998 extending the copyright protection from life-plus-fifty years to life-plus-seventy years for both new and already created works. It was enacted despite strong disapproval by eminent economists who argued that for the currently active artists this change means only approximately 0.33% change of

present value of their work<sup>74</sup>. A very similar act passed in recent weeks through the European Parliament while the conservative estimation of its impact on the present value is 5% at most<sup>75</sup>.

It were only the possessors of already created and slowly expiring works who really benefit out of the change. But what is created is created, it is not possible to motivate someone retroactively. Thus the copyright holders gain additional profit which from the welfare point of view is a transfer of money from consumers to producers prolonging the existence of the dead-weight losses. Therefore we can safely assume, that the lobbying of the entertainment industry is strong enough to achieve the optimal or higher level of protection.

## 5.5 Digital Revolution

Now we have a framework to think about the digital revolution changes. I will stress two important factors which fundamentally change the conditions of music production. The first one is the widespread hardly suppressible piracy. The second one different mechanism of the art marketing, different process of attention grabbing. The first change is widely discussed in the literature. Piracy means a decrease in demand for the paid music. If we think, that the current copyright protection is way too strong, we could consider the piracy as welfare-enhancing. With the opposite opinion about the protection we will side with the opposite group, which see copyright deterioration as welfare damaging. The second change is rarely mentioned but I consider it to be equally important and significantly affecting which side of the dispute we should choose to support.

### 5.5.1 Piracy

With the genesis of P2P pirate networks a new supplier emerged. He offers the exactly same good but in different channel and for zero price. The potential consumers, who are not legally excluded from the obligation to pay for the desired music, have three options. Buy the song, download it from an illegal source or do to acquire it at all. To make the decision they compare the values of  $v = v^* - \lambda$ ,  $p + TC_p$  and  $TC_d(\text{protection}) + \text{morality}(\text{law})$ . Four eventualities are possible:

- (a)  $TC_d(\text{protection}) + \text{morality}(\text{law}) > v$
- (b)  $v \geq TC_d(\text{protection}) + \text{morality}(\text{law}) > p + TC_p$
- (c)  $v \geq p + TC_p \geq TC_d(\text{protection}) + \text{morality}(\text{law})$

74 Akerlof, G., Arrow, K., Bresnahan, T., Buchanan, J., Coase, R., Cohen, L., Friedman, M., Green, J., Hahn, R., Hazlett, T., Hemphill, S., Litan, R., Noll, R., Schmalensee, R., Shavell, S., Varian, H. and Zeckhauser, R (2002).

75 Antoř, D. (2009), „Proč je prodloužení copyrightu chyba“, *jilm.cz*, 24 April, <http://jilm.cz/internet/proc-je-prodlouzeni-copyrightu-chyba>.

$$(d) \quad p + TC_p > v \geq TC_d(\text{protection}) + \text{morality}(\text{law})$$

If the costs of downloading from the pirate source are perceived higher than the value of song (a), nothing changes – those who were purchasing the music will continue to do so, those who did not won't start to consume it. The same is applied if the costs of legal purchase are perceived lower than the costs of pirated download (b). The eventuality (c) is the case of demand diversion when the consumer moves from legal market to the pirate network. On the contrary (d) shows demand creation, when new people start to consume music because of cheap downloading from P2P. Couple empirical analyses attempt to estimate the scale of demand creation and diversion with mixed conclusions. While Oberholzer, F. and Strumpf, K. (2004) claim that the demand creation exceeds the demand diversion Zentner, A. (2006) found the exact opposite evidence. One interesting idea, which I should not forget to mention, is the possibility, that illegal downloads might actually foster the demand for legally sold music. As we've already said, the music is more valuable when more of your friends listen it. Thus if the general music consumption has increased your subjective evaluation of songs has risen as well.<sup>76</sup>

But the evidence of sharp decline of sales in recent years seems to be an undeniable proof that the demand diversion is large and growing. On the other hand it is also evident that without piracy the overall amount of consumed music would be much lower.

Now let's explain what the parameters  $TC_d(\text{protection})$  and  $\text{morality}(\text{law})$  mean.  $TC_d$  depicts the transaction costs of downloading. We include there the user friendliness of the interface of P2P, its reliability and trustworthiness. We assume that they grow the level of protection. Its increase force the providers of P2P services to move into half-illegality, to invent new and new tricks how to bypass the legal and technical obstacles, its users are more afraid of a punishment.

The security concern is definitely significant. Some of the P2P software use to be bundled with tons of malware. The intensive protection might deteriorate the user experience of P2P networks, e.g. because they cannot manage any central database of shared files and only hardly can eliminate files with false names and other chaotic element. And finally the fear of legal problems could have some impact too. We have seen how the free-riding killed the first-generation P2P networks. There is also an evidence that after each publicised case of legal action against some pirates leads to temporary decrease of traffic at pirate networks<sup>77</sup>. But in general the hitherto

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<sup>76</sup> Liebowitz, S., Watt, R. (2006), p. 9.

<sup>77</sup> See Landes, D. (2009) „Fewer Swedes file sharing: study“, *The Local*, 22 May, <http://www.thelocal.se/19442/20090514>.

experience shows that the countries are unable to effectively eliminate the sharing and the transaction costs of downloading are low enough for growing number of users. The fear of punishment decreases, P2P services are reliable enough and the trust is built on the friends' good experience.

In the parameter *morality* I denote the price which people consider „fair“. Fair enough, that they would be willing to pay it even if not forced to. I claim it to be positively dependent on the level of law, as kind of a cost of breaking the law. It expresses a somewhat uneconomic idea that people tend to obey the rules to some extent and act in the way how they want the others to act. And the majority of people still agree that it is morally correct to pay for someone's creation and that the piracy is not the fully immaculate.

In the world of unrestricted possibilities to download music for free we can even regard this motivation to be the only one, why some people still pay for the songs. Then we can speculate that empowering people to choose the price would lead to higher revenues. The current choice is between 1 dollar in shop and 0 dollar in the P2P network. That means, that people willing to pay more than a dollar are not able to send more and people willing to pay something between 0 and 1 dollar use the P2P network. Such idea have become popular in the last two years especially after the widely publicised experiment of Radiohead with their album *In Rainbows*. Unfortunately Radiohead do not reveal the results. The only known figures are from external research company ComScore which claim that 62% of downloaders decided not to pay anything, 17% paid something between 1 cent and 4 dollars, 6% between 4 and 8 dollars, 12% between 8 and 12 dollars and 4% between 12 and 20 dollars<sup>78</sup>. But Radiohead denied the accuracy of these numbers. This year, the Czech band Wahnout tried something very similar. Unfortunately I didn't obtain the data before I've completed this paper, to examine how (un)successful this approach could be.

But we have many reasons to doubt that this is the true future of the music industry. For example the survey among young Swedes showed that 75% consider it OK to download illegally from the Internet<sup>79</sup>. According to Solutions Research Group (2006) 40% of young Americans consider downloading of copyrighted movies off the Internet as a very serious offense while 59% consider as very serious offence parking in a fire line. On the other hand Liebowitz, S. and Watt, R. (2006) write that the willingness to pay for pirated CD is below the market price, typically between 60-80% of the full market price<sup>80</sup>. The difference might constitute the parameter *morality*.

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78 See „Study: Free beats fee for Radiohead's 'In Rainbows'“, *CNET News Blog*, 22 May, [http://news.cnet.com/8301-10784\\_3-9811013-7.html](http://news.cnet.com/8301-10784_3-9811013-7.html).

79 Ewing, A. (2006).

80 p. 520.

The entrance of illegal source of music changes the theoretical optimal regulation function. The regulator now maximizes

$$(16) \quad \sum_i^n B_i + \sum_i^n \Pi_i + \sum(v_p - p - TC_p) + \sum(v_p - TC_{ld}) + \sum(v_d - TC_d) - C(\text{protection}) - C(Q_d)$$

The difference between (16) and (15) consists in the addition of consumer surplus generated by illegal downloads, the law enforcement costs and the costs of the disrespect to law.  $C(\text{protection})$  demonstrates that the copyright enforcement is costly, we even observe effective protection to be prohibitively costly so far<sup>81</sup>. Besides the direct costs of enforcement we face some indirect effects too. The French „three strikes“ anti-piracy law<sup>82</sup> poses a risk of another inefficiencies resulting from the expulsion of people out of the Internet.

$C(Q_d)$  denotes the social costs of law breaking where  $Q_d$  is a function of law and protection. The wider the discrepancy between formal laws and their effective realization is, the higher these costs are. This concept is pretty abstract and unquantifiable, it tries to capture the negative impacts of general disrespect to the law. If people stop to obey the law in one area it is very likely that they will have lower respect to the law as such. That's why legal systems are being constructed not only based on the normative ideas how the world should look like but also based on the experience of what is achievable. No legal system can afford to permanently include disrespected norms. The thoughts of what is right and juste have to step aside in such case in favor of pragmatic acceptance of the reality

Finally we should show the effect on authors. Their situation is changed only by lower revenues from recordings and expected increase of revenues from  $fame(Q)$ . Which move is stronger is not clear, but given the Figure 9 in chapter three we could assume that *ceteris paribus* the authors would be on average better off. But we said that authors are unable to achieve a positive profit because the labels would shift their contracts to capture it. What we really observe is the strong effort<sup>83</sup> of labels to include into their contracts all authors' economic activities including the income from concerts and merchandising, the so-called 360-degree contracts. That could be just a way how to suck the profit away from authors. Anyways, the labels are inevitable worse off because of the existence of piracy.

That's the most common framework in which the discussion about the future of copyright

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81 Piatek, M., Kohno, T., Krishnamurthy, A. (2008) describes how the tools to monitor and fight the Internet piracy are easy to confuse and outwit.

82 See the comprehensive description – „France Passes 'Three Strikes' Anti-Piracy Law“, *TorrentFreak*, 22 May, <http://torrentfreak.com/france-passes-three-strikes-anti-piracy-law-090512>.

83 See „'360' Music Deals Become Mandatory As Labels Prepare For Free Music“, *TechCrunch*, 22 May, <http://www.techcrunch.com/2008/11/08/360-music-deals-become-mandatory-as-labels-prepare-for-free-music>.

occurs. Those who warn that piracy may kill the labels and consequently the music production call for boosting the copyright protection in all directions by the logic of reciprocal proportion of the protection degree and its leakiness<sup>84</sup>. But even if we consider the protection in the initial situation as optimal, after weighting in the social costs of law enforcement and law disrespect, we still might propose rather restriction of the protection although thus we accept the welfare deterioration caused by the digital revolution. Only if we regard the original protection to be too high, we welcome the piracy as a right correction improving the total welfare. But the second digital revolution change gives us more space to refuse that the copyright breakdown leads necessarily to the welfare decrease.

### 5.5.2 Prosumption<sup>85</sup>

We imagined certain limited amount of attention which the consumers are willing to give to the music –  $A$ . To improve the demand for music from 0 to  $Q$  we assumed that the recording needs to capture attention  $a$ . Only labels were able to do so by investing  $I$ . Such model makes sense in the world of one-way communication where only limited number of „broadcasters“ exists and labels can effectively control the passive consumers through them. We would say, that consumers buy what they see in TV and they see in TV what labels push there.

The digital revolution created something, what Pouwelse, J., Garbacki, P., Epema D. and Sips, H. (2008) call „prosumers“. The Internet network transformed the passive „acceptors“ into „broadcasters“. Facebook, Twitter, YouTube, blogs – these are the channels where prosumers both consume and produce. Either there own original content, or at least information about it. The recommendation from a friend in form of a shared link starts to be a dominant way how people encounter new music and other stuff.

Interesting content is thus grabbing an attention without any additional investments needed. Susan Boyle became literally over-night a true worldwide celebrity because of the viral power of the Internet. Of course, she had to appear at popular British TV Show Britain's Got Talent first but what followed was ridiculous. Her video became one of the most successful of the history with more than 100 million views in just a couple of days.

But some authors do not even need such kick-off as Boyle got by her appearance in the TV show. Previously unknown band OK Go attracted more than 40 million viewers by their creative video clip on treadmills, Jon Lajoie has 200 thousand subscribers on YouTube eager to see every ew hilarious obscene music clip of him.

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84 Boyle, J. (2008), p. 60.

85 Neoplasm combining production and consumption.

How to demonstrate this change in the model? We could remove the assumption that the expected demand for recording without label's investment is equal to zero. There is some possibility, that the work will grow famous even without the help of the label, part of the attention devoted to music ceases to be controllable by labels and starts to behave stochastic. That also means, that the necessary investment to get the same expected attention as before the digital revolution is lower – exactly in the proportion with the amount of attention which is now uncontrolled. The authors now have a theoretical option to cover their costs or even achieve a profit without the help of label<sup>86</sup> if the stochastic part of attention grows to be large enough. Thus they gain some bargaining power against the labels and can achieve better conditions. But because we've claimed that there is an unlimited number of equally equipped potential authors, our simplistic model fails to describe how the new entrants will affect the position of authors. To describe it properly some different model would be more appropriate, e.g. the model of monopolistic competition.

But what we can conclude from the model as we sketched it is that the costs of the song creation decreases. Assuming that a growing part of attention is stochastic means that we need only smaller investment  $I$  to grab the same expected attention. Therefore while the revenue falls the costs do the same. That is in my opinion a fundamental assault on the assertion that the digital revolution is killing the music and leads to welfare deterioration.

## 5.6 Implications and Recommendations

I tried to sketch a model which would include all the major questions which we face thinking about the copyright in the context of music production<sup>87</sup>. The position of labels remains (at least officially) still the same. As former CEO of Disney said: *"If someone figured out how to unlock the gas in the gas station, people would be outraged. They wouldn't say to the oil industry, 'You need a different business model.'"*<sup>88</sup> Those who propose to preserve and expand the copyright protection claim that where is something for free, there is no business model.

The other possible way how to keep consumers who pay for music is being so far successfully applied by Apple. His complex music solution of the music player iPod and music shop iTunes formed a competitive advantage which is hard beat not only for Apple's corporate competitors, but also for the pirate networks. Apple reduced the transactional costs of buying music as low as

86 That such movement away from labels hasn't been yet experienced is a strong argument against validity of this theory. But it is also possible that we just still haven't passed the break-point.

87 With the important omission of more elaborate approach to the problem of the creative works as an inputs for further creative activity which would be desirable, but difficult to include into the same framework. Inclusion of this factor would be only another case against the copyright protection, though.

88 See „Piracy, or Innovation? It's Hollywood vs. High Tech“, *The New York Times*, 22 May, <http://www.nytimes.com/2002/03/14/business/piracy-or-innovation-it-s-hollywood-vs-high-tech.html>.

possible. But the still declining music sales mean that many formerly paying consumers flow to the P2P networks and only a part of them end up at Apple's shop.

Relentless fighter for copyright reformulation Lawrence Lessig is among those, who see the digital revolution as potentially welfare damaging, but unstoppable. Hence he proposes the state-funded compensations to the artists: „*It is my view that Congress should enact a compulsory or voluntary collective license to 1) legalize (at least noncommercial) file sharing and 2) compensate artists for any harm such sharing is estimated to cause. The second part of this would secure the objectives of copyright — money to artists. The first part would end the “war” we’re now waging against our kids.*“<sup>89</sup> Which in other words means the tax-based financing<sup>90</sup> of artistic production and direct transfers despite the risks of rent-seeking and inefficiency. Similar, but rather quaint proposal is the private patronage of the creative activity<sup>91</sup>.

The way which seems to be the most attractive for labels in the bundling of music to other services. As we observe the convergence of music players and mobile phone, one possibility is a flat fee included in the contract with mobile operator which would allow the consumer an access to legal music service. This way – which has a limited equivalent in subscriptions – eliminates the transaction costs of payment. Related revenue source are the site licenses. While the enforcement of copyright against the consumers is prohibitively expensive, the enforcement against the providers of Internet services is easily possible. If the consumers changed their behavior and instead of downloading the music files they started to prefer direct streaming from the Internet, the labels would be able to collect fees from the providers of these stream services. Indeed, we observe an increase of popularity of websites like YouTube and MySpace which deposit large music collections where one finds almost any song. While people start to be online 24 hours a day with faster and cheaper mobile Internet connection, streaming could eventually displace downloading<sup>92</sup>. But the crucial question is how the services will be able to pay the license. Common idea is that they will generate the necessary revenue by selling ads, but so far YouTube, MySpace and the others were not too successful in this respect. Thus we turn back to subscriptions and the necessarily condition that people will accept to start paying for music.

The guru of Law&Economics Richard Posner<sup>93</sup> has given the most of his attention to the problem of transaction costs connected to discovering and contacting the author in order to get a

89 See „Lawrence Lessig Answers Your Questions on Copyright, Corruption, and Congress“, *Freakonomics*, 22 May, <http://freakonomics.blogs.nytimes.com/2009/03/02/lawrence-lessig-answers-your-questions-on-copyright-corruption-and-congress>.

90 Liebowitz, S., Watt, R. (2006), p. 22.

91 Liebowitz, S., Watt, R. (2006), p. 23.

92 See „How will The Cloud change the way we think about music ownership?“, *CrunchGear*, 22 May, <http://www.crunchgear.com/2009/03/23/how-will-the-cloud-change-the-way-we-think-about-music-ownership>.

93 Posner, R. (2005), pp. 5-6.

permission to use his work for any further purpose. That leads him to a proposal to allow indefinite possibility to renew the copyright protection but also an obligatory registration of all copyrighted works while the others would fall into the public domain. Boyle, J. (2008)<sup>94</sup> uses a similar argumentation, he supports the Creative Commons license but consider it to be a second best<sup>95</sup> – behind the obligatory registration. He differs from Posner in respect to the recommended duration of protection. Posner delivers an argument, that every work demands some sort of care and without copyright protection its quality and value will fade away because of the tragedy of common problem. He illustrate his claim with Mickey Mouse – if everybody were allowed to use him, his value in the eyes of consumers would fall

Boldrin, M., Levine, D. (2008)<sup>96</sup> refuse this argumentation. They do not see any reason why the competition should be welfare-damaging. They admit that free usage of Mickey Mouse would likely lead to the exhaustion of his value but they do not consider it malicious. They assert that it is just an usual consequence of competition that the production and consumption rise up and the marginal utility eventually decreases. On the contrary they suggest to completely get rid of the whole copyright protection<sup>97</sup>. They believe that the authors would still have enough incentives to work creatively. To back up their opinion they offer a long list of empirical evidence how the profit is achievable even without the „intellectual monopoly“ and how even the historical evidence of the copyright emergence is at least mixed with regards to the enhancement of creative activity<sup>98</sup>. They believe that being the first is a big advantage which the original author always enjoys<sup>99</sup>. But we observe, that P2P networks are very fast to spread fresh content so the headstart of the author is not really long. Johnson (2005) also stays on the side of copyright abolitionist referring to George Stigler<sup>100</sup>. He believes that the elasticity of supply is pretty low<sup>101</sup>. Finally a common opinion is that the copyright in today’s extent is dead and sooner or later will be abandoned. The labels know it and simply try to exploit out of it as much as possible during the transitive period<sup>102</sup>.

My opinion is, that we are moving in an ambiguous and unsettled area and we should not adopt immature actions. I agree with Boyle, J. (2008) that the policy should be based on the empirical research and should be individual for each media segment<sup>103</sup>. It is evident, that movie,

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94 p. 14.

95 p. 184.

96 p. 186.

97 p. 16.

98 p. 109.

99 p. 26.

100 p. 9.

101 p. 19.

102 Compare „Big Music Will Surrender, But Not Until At Least 2011“, *TechCrunch*, 22 May, <http://www.techcrunch.com/2009/03/08/big-music-will-surrender-but-not-until-at-least-2011>.

103 p. 206.

book and newspaper industries demand different analyses than music industry and an entirely different one we need for patents.

As regards the music industry, I am cautiously in the camp of those who want to restrict or even fully abandon the copyright. I believe that the massive-scale law breaking is unacceptable. The law has to be either enforced or removed. I am also convinced that the enforcement is unapproachable. Perhaps the result of French attempt will give us the final answer whether the digital pirates are really unbeatable. And finally I tend to believe that the profitability of the music producers is even after the digital revolution sufficient enough to maintain or extend its variety and even if we had a realistic method how to enforce the copyright, its reduction would be still beneficial from the total welfare perspective.

But because many unknown variables are in play, the recommendable public policy suggestion is to slowly loosen the copyright law and observe the consequences. Meanwhile the exact opposite is happening. The countries under pressure from the strong interest group choose to extend the copyright by enacting purposeless laws such as the CTEA without support of neither economists or citizens. Hence I suppose that the rent-seeking will continue up until the question of the intellectual property becomes a serious political issue. The possible success of the Swedish Pirate Party in the upcoming European elections could be the first sign.

# Chapter Six

## 6 Summary

I attempted to describe all important factors influencing the music production, put them into the perspective of utilitarian welfare analysis and propose possible implication for the regulation policy.

In chapter two we defined the object of our interest – intellectual law and copyright particularly. We discussed the justification of their existence.

Chapter three I used to sum up all important statistics of the music market. I specified the size of the market, shares of dominant labels and the impact of the Internet piracy. I focused especially on the dynamics of recent years.

In chapter four I discussed various models of the music market before the digital revolution. I concluded that the music labels are very likely able to extract supracompetitive profit because the possibility of entry is limited.

In chapter five I concentrated all the information from previous parts to frame up a model usable to depict the digital revolution changes. I argued that two fundamental changes occur. To the widely acknowledged piracy I amended the shift of the music marketing. I used the proposed framework to evaluate the possible welfare effects of these changes.

In the end I mention couple representative opinions about the desirable future of copyright and formulate my own proposal concerning the public policy.

## Appendix

Record Sales (retail value, billions, USD)		
Year	Worldwide	US
2000	36.9	14
2001	33.7	13.4
2002	32.2	12.6
2003	32	11.8
2004	33.6	12.2
2005	33.5	12.3
2006	31.8	11.5
2007	29.9	10.4
% Growth	▼ -19.0%	▼ -25.7%
% Growth (Inflation adjusted)	▼ -32.1%	▼ -37.7%

Appendix 1 (source: IFPI, Wikipedia)

Structure of Recorded Music Sales (trade value, billions, USD)				
	2004	2005	2007	2008
Physical	21	19.7	16.3	13.8
Digital	0.4	1.1	3	3.8
Performance rights			0.7	0.8

Appendix 2 (source: IFPI)

Geographical structure of record sales				
	Physical	Digital	Performance rights	Total
USA	3.1	1.7	0.1	4.9
Europe	5.8	0.8	0.6	7.2
Asia	3.6	1	0.1	4.7
Latin America	0.4	0.1	0	0.5
Global	13.8	3.8	0.8	18.4

Appendix 3 (source: IFPI)

US Revenues from Recorder Music (millions, USD)					
	2004	2005	2006	2007	2008
Download Single	138	363.3	580.6	801.6	1022.7
Download Album	45.5	135.7	275.9	424.9	568.9
Mobile		421.6	773.8	880.8	816.3
Subscription		149.2	206.2	201.3	186.2
Digital Performance Royalties		27.4	31.5	47	81.8
CD Album	11446.5	10520.2	9372.6	7452.3	5471.3
CD Single	15	10.9	7.7	12.2	3.5
Cassette	23.7	13.1	3.7	3	0.9

Appendix 4 (source: RIAA)

US Music Market Shares				
	2005	2006	2007	2008
Universal	31.71%	31.61%	31.9%	35.12%
Sony BMG	25.61%	27.44%	24.97%	22.79%
EMI	9.55%	10.2%	9.37%	8.35%
Warner	15%	18.14%	20.28%	21.12%
Independent labels	18.13%	12.61%	13.48%	12.62%

Appendix 5 (source: Nielsen SoundScan)

Ticket Sales in the USA				
Year	Industry Total Ticket Sales in Billions US Dollars	% Change Total Ticket Sales	Top 100 Tours Grosses	% Change Top 100 Tours
1990	1.1			
1991	0.83	-24.5%		
1992	1	20.5%		
1993	0.9	-10%		
1994	1.4	55.6%		
1995	0.95	-32.1%		
1996	1.05	10.5%		
1997	1.3	23.8%		
1998	1.3	0%		
1999	1.5	15.4%		
2000	1.7	13.3%	1.5	
2001	1.75	2.9%	1.51	0.7%
2002	2.1	20%	1.63	7.9%
2003	2.5	19%	1.95	19.6%
2004	2.8	12%	1.97	1%
2005	3.1	10.7%	2.07	5.1%
2006	3.6	16.1%	2.37	14.5%
2007	3.9	8.3%	2.28	-3.8%

Appendix 6 (source: Pollstar)

## References

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