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Openness in the music business–
How record labels and artists may profit from
reducing control

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List of Abbreviations

A&R	Artist & Repertoire
BY	By Attribution
CC	Creative Commons
CD	Compact Disk
CSS	Content Scrambling System
DMCA	Digital Millenium Copyright Act
DRM	Digital Rights Management
DVD	Digital Versatile Disk
e.g.	for example (exempli gratia)
EP	Extended Play
FAQ	Frequently Asked Questions
GEMA	Gesellschaft für musikalische Aufführungs- und mechanische Vervielfältigungsrechte
GPL	General Public License
IFPI	International Federation of Phonographic Industry
IP	Intellectual Property
IPR	Intellectual Property Right
ISP	Internet Service Provider
KMO	Kaiser-Maier-Olkin
MP3	MPEG-1 Audio Layer 3
MPEG	Moving Picture Experts Group
NC	Non-commercial
ND	Non-derivative
NIN	Nine Inch Nails

List of Abbreviations

OLS	Ordinary Least Squares
OMA	Open Mobile Alliance
OS	Open Source
OSS	Open Source Software
P2P	Peer-to-peer
PC	Personal Computer
PD	Public Domain
PDF	Portable Document Format
PRO	Performance Rights Organization
R&D	Research and Development
RBV	Resource-based view
RIAA	Recording Industry Association of America
St. Dev.	Standard Deviation
SA	Share alike
SACD	Super Audio Compact Disk
TAM	Technology Acceptance Model
UK	United Kingdom
USD	United States Dollar
VCR	Video Cassette Recorder
VIF	Variance Inflation Factors
VP	Vice President
VUT	Verband unabhängiger Musikunternehmen e.V.
WIPO	World Intellectual Property Organization
WMG	Warner Music Group

Abstract

Conventional wisdom emphasizes the vital importance for firms of excluding others from imitating their innovations or using them without authorization in order to appropriate their value. However, more recent research shows that opening up the innovation process and freely revealing innovations can be profitable. Commercial open source software (OSS) provides several explanations of why relinquishing control of innovations can be economically rational. Most notably, it illustrates how free revealing opens up possibilities of collaboration with external parties. However, there are some doubts whether there is a compelling case for free revealing in industries that lack the preconditions for distributed, collaborative development. It was this skepticism that motivated this research.

This study analyzes the emergence of openness in the recorded music business. First, it examines what motivates record labels to give up copy protection and choose a weaker level of technical protection. Second, this thesis examines why record labels or artists adopt Creative Commons (CC) licenses and waive some of the exclusion rights provided by copyright. The research questions are analyzed empirically, using qualitative data based on interviews as well as quantitative data from two large-scale surveys among musicians and consumers of music.

A few years ago, the emergence of file-sharing networks threatened the business models of record labels. Most of them reacted to this challenge by taking legal actions and introducing copy protection for their music. Until 2009 however, all record labels gave up Digital Rights Management (DRM). Among the various reasons that motivated this change, two stand out: technical issues generated by incompatible technologies as well as customer demand for interoperable formats.

However, not all record labels chose the same level of protection. Smaller firms, so-called independent labels, relied far less on DRM. They either abolished it earlier than larger firms, so-called major labels, or never used it at all. Their different IP management can largely be explained by resource constraints as well as closer connections to their customers, which make them profit stronger from and respond faster to demands for openness. Anecdotal evidence indicates that relying on open, interoperable formats gave some firms a competitive edge and led to increases in sales numbers.

In addition to giving up copy protection, some rights holders explicitly allow consumers to share their music or create derivative works. By waiving some of the exclusive rights granted by full copyright, they express a higher level of openness and practice a form of free revealing. While some musicians release all of their works under a CC license, others employ the licenses selectively, e.g., solely for promotional or outdated works. Record labels and artists employ CC licenses for three purposes: to provide marketing, to express idealistic or altruistic motives and to ease collaboration with other creators. Leveraging the benefits of using CC licenses, record labels and artists have come up with several profitable business models. In addition, this work shows that customers appreciate being granted additional freedoms and are ready to pay a considerable higher price for such rights. Thus, this dissertation demonstrates that using a CC license can be a rational choice for artists, especially for emerging ones.

Reducing control constitutes a fundamental deviation from the traditional policy of protecting one's knowledge as strongly as possible. By examining the music business as a case, which has significant differences to previously studied cases of openness, especially in the way innovations are created and marketed, this dissertation advances our comprehension of this phenomenon and corroborates its relevance. In particular, the study contributes to theory in three respects. First, it provided the first comprehensive analysis of the benefits and drawbacks of using such licenses, as well as the drivers and inhibitors for their adoption. Second, it provides insights on how the characteristics of firms or individuals influence the level of openness. Third, it illustrates that free revealing of innovations can make sense even when collaborations with other parties are of subordinate importance.

As practical implication, this work recommends reevaluating the benefits and drawbacks of legal and technical protection measures and rethinking the attitude of exercising maximal control: Opening up one's innovation process may enable valuable interactions with parties outside the firm; opening up one's products may make them more desirable to customers and increase their willingness to pay.

1 Introduction

1.1 Motivation and research goal

The question of how firms can capture the value created by innovating is one of the pivotal questions in research on innovation management. Conventional wisdom emphasizes the vital importance for firms of excluding others from imitating their innovations or using them without authorization in order to appropriate their value (e.g., Liebeskind 1996; Klein et al. 2002; Spencer 2003). Based on the idea that stronger protection will increase profits, many firms invest significant efforts into maximizing the protection of their intellectual assets (e.g., Duchêne & Waelbroeck 2006). The rise in patent applications (e.g., EPO 2008), referred to as “patent explosion” by Hall and co-authors (Hall & Ham Ziedonis 2001; Hall 2005), reflects this belief.¹

The trend towards stronger use of property rights can also be observed in industries whose innovations are primarily protected by copyright such as software, music, film or publishing. Perceiving copyright as an indispensable precondition for value appropriation (e.g., Landes & Posner 1989; Yoon 2002; Frith 2004), the creative industries strongly lobbied for increased protection of their intellectual property (IP) (Lessig 2004a; De Laat 2005). As a result, the duration of copyright in the USA increased from initially 14 years in 1790 to the current length of an author’s lifetime plus 70 years (e.g., Vaidhyathan 2001, p. 25). Between 1964 and 2003, the terms of copyright were extended not less than eleven times (Lessig 2004a, p. 134).

The emergence of digital technologies and file-sharing networks such as Napster or KaZaA in the late 1990s made it increasingly difficult to prevent customers from obtaining content for free and weakened the appropriability regime (Shapiro & Varian 1999, p. 4; van Wijk 2002). This development particularly affected the recorded music business whose revenues declined between 1998 and 2007 by approximately 30% (Bundesverband Musikindustrie 2008). Since the average time per day people listen to music has rather increased than decreased in this period (Bundesverband Musikindustrie

¹ Cohen et al. (2000) summarize various other motives for patenting such as blocking competitors, enabling cross-licensing or forearming against infringement suits.

2008), the music business has clearly managed to *create* value, but fails to *capture* this value to an increasing extent.

Without any doubt, file sharing represents one of the main causes for the economic downturn of the recorded music business (e.g., Liebowitz 2006, 2008; Zentner 2006, 2008). In order to halt piracy and restrengthen the appropriability regime, record labels lobbied for a tighter legal regime (e.g., Ganley 2004) and initiated lawsuits against file-sharing networks and individual users (e.g., Bach 2004). In addition, they introduced technical protection measures, which prevent or limit copying under the heading of Digital Rights Management (DRM) (e.g., Rosenblatt et al. 2002). Believing that effective protection against piracy is vital for the survival of these industries, the necessity of these steps was commonly accepted (e.g., Tang 2005; Kromer 2008). However, not all record labels followed this strategy: While larger firms took the measures listed above, many smaller firms or individual artists deliberately avoided the use of DRM and did not take legal actions against file sharers (Bohn 2006a). Given the perceived causality between protection and value appropriation, this is puzzling.

Research proposes a number of explanations as to why some firms did not try to establish maximum protection and exclusion. First, several studies reveal that property rights are often considered to be rather ineffective for value appropriation (e.g., Levin et al. 1987; Cohen et al. 2000). Second, complementary assets and capabilities, such as better sales and service, may enable firms to generate returns from the innovations even when imitation and piracy are technically possible (e.g., Teece 1986; Pisano 2006). Finally, restrictions imposed by DRM may degrade the value of legally purchased content and make it less attractive (e.g., Gopal & Sanders 1997; Sundararajan 2004; Jaisingh 2007).

In addition, some record labels and individual artists not only renounced technical protection of their content, but either gave it away for free or explicitly allowed consumers to share it with others. Given the negative impact of piracy on sales, such behavior is surprising. Nevertheless, existing research confirms that such behavior, usually referred to as “free revealing”, can in fact be beneficial for firms (e.g., Harhoff et al. 2003; Pénin 2007) and individuals (e.g., Hertel et al. 2003; Baldwin et al. 2006). The most prominent example of deliberately waiving available means of protection is open source software (OSS). One of its key characteristics is the ability to work together with a community and leverage its manpower and knowledge. Through this collective learning and development innovation can be accelerated (Allen 1983; Baldwin & Clark

2006). Therefore, OSS is sometimes referred to as a “*private-collective model for innovation*” (von Hippel & von Krogh 2006, p. 302). In contrast to software, producers of cultural goods like music, movies or books usually work alone or in small groups. Since distributed, collaborative invention of such goods is rare, one of the major benefits of sharing IP is not applicable. Consequently, it seems questionable whether there is a compelling case for free revealing in cultural industries.

OSS gives users additional freedoms such as the right to adapt software to one’s needs and redistribute copies (OSI 2001; FSF 2007). Inspired by the success of the OSS movement, the Creative Commons (CC) foundation issued a set of licenses in December 2002 whose purpose was to facilitate the sharing and re-use of cultural works (e.g., Hill 2005; Cheliotis 2009; Creative Commons 2009a). Despite the skepticism on the benefits of free revealing for cultural goods (e.g., Weinstein & Wild 2005; Weatherall 2006), CC licenses have seen a strong adoption. As of 2009, more than 150 million items are certified under such a license, including texts, photos, music and videos (Creative Commons 2009b). One of the most recent additions to the pool of CC-licensed works includes the entire collection of more than 11 million Wikipedia articles (Linksvayer 2009).

The CC foundation originated from criticism of the current copyright regime. Based on the belief that artists frequently build on or get inspiration from preexisting works, the initiative perceived copyright to be a deterrent to creativity (Vaidhyanathan 2001; Lessig 2004a). While most artists who have released CC-licensed music are amateur musicians, several professional artists have proven that earning money with CC-licensed music is possible – despite the fact that consumers are allowed to share the songs. The most prominent example is the American rock music group Nine Inch Nails whose latest CC-licensed album was a huge commercial success and the best selling album in the Amazon download store in 2008 (Amazon 2009; Anderson 2008b).

Research on CC licenses is limited, despite their broad adoption. So far, most authors have focused on discussing the goals and approach of CC (e.g., Elkin-Koren 2005, 2006; Jones & Cameron 2005) as well as the adoption of CC licenses in different regions over time (e.g., Cheliotis et al. 2008). Systematic analyses and empirical data on the benefits and drawbacks of using CC licenses, on CC-compliant business models, and on drivers for their adoption are lacking.

The extensive use of legal and technical protection illustrates the strong emphasis most music firms historically placed on IP protection. However, not all record labels

and artists have fought piracy by locking up their content. Instead, some stopped placing copy protection on their music or, more radically, granted consumers the right to share it. This dissertation aims to understand this change. In particular, it tries to answer two questions: Why do some key players in the music business move towards a more “open” model while others stick to their traditional “closed” one? And: What are the drivers for free revealing in a setting that is not characterized by distributed, collaborative development?

With regards to the first question, this work confirms several well-known drivers for openness such as customer demand (e.g., Ramírez 1999), resource constraints and close customer connections (e.g., Henkel 2006, 2007, p.139; Käs 2008). The main factors that would deter openness, over and above its intrinsic disadvantages, include the adherence to traditional thinking about IP protection and control (e.g., Liebeskind 1996; Käs 2008), an inability to adapt to changing market conditions (e.g., Teece et al. 1997) and routines and capabilities which are not aligned with the benefits and drawbacks of increased openness (e.g., Chesbrough 2003a, 2003b). All together, these factors may also explain why smaller firms tend to exhibit greater levels of openness. Furthermore, this thesis supports the claims that lowering the degree of protection can result in a competitive advantage for market participants and increase sales (Henkel 2007; Käs 2008) as well as that granting customers additional freedoms can significantly increase their willingness to pay for a good (e.g., Franke & von Hippel 2003).

The second question relates to the reasons for free revealing in cultural industries. This dissertation demonstrates that using a CC license can be a rational choice for artists, especially for emerging ones. CC licenses can help musicians spread their music, open up future opportunities or simplify collaboration by reducing the associated transaction costs (e.g., Garlick 2005b; Montagnani & Borghi 2007). Thus, some of the liabilities of newness and smallness can be overcome with CC licenses (Gruber & Henkel 2006). The picture is less clear for established artists: While the case of Nine Inch Nails has proven that using CC licenses can be beneficial for established artists, using such licenses might also jeopardize their economic success if they lack loyal fans who do not take advantage of the granted rights.

Reducing control constitutes a fundamental deviation from the traditional policy of protecting one’s knowledge as strongly as possible. Given its high risk-return profile, a better understanding of the emergence of openness and its competitive importance is highly relevant (e.g., Chesbrough 2003a, 2003b). By examining the music business as a

case which has significant differences to previously studied cases of openness, especially in the way innovations are created and marketed, this dissertation advances our comprehension of this phenomenon and corroborates its relevance.

1.2 Research design

In order to study the emergence of openness in the music business, it is crucial to understand the means available to record labels and artists to protect their IP. Two protection measures have to be distinguished: legal and technical ones.

Once fixed in tangible form, music is protected by copyright, which gives the creator the exclusive right to reproduce and modify the work. Copyright grants creators a temporary monopoly to exploit their work (e.g., Landes & Posner 1989, 2003). Since this right became increasingly difficult to enforce with the emergence of digital technologies, most record labels take two actions. First, they employ copy protection technologies to prevent unauthorized reproduction. Second, they enforce their copyright by suing users and institutions involved in piracy. The dominant method for protecting recorded music between 2000 and 2008 was relying on copyright and enforcing it via DRM and legal actions.

Alternatively, rights holders may decide to choose a weaker level of protection. Technically, they may prefer watermarking, also known as passive DRM, which allows them to trace copies and their origins, but does not prevent reproduction. Furthermore, rights holders may also decide not to use any form of copy protection (e.g., Rosenblatt et al. 2002). Legally, they may still rely on copyright, but do not enforce it via legal actions, thus tolerating its infringement (e.g., VUT 2006). Furthermore, rights holders may also waive some of the exclusive rights granted by copyright and permit users to share their works or create modified versions.² Releasing music under a CC license is the most popular method of weaker legal protection (Creative Commons 2009b).

Artists and record labels may choose different protection strategies by combining the available technical and legal protection mechanisms. Figure 1.1 illustrates the approaches taken by different rights holders as of 2006.³ Starting from the policy of using

² Artists may also give up all rights associated with copyright. Thus, the work enters the public domain which enables everyone to do with the work whatever they like. However, since this option is hardly chosen by creators, it is not considered further.

³ Of the nine combinations shown in Figure 1.1, four are meaningless or illegal. First, using DRM or watermarking to prevent or control copying does not make sense unless legal actions are taken against

copyright and enforcing it via legal actions as well as DRM, openness can emerge in two directions: record labels and artists may either reduce the level of technical protection by not using full DRM, or they may lower the level of legal protection by not enforcing copyright or giving up some of their exclusive rights.

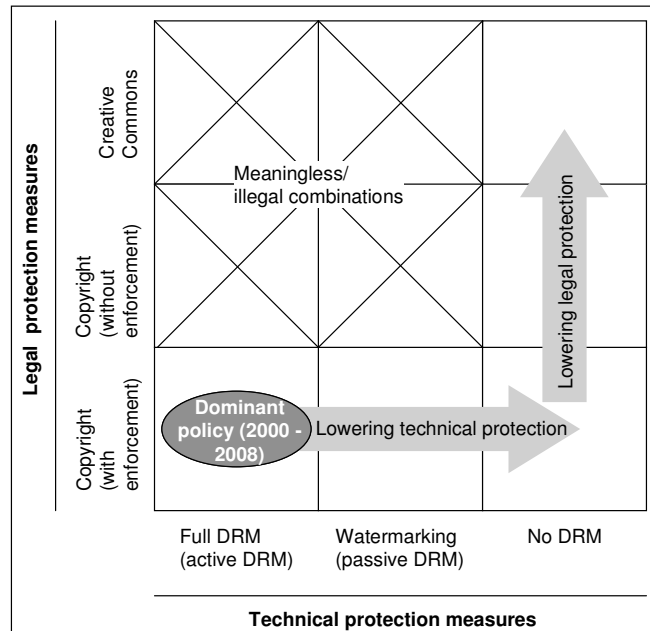


Figure 1.1 The use of legal and technical protection measures in the music business as of 2006

In order to fully comprehend the phenomenon of openness in the music business, both movements described above are examined in this dissertation. The main focus lies on legal protection, in particular on the decision to release music under a CC license instead of full copyright, for two reasons. First, the amount of research done on DRM far exceeds that done on CC. Second, and more importantly, using CC in addition to not taking full advantage of DRM represents a higher degree of openness and a stronger deviation from the traditional policy of maximum protection.

The research questions are studied empirically, linking qualitative and quantitative methods. Qualitative research is used to explore views and experiences; quantitative research is used to rank and measure their importance (Yin 2003, p. 5; Eisenhardt & Graebner 2007, p. 26). Figure 1.2 illustrates the two stages of openness – abolishing full DRM and adopting CC licenses – which are studied empirically in this work, and how they are linked to the research questions guiding this thesis.

infringers and hackers. Second, using DRM in combination with CC licenses is forbidden by the license terms (Creative Commons 2009c).

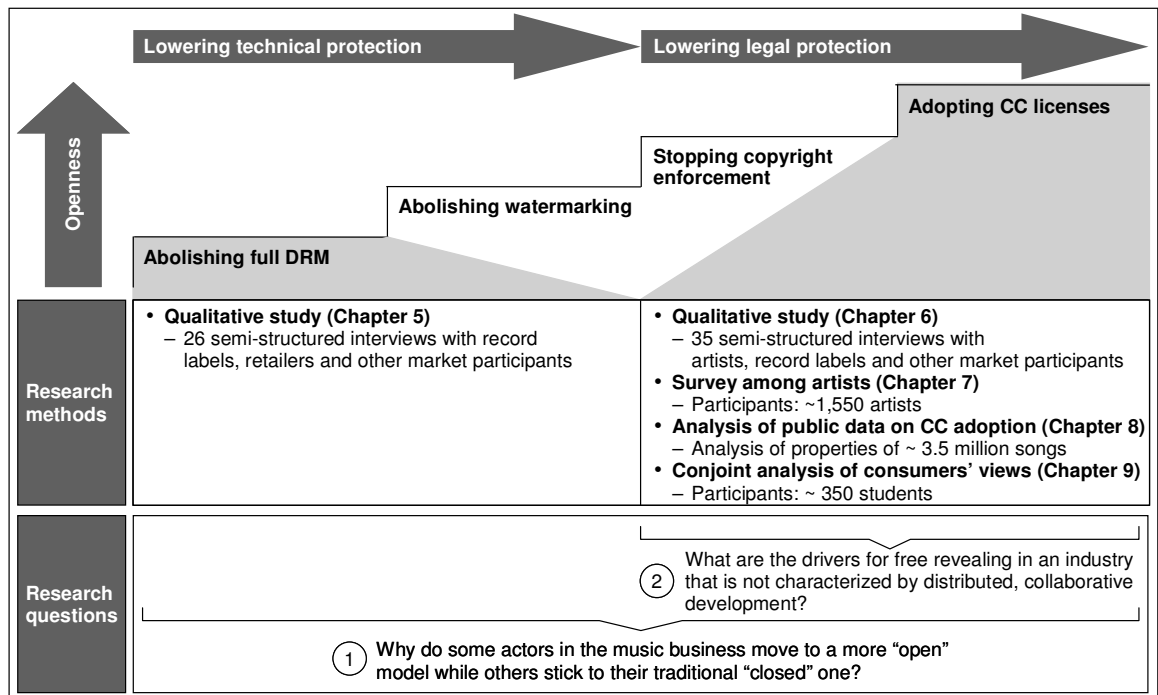


Figure 1.2 Research design of the study

1.3 Structure of the dissertation

This dissertation examines the phenomenon of openness and free revealing in the music business. It consists of ten chapters, including this introductory chapter.

In order to understand the peculiarity of openness and free revealing as a rent-seeking strategy, **Chapter 2** starts with a review of the “common” ways for protecting (2.1) and appropriating value from innovations (2.2). Afterwards, free revealing is introduced as an alternative strategy to generate profits from innovations (2.3). Since individuals innovate and freely reveal their achievements for reasons that differ from those of firms, their contributions and motivations are studied next (2.4 & 2.5). Information goods such as music, films and books may be regarded as innovations. Given their specific properties, **Chapter 3** pays closer attention to the options available for protecting them and generating returns (3.1). Copyright (3.2) and DRM (3.3) are introduced as the most important means to prevent unauthorized reproduction and imitation. Since relying on those mechanisms also has disadvantages, the literature regarding their optimal use is reviewed (3.4). Finally, the brief literature on CC is surveyed to understand the purpose and current adoption of this alternative to copyright (3.5).⁴

⁴ To be precise, CC licenses do not replace copyright since authors releasing works under a CC license do not give up their copyright. However, since they give up important rights derived from “full” copyright by putting a work under a CC license, one can regard CC as an alternative to copyright.

Chapter 4 provides background information on the music business in the context of which the proposed research questions are studied (4.1). The impact of digital technologies in general (4.2.), their negative effects on the appropriability regime for recorded music, and different strategies for responding to this threat are highlighted (4.3).

The qualitative exploratory study on DRM is described in **Chapter 5**. After an introduction of the research questions (5.1) as well as the associated data collection methods and sources (5.2), the results are presented (5.3). These cover the use of DRM over time, the different perspectives of market participants on DRM and their resulting DRM policies. Explanations for the observed variations are provided. Finally, an attempt is made to determine the market impact of DRM. **Chapter 6** comprises the qualitative exploratory study on CC. Examining slightly different research questions (6.1), its design mirrors the one of the previous chapter (6.2). Key results (6.3) include a characterization of CC users and their specific triggers and ways of using CC. Furthermore, the advantages and disadvantages of using CC licenses are discussed. Four different business models are presented that leverage the strength of CC licenses. Finally, an examination of the following questions is given: how the use of CC changes over time, whether it is suitable for both emerging and established artists, and what alternatives to using CC licenses exist.

Based on the results of the qualitative study, Chapters 7 to 9 attempt to capture the phenomenon of CC in a quantitative way. **Chapter 7** summarizes the results of a survey among musicians. After outlining its design (7.1), the descriptive results are reported (7.2), including artists' use of CC licenses, their views on the benefits and drawbacks of CC licenses, and their experiences and future intentions. An exploratory cluster analysis offers further insights into the different types of CC users (7.3). Finally, a multivariate analysis tests various hypotheses on the drivers for the adoption of CC licenses (7.4).

Chapter 8 analyzes publicly available data on the adoption of CC licenses for music (8.1). It quantifies the overall adoption of CC licenses and provides additional insights on the characteristics of CC-licensed music and changes of artists' CC usage (8.2). Changing the perspective, **Chapter 9** studies whether consumers value the additional rights that come with CC-licensed content. Building on choice experiments with students (9.1 & 9.2), it quantifies the importance consumers place on the right to share and create derivative works and how much they are willing to pay for these rights (9.3).

Chapter 10 summarizes the results of this work, derives implications for both theory and practice and provides avenues for further research.

2 Foundations of profiting from innovation

This thesis attempts to explain the motivations behind innovators' decisions to choose a lower level of protection for their developments or, more radically, to freely reveal them. Both angles are studied empirically in the music business.

The main purpose of this chapter is to review the literature on openness and free revealing to enable the reader to better classify the empirical results presented in the later chapters. Therefore, this chapter primarily deals with results from the research on innovation management. Any specific aspects of music are deliberately excluded, but are covered in detail in Chapters 3 and 4.

Conventional wisdom in innovation management argues that excluding others from unauthorized use and imitation of an innovation is crucial for appropriating adequate returns. Since, by definition, openness and free revealing contradict this thinking, it makes sense to begin with a review of the established ways to appropriate value from innovations (2.1) and strategies to improve the condition for capturing the generated value (2.2). After that, free revealing is introduced as an alternative method for profiting from innovations (2.3). Besides rent-seeking, sharing innovations can be motivated by various other reasons. These motives, which are of particular relevance for individual innovators (2.4), are discussed subsequently (2.5).

2.1 Appropriating value from innovations

Firms innovate in order to generate private rents (e.g., Demsetz 1967; Arora & Cedagnoli 2006). This section reviews the two main approaches for profiting from innovations: use in the inventing company's own products and licensing. A third, less obvious alternative is free revealing in order to capture indirect profits; this is examined in Section 2.3.

2.1.1 Use in own products

Research and development (R&D) are activities that are undertaken to produce new knowledge or transform existing knowledge into new products and processes (e.g., Gerpott 2005, p. 25). While process innovations may lower costs or time for producing

a good, product innovations may improve the product performance. In order to use an innovation in its own products or processes, a firm needs “*freedom to operate*” (e.g., Henkel & Pangerl 2008, p. 1), which means that other firms must not be able to prevent its application. The most common way to secure this right is by filing a patent which allows a firm to use an invention however it likes.⁵ A patent also provides an inventor with an exclusion right, meaning he is allowed to prevent others from using his development and can license it for a fee.⁶

2.1.2 Licensing

In the traditional, closed invention process, internal R&D leads to internally developed products that are manufactured and sold by the same firm. In contrast, the paradigm of “open innovation”, a term coined by Chesbrough (Chesbrough 2003a, 2003b; Chesbrough et al. 2006), suggests that “*firms commercialize external (as well as internal) ideas by deploying outside (as well as inhouse) pathways to the market*” (Chesbrough 2003a, p. 36f.). Thus, Chesbrough’s notion of openness comprises two directions: “inbound openness”, which refers to the integration of external knowledge, and “outbound openness”, which refers to alternative approaches to market new technologies.

Licensing technologies, i.e., granting other parties the right to use a technology, usually for a fee, is one form of “outbound openness” (Pisano 2006).⁷ As a first step, firms usually license unused technologies whose exploitation does not conflict with their own interests. This knowledge is typically a by-product rather than the intended outcome of the innovation process (Brockhoff 1999, p. 158). Some firms even grant licenses for their core technologies to other companies, including competitors (e.g., Chesbrough 2003b, p. 159; Kline 2003, p. 89). The fact that some firms consider technology licensing to be their main business model serves as another indicator for the potential viability of such a strategy (e.g., Qualcomm 2006). As “*markets for technol-*

⁵ However, this may sometimes be insufficient if patents held by other parties are required as well (e.g., Shapiro 2001).

⁶ Excluding others can also be a strategic goal to defend one’s position by protecting the possibility to develop related technologies in the future (e.g., Kash & Kingston 2001; Blind et al. 2006), by blocking competitors from a field of technology (e.g., Blind et al. 2006) or by strengthening one’s position for a potential patent infringement suit (e.g., Cohen et al. 2002).

⁷ A license is the right to use a certain technology which is usually protected by a property right such as a patent (e.g., Steckler 1996). In addition, the licensee usually also gains access to adjunctive know-how in order to use the licensed technology (e.g., Hauschildt 1997, p. 50).

ogy” (Arora et al. 2001, p. 419) mature and grow, licensing becomes an increasingly established alternative for exploiting technologies (e.g., Rivette & Kline 1999; Arora et al. 2001).

Generating royalties is the main purpose of licensing (e.g., Arora 1997; Arora & Fosfuri 2000). It can also support a number of other goals such as facilitating cumulative innovation and broader acceptance of a technology (e.g., Teece 2000, p. 230; Arora et al. 2001). An example hereof that illustrates the potential market impact of licensing is the “video tape format war” that took place in the mid 1970s between Sony and Matsushita. At that time, both Sony and Matsushita developed competing and incompatible videocassette recording (VCR) formats, Betamax and VHS, respectively. Although Betamax was technologically superior, Sony, having a strong proprietary philosophy, failed to convince other manufacturers to adopt it. In contrast, VHS was widely adopted because Matsushita applied a liberal licensing strategy. Driven by network effects, VHS eventually became the dominant standard (e.g., Cusumano et al. 1992; Shapiro & Varian 1999, p. 248). This case illustrates that a commitment to fair licensing terms can both increase the diffusion of a technology and lead to lucrative licensing fees (Bar-Gill & Parchomovsky 2003).

2.2 Protecting innovations

Following Teece’s (1986) concept of “*profiting from innovation*” (p. 286), three main factors determine an innovator’s ability to appropriate the created value: the strength of the appropriability regime, the dominant design paradigm, and one’s complementary assets. The appropriability regime describes an innovator’s power to exclude competitors, i.e., to prevent unauthorized use of his invention. Its strength depends on the level of difficulty involved in imitating a technology, as well as on the effectiveness of IP rights (IPRs). When the appropriability regime is tight, i.e. when imitation is difficult, an innovator is usually able to capture the value of his innovation. In the absence of excludability, the increased competition is likely to reduce an innovator’s returns (Liebeskind 1996). Therefore, excluding others becomes a crucial skill in protecting the competitive advantage gained from innovating (Arrow 1962; Liebeskind 1996, 1997).

Tight appropriability regimes are, however, rare and occur in only a few industries such as pharmaceuticals and chemistry (Taylor & Silberston 1973; Levin et al. 1987).

Innovators mostly have to face the challenge that imitation is easy (Mansfield 1986). In that case, successful commercialization of innovations depends on the ownership of so-called “*complementary assets*” (Teece 1986, p. 286). They are defined as goods or capabilities, such as access to distribution channels or production know-how, that need to be used in conjunction with the innovation to generate returns.

In addition to IPRs and complementary assets, literature finds lead time and secrecy to be a means to enhance the conditions for value appropriation since they give firms a temporal advantage until competitors come up with comparable products (Levin et al. 1987; Harabi 1995; Cohen et al. 2000). The effectiveness of these four mechanisms (IPRs, complementary assets, lead time and secrecy) is examined in greater detail in Sections 2.2.1 to 2.2.5.⁸

Although control mechanisms are usually used to exclude others, it should be noted that control does not necessarily imply exclusion. Control mechanisms can also be used to speed up diffusion of a technology instead of restricting its proliferation, for example by *not* exercising the exclusion right that comes with a patent or licensing an innovation under terms that require revealing of cumulative inventions.

2.2.1 Intellectual property rights

IP law consists of three main branches: trademark, patent and copyright law (e.g., Vaidhyathan 2001, p. 18; Goldstein 2003a, p. 7). The latter two share the same constitutional source and the intent to encourage innovation (e.g., Granstrand 1999, p. 49).⁹ Since IPRs comprise the right to exclude others, they can be used effectively to control others’ use (e.g., Pierson et al. 2007, p. 2). Patents are granted to an inventor of a tangible, useful and non-obvious device or process for up to 20 years (e.g., Bernhardt & Krasser 1986). Patents protect both the specific invention as well as the underlying idea and enable an inventor to exclude others from using his invention – even if they independently make the same discovery. In return for these rights, the inventor must disclose the invention to the public; however, it is important to note that a patent does not give a patentee the right to use his invention if such a use would infringe other patents.

⁸ Besides these four mechanisms, the most important ones listed in literature are complexity of design (Arundel 2001; Sattler 2003), long-term employment relationships (Sattler 2003) and the ability to quickly move down the learning curve (Levin et al. 1987; Harabi 1995). Fauchart and von Hippel (2006) contend that strong social norms that are held in common by members of a given community can complement or substitute for law-based IP systems.

⁹ The rationale for and design of IPRs varies between countries. This thesis focuses on the US perspective.

Other than use against imitation, patents can support a variety of strategic goals such as signaling competence, blocking competitors, generating licensing income, serving as bargaining chip and measuring the performance of internal R&D (Arundel & Patel 2003; Blind et al. 2006; Noel & Schankerman 2006).¹⁰

2.2.2 Secrecy

Instead of filing a patent and disclosing an invention to the public, firms may also decide to keep it secret. By declaring knowledge a trade secret, the information enjoys some legal protection against dissemination (e.g., Steckler 1996). Secrecy can prevent imitation and unauthorized use by third parties – unless they independently make the same discovery. In contrast to patents, trade secrets do not expire, which may result in a longer or even perpetual exclusive use of the confidential information. Successful examples include the recipe for Coca Cola and the process for assembling Meissen porcelain (Steckler 1996). Secrecy does involve, however, several drawbacks and risks: First, licensing trade secrets is hardly feasible as it would require sharing confidential information. Second, maintaining secrecy is difficult and expensive (Liebeskind 1997). As a result of spillovers, trade secrets usually tend to leak out quite soon (Mansfield 1985). Although innovators usually try to avoid such knowledge leakages, they occur frequently, particularly for codified information (Audretsch & Feldman 1996; Harhoff et al. 2003). The third risk relates to the possibility of independent invention: If some other party re-invents and patents the same invention, an inventor may lose his right to use it in the future.

2.2.3 Complementary assets

Despite the use of IPRs and secrecy, firms mostly have to deal with weak appropriability regimes. Thus, successful commercialization of innovations requires ownership of complementary assets. Defined very broadly, complementary assets comprise a large spectrum of assets or capabilities such as brand image, distribution channels, production facilities and know-how, economies of scale and scope, access to input factors, cooperation partners, customer base, user communities or after sales service (Teece 1986; Dahlander & Wallin 2006; Pisano 2006).

¹⁰ For an introduction to copyright, as well as a comparison of copyright and patents, see Section 3.2.

According to the resource-based view (RBV), any resource can generate a sustainable competitive advantage if it is valuable, rare, in-imitable, and non-substitutable (Barney 1986, 1991). Thus, complementary assets may constitute a source of competitive advantage. In particular, the RBV suggests that assets such as brands or superior sales capabilities are the most valuable since they are built over a longer time and cannot be easily acquired or imitated by competitors (e.g., Dierickx & Cool 1989). The ownership of specialized complementary assets may also protect incumbents against the effects of a radical technological change (Mitchell 1989, 1992; Tripsas 1997).

2.2.4 Lead time

Lead time can result in the absence of competition for some time, otherwise known as temporal monopoly. It can also enable firms to strengthen their position regarding complementary assets (Statman 1981; Dierickx & Cool 1989) or accelerate progress on the learning curve (Henkel 2007, p. 31). Thus, it can improve the conditions for value appropriation. Henkel (2007, p. 20) considers lead time as a means of protection that results from IPRs, secrecy, or an advantageous complementary asset position. Several earlier authors confirm this view; for example, Bresnahan (1985) discusses Xerox's use of patents to block competitors and generate an entry barrier.¹¹

2.2.5 Effectiveness and interactions

It has been well established that firms can rely on a variety of protection mechanisms to improve the conditions for value appropriation, including IPRs, secrecy, complementary assets, and lead time. Two questions remain: How effective are those individual means, and do interrelations do exist between them?

Despite their wide use, *IPRs* are usually considered to be the least effective mechanism (e.g., Harabi 1995; Cohen et al. 2000). Two disadvantages of patents may explain their low ranking: First, patents require disclosure of inventions, and thus, competitors can learn about a firm's new technologies as well as the direction of its R&D (e.g., Levin et al. 1987; Harabi 1995). Second, patents can usually be bypassed; many indus-

¹¹ In the related field of strategy, several studies have identified enduring market share advantages for surviving pioneers. Benefits of a first-mover strategy include, among others, proprietary learning effects, preemption of input factors and locations, and the generation of buyer switching costs. However, being the first mover is not necessarily a superior strategy. For example, first movers may experience difficulties if technology or customer needs change (e.g., Robinson & Fornell 1985; Carpenter & Nakamoto 1986; Urban et al. 1986; Lieberman & Montgomery 1987; Szymanski et al. 1995).

tries consider “inventing around” a patent as comparably easy (e.g., Arundel 2001). For a sample of innovations in pharmaceuticals, chemicals and electrical products, Mansfield et al. (1981) find that competitors could imitate patented inventions for about 65% of the costs of their original creation and duplicate 60% of them within four years.¹²

Compared to patents, *secrecy* is, on average, considered to be a more effective method of protection. In particular, it seems to work well for process innovations which firms can hide from their competitors for long periods of time. Its benefits seem to be weaker for product innovations which can, once on the market, more easily be reverse-engineered (e.g., Cohen et al. 2000; Arundel 2001). In line with the previous reasoning, several empirical studies confirm that successful commercialization of innovations heavily depends on the ownership of *complementary assets*; of the highest importance are better sales and service (e.g., Levin et al. 1987; Harabi 1995). *Lead time* outperforms all three mechanisms analyzed so far. Many studies find temporal advantages to be the most or second most effective protection mechanism for both product and process innovations (e.g., Harabi 1995; Sattler 2003).

Table 2.1 summarizes the discussion on the effectiveness of IPRs, secrecy, complementary assets and lead time by showing the ranks which firms assign to these mechanisms in different studies.¹³ All studies find lead time and complementary assets to be effective in protecting firms’ competitive advantages. The benefits of IPRs and secrecy are less evident.

¹² In contrast to the large body of literature on patents, the author is not aware of any study that examines the effectiveness of copyright for value appropriation.

¹³ The effectiveness of the different protection mechanisms varies among different regions, industries, firm sizes, and types of innovations (Cohen et al. 2000; Arundel 2001; Sattler 2003).

Ranking of effectiveness of different control mechanisms for value appropriation*								
Protection mechanisms			Studies					
			Levin et al. (1987)	Harabi (1995)	König and Licht (1995)	Cohen et al. (2000)	Arundel (2001)	Sattler (2003)
Intellectual property rights	Patents	... to prevent duplication	4	6	5	5	4	5
		... to secure royalties	5	5				
	Registered design/ Other legal				6	6	5	6
Secrecy			6	4	4	2	2	4
Complementary assets	Superior sales and service efforts		1	1		4		
	Complementary manufacturing					3		
	Economies of scale		3	3				
Lead time			2	2	2	1	1	2
Others	Complexity of design				3		3	3
	Long-term employment relationships				1			1

* 1 denotes the most effective appropriability mechanism

Table 2.1 Ranking of effectiveness of different control mechanisms for value appropriation (own illustration based on Sattler 2003)

The previous discussion on the effectiveness of protection mechanisms neglected the impact those means have on each other. For example, patents or secrecy may yield a lead time advantage which may make it easier to build up complementary assets (Henkel 2007, p. 20). In addition, firms hardly rely just on one protection mechanism, but use combinations to increase their effectiveness (Laursen & Salter 2005; Fischer & Henkel 2009): For example, they might keep a product secret during development, but file a patent once it is available on the market (Cohen et al. 2000).

2.3 Free revealing as a rent-seeking strategy

Firms invest in innovations to generate private rents, typically by using a technology in own products or by licensing it. Firms can enhance their ability to profit from their developments by protecting them (e.g., Demsetz 1967; Teece 1986). Consequently, freely revealing innovations clearly contradicts established management practices that consider exclusion to be a crucial precondition for value appropriation (e.g., Liebeskind 1996; Spencer 2003; Chesbrough, 2003, pp. 40-42, 56-59). This section intends to examine the phenomenon of free revealing as a profit-seeking strategy. For this purpose, it outlines various cases (2.3.1), analyzes potential benefits (2.3.2) and drawbacks (2.3.3), presents suitable business models (2.3.4) and identifies enablers and roadblocks

for firms' adoption of free revealing (2.3.5).¹⁴ To distinguish free revealing from other concepts, this work follows Harhoff et al. (2003) who define "*free revealing of information by a possessor as the granting of access to all interested agents without imposition of any direct payment*" (p. 1753f.).

2.3.1 Cases

While the benefits of free revealing for firms seem questionable at first glance, unremunerated knowledge disclosure by firms can be observed in various settings. This section closely examines two cases of free revealing and briefly touches a number of related phenomena.

Collective invention. Allen (1983) is one of the first authors to analyze free revealing as a profit maximizing strategy. Studying technical progress in the 19th century English iron industry, he finds that innovators frequently made data on the design and performance of new furnaces publicly available. Labeling this phenomenon "collective invention", Allen defines it as free exchange of technical information among firms and individuals, including competitors. In this case, these inventions were not a result of systematic R&D, but rather a by-product of day-to-day business. The decision to freely reveal innovations made the English iron industry more innovative and competitive since furnaces improved at a faster pace and firms could build on prior knowledge, reducing costs and risks.

Allen derives three propositions on the economic rationale for such behavior: First, it would have been extremely costly to keep the innovations secret; second, firms or their executives could gain reputation and signal technical excellence; third, the revealed innovations were specific to certain features of the innovator's production or assets which increased their value and limited use for competitors. In another study on collective invention, Nuvolari (2004) stresses the substantial progress that was made for steam engines in the early 19th century as improvements on their design were shared freely. Fauchart (2003) presents findings on information sharing on safety issues among competitors in the chlor-alkali industry.

¹⁴ Freely revealing may also be considered as an extreme form of "outbound openness", as defined by Chesbrough and co-authors (Chesbrough 2003a, 2003b; Chesbrough et al. 2006). However, Chesbrough does not consider free revealing to be a facet of "outbound openness" as he focuses on remunerated knowledge and technology exchange.

Commercial open source software. One of the most prominent examples of free revealing by firms is the development of open source software (OSS) by commercial firms. Alexy (2008, p. 53) distinguishes three different modes of commercial OSS engagement: using OSS, participating in existing OSS projects, and releasing proprietary software as OSS. The second and third models can be considered as free revealing.

Embedded Linux serves as a hallmark example for the practice of commercial firms to contribute modifications and extensions to an existing OSS project.¹⁵ Although these organizations dedicate significant resources to software development, they voluntarily reveal on average about 60% of the source code they develop (Henkel 2006; Käs 2008, p. 176). Opening the source code of a product developed in-house constitutes the strongest deviation from the traditional means of treating a firm's IP (von Hippel & von Krogh 2003; Grand et al. 2004; West & Gallagher 2006). One of the most famous examples is IBM's public release of the source code of Eclipse, an integrated development environment, in 2001, which it had built for USD 40 million (Junnarkar 2001).

In many ways, Allen's concept of collective invention is similar to the phenomenon of commercial OSS (Osterloh & Rota 2007); however, it also differs in one major aspect since "*firms did not allocate resources to invention – the new technical knowledge was a byproduct of normal business operation.*" (Allen 1983, p. 2; see also Henkel 2007, p. 218). As outlined above, firms engaging in OSS may allocate a significant amount of resources to OSS as part of their R&D strategy.

Other examples. After a closer examination of two cases of free revealing, this section provides an overview of a few related phenomena. *Defensive publishing* is defined as the "*publication of an invention with the purpose of creating prior art, thus preventing patents being granted on this invention*" (Henkel & Pangerl 2008, p. 1). Since patents are only granted for inventions which are "*new and which involve an inventive step*" (European Patent Convention (EPC), Article 52(1)), defensive publishing of an invention prevents a patent from being granted for it. Thus, the main purpose of defensive publishing is to secure freedom to operate; it can also increase the diffusion of an invention or facilitate cumulative inventions.

Besides publishing results instead of patenting them, numerous firms have started to *donate patents* to the public. For example, IBM made 500 patents freely available to

¹⁵ The term "Embedded Linux" refers to variants of Linux used in embedded devices such as mobile phones or machine controls. It has experienced rapid development over the last years and has become one of the most common operating systems for embedded devices (Webb 2002).

OSS projects in 2005 (IBM 2005) and donated 31 patents on environmental technologies to the “Eco-Patent Commons” initiative in 2008 (Bowman 2009). While IBM does not intend to abandon its lucrative business of technology licensing, it ranks the benefits of revealing knowledge, such as increased diffusion and innovation, higher for some technologies than the drawbacks of losing licensing income.

While fashion firms go to great lengths to protect their brands, they largely *tolerate imitation of their designs*, mainly by manufacturers of less expensive clothing. Raustiala and Sprigman (2006) identify three reasons why fashion firms neither limit access to nor require payments for their original designs: First, imitation of their designs enables more people to buy it, which erodes the positional qualities of fashion goods. In order to disassociate themselves from the mainstream, fashion-conscious buyers need to buy new items that are, in turn, introduced by original designers. Thus, copying accelerates innovation which induces additional sales. Second, creators of original designs enjoy a first-mover advantage which enables them to recover their investments. Third, piracy increases product differentiation and induces consumption by those who prefer a particular variation to the original. These modifications facilitate the emergence of new fashion trends. In summary, the “*low-IP equilibrium*” (Raustiala & Sprigman 2006, p. 1692) in which the fashion industry operates seems to be a main driver of its innovativeness and economic success.¹⁶

Firms and individuals frequently exchange information on an informal basis. This phenomenon, called *information trading*, is based on the expectation that the recipient will share his knowledge, too, when asked to do so (von Hippel 1987; Schrader 1991; Dahl & Pedersen 2004). While most researchers regard such dissemination of information as undesired leakage which can lead to a competitive disadvantage (e.g., Mansfield 1985; Liebeskind 1997), others argue that it can be in line with the economic interests of the giving firm. For example, information trading can help firms to obtain valuable technical advice (Schrader 1991) or increase the likelihood of setting a standard in an industry (von Hippel 1987).¹⁷

¹⁶ One might argue that this behavior is not an example of deliberate free revealing since the industry does not have any means to prevent piracy. This is partially correct since only the two-dimensional sketch of a fashion design is protected by copyright, but not the three dimensional garment produced from that sketch. However, if piracy was an issue to the industry, one would expect the industry to lobby for stronger copyright protection similar to the movie or music industry. Thus, the fashion industry seems to tolerate copying of original designs (Raustiala & Sprigman 2006).

¹⁷ Of course, information trading is not always advantageous. In particular, know-how that offers significant competitive advantage should be hidden rather than shared (e.g., Schrader 1991).

Many important novel products and processes have been developed by users. A diverse set of cases has been documented, including oil refining (Enos 1962), chemical production processes (Freeman 1968), semiconductors (von Hippel 1977) and sporting equipment (Franke & Shah 2003). Since *user innovators* develop new products primarily to serve their own needs, they are usually not interested in building and selling professional products or licensing their innovation (e.g., von Hippel 1988, p. 45). Instead, they often welcome broad adoption of their innovations to benefit from development support or the appearance of manufacturers which convert their prototype into a solid, well-engineered product (Franke & Shah 2003; Harhoff et al. 2003; Baldwin et al. 2006). Thus, they tend to freely reveal innovations. For similar reasons, supplier firms may disclose knowledge to their customers (Gawer & Cusumano 2002; Harhoff 1996; VanderWerf 1992).

2.3.2 Reasons

By freely revealing innovations, firms allow all parties to use their developments, give up potential licensing revenues and grant competitors insights into their products and processes. Literature has tried to explain the puzzle posed by free revealing. This section outlines the most common benefits of free revealing as discussed in literature.¹⁸ While the situations behind the arguments are different, most of the research focuses on OSS, the most commonly studied case of free revealing. Table 2.2 gives an overview of the known reasons for free revealing.

Market	<ul style="list-style-type: none"> • Build reputation • Enhance marketing • Satisfy customer demand • Increase diffusion to... <ul style="list-style-type: none"> – Increase compatibility and attract complementors – Set standard and generate network effects – Increase demand for complementary products
Technological	<ul style="list-style-type: none"> • Receive external development support • Foster cumulative innovation
Strategic	<ul style="list-style-type: none"> • Secure freedom to operate • Commoditize competition • Reduce external dependencies
Legal	<ul style="list-style-type: none"> • Fulfill legal requirements

Table 2.2 Reasons for free revealing
(own illustration based on Henkel 2007, p. 88 and Käs 2008, pp. 68, 127)

¹⁸ Revealing of innovations can also be driven by legal requirements. For example, all OSS licenses give customers the right to demand access to the source code of software they use (OSI 2001). Thus, it restricts an innovator's ability to keep software secret. As this kind of revealing does not occur voluntarily, it does not qualify as free revealing (Harhoff et al. 2003; Pénin 2007).

Market-related reasons

Build reputation. Allen (1983) identifies reputation gains as one of the main benefits of freely revealing knowledge. One of the main reasons for supporting OSS by the investment bank Dresdner Kleinwort Wasserstein, for example, was to signal to potential employees that “*we are a bank but we do really cool stuff*” (Henkel 2004, p. 19). Similarly, IBM’s decisions to engage in OSS and donate patents generated a lot of positive press, improved its reputation (Abreu 2001), and may have contributed to its standing as most popular employer among European engineers (Langer 2007). In addition, disclosure of knowledge can also signify commitment to partners, intimidate competitors (Gill 2008; Lichtman et al. 2000) and serve as an indicator of technical excellence for customers (Hicks 1995; Muller & Pénin 2006; Pénin 2007). In the long run, an improved corporate image and strong technical reputation may attract additional customers.

Enhance marketing. Since free revealing still constitutes a strong deviation from the norm, such a move can generate a lot of attention. Sun’s decision to open source its StarOffice application, for example, elevated its popularity and resulted in a much broader adoption (Alexy 2008, p. 37). Henkel (2006) and Käs (2008, p. 136) confirm this observation by finding that visibility on mailing lists and cooperation with communities is valuable marketing for software firms. By revealing specifications or source code, manufacturers enable customers to become co-creators of value and adapt it to their particular needs (Prahalad 2004; Benkler 2006). The end result is that the product may become more valuable for them and their loyalty is likely to increase (Morrison et al. 2000; Franke & von Hippel 2003; Goldman & Gabriel 2005, p. 93).

Satisfy customer demand. As customers take a more active role in the innovation process, they increasingly demand the ability to change products (Ramírez 1999; Prahalad & Ramaswamy 2000; Vargo & Lusch 2004). This claim can act as an impetus to leave the traditional logic of maximal exclusion (Piller 2003). In her study on Embedded Linux, Käs (2008, p. 183) finds that firms consider customers’ expectations to obtain access to the source code as the most important reason for revealing. Changing customer preferences is something that key players, like Intel and Microsoft, also deal with: “*It is the market forces that make you go there*”. Microsoft responded with its “Shared Source” initiative to the fact that its “*customers want source access both for its technical benefits, and because transparency increases trust*” (Matusow 2005, p. 331).

Increase compatibility and attract complementors. Disclosing information on a product makes it easier for other firms to establish compatibility and reduces the risk of a vendor lock-in; it thus becomes more attractive for third parties to develop complements (Gawer & Cusumano 2002, p. 51; Goldman & Gabriel 2005, p. 75). When a product works well with others that a customer already owns, his valuation and likelihood of buying it increase (Farrell & Saloner 1985; Katz & Shapiro 1985; Langlois & Robertson 1992). Specifically for platform products, the availability of complementary products is a key driver for customer value and sales. By releasing its Eclipse platform as OSS, IBM, for example, attracted a large number of complementors. So far, third parties have written around 1,200 programs enhancing the functionality of Eclipse (Eclipse 2009). In combination with a large and devoted community, these pieces of software build a huge ecosystem and greatly enhance the value of Eclipse and related IBM products.

Set standard and generate network effects. Since freely disclosing an innovation increases its diffusion, it improves the likelihood the creation will become dominant (von Hippel & von Krogh 2006). Setting or contributing to a standard is beneficial to firms since their knowledge becomes more valuable and their products more likely to be compliant with the ones of competitors and complementors (Allen 1983; Henkel 2004). In the long run, broad dissemination of knowledge through free revealing can also impact the direction of future developments and research (Spencer 2003).¹⁹ By establishing compatibility with standards and other products, free revealing may also induce or amplify network effects (Farrell & Saloner 1986; Katz & Shapiro 1986; Church & Gandal 1992).

Increase demand for complementary products. While free revealing may increase the diffusion of an innovation, it also renders some income sources such as licensing obsolete. Thus, firms need to look for *indirect* ways to appropriate the value of an innovation. A common method for doing so is to sell complementary products or services (e.g., Sengupta 1998). Free revealing supports such a business model as it usually increases the demand for such goods (e.g., Parker & Alstyne 2005). Distributors of the free operating system Linux excel in this strategy: By packaging Linux with proprietary software and offering additional services such as support and training, they

¹⁹ In an empirical analysis, Spencer (2003) finds that firms who share technological knowledge with others perform better than those who do not. Literature explains this finding by arguing that the success and adoption of a technology not only depends on its performance, but also on its environment (e.g., Rogers 2003). For the semiconductor industry, Appleyard (1996) identifies interfirm knowledge sharing as an important driver for the emergence of industry-wide standards.

create an attractive bundle for customers (Hecker 1999; Raymond 2001, p. 120-123). Novell's acquisition of SuSE, a large Linux distributor, for USD 210 million, indicates the viability of such a business model (Shankland 2003).

By freely disclosing knowledge to downstream sectors, suppliers may enable their customers to decrease their production costs or enable new firms to enter the market. As global production increases, the demand for their products likewise grows (Harhoff 1996). Of course, a similar argument can be made for firms providing their suppliers with free innovations. In this case, the disclosing firm mainly benefits from cost reductions realized by suppliers (Lim 2009).

Technological reasons

Receive external development support. The more information a firm reveals about a product, the easier it becomes for others to improve it. Thus, receiving external development support is one of the key motives for commercial firms to open source software (e.g., Bonaccorsi & Rossi 2006; Henkel 2006). Users assume tasks such as coding, debugging, testing, maintaining documentation and giving support to fill a need, develop skills or have fun (e.g., Lakhani & von Hippel 2003; Lakhani & Wolf 2005). Their contributions can help firms cut costs, speed up the development or improve the quality of their software (Dalle & Jullien 2003; Henkel 2004; Goldman & Gabriel 2005, p. 78). Users' involvement is widely varied: While some may just provide feedback or suggestions for further improvements, others may go to great lengths to implement additional features or port a product to a new platform (e.g., von Hippel 2001; Goldman & Gabriel 2005, p. 51).²⁰

External development support can not only come from individuals, but also from other firms. Henkel (2006) shows the existence of "*informal development collaboration[s]*" (p. 953) between firms in the area of Embedded Linux. Building on a common code base, but having highly different needs, revealing improvements of the shared code base can be beneficial for two reasons: First, it reduces duplication of effort and thus makes all market participants more competitive. Second, firms lose little competitive advantage by contributing back as their products are quite unique.

²⁰ Interestingly, users not only focus on challenging and interesting jobs, but also take responsibility for "mundane tasks" such as documentation or user support which may be partially explained through reciprocity (Fehr & Gächter 2000; Lakhani & von Hippel 2003; Shah 2006).

Foster cumulative innovation. Since free revealing implies disclosure and free access, future innovators can easily build on such knowledge.²¹ Thus, it may increase the rate of collective learning and the pace of innovation in an industry. Foray (2004) suggests that voluntary spillovers can improve the overall performance of an industry, by preventing costly accidents for example (Fauchart 2003).²²

Strategic reasons

Secure freedom to operate. Free revealing converts private knowledge into public knowledge. As a by-product, an inventor practices defensive publishing and creates prior art. Thus, he prevents patents from being granted for his invention and secures his freedom to operate (Henkel & Pangerl 2008).

Commoditize competition. Knowledge becomes a commodity when it is placed in the public domain. This fact can be used strategically to weaken a particular competitor or to commoditize competition and shift it to a field where the releasing firm is stronger (Hecker 1999; West 2003; Henkel 2004; Goldman & Gabriel 2005, pp. 95-97). By promoting Linux, IBM managed, for example, to establish a strong alternative to the dominant Microsoft Windows and Sun Solaris operating systems that does not charge any licensing fees. This move made IBM servers running Linux as the operating system more competitive (Koenig 2004). Obviously, such a strategy works better for firms that offer complementary products than for pure software providers (Henkel 2007, p. 90; Fosfuri et al. 2008).

Reduce external dependencies. Users and suppliers frequently reveal innovation in areas that affect business partners. They do so to increase competition and to reduce the danger to face dominant business partners. Reducing the dependency on Microsoft, for example, is usually given as one explanation for the strong corporate support for the Linux operating system (Raymond 2001, p. 142). In contrast, an almost-monopolist can use free revealing to make a credible commitment to welcoming competition and not intending to abuse its strong position (Economides 1987; Shepard 1987; Farrell & Galini 1988).

²¹ In contrast, patents may hinder future inventions because “*cumulative innovators may not be able to capture enough value to cover their R&D expenses and the licensing fee*” (Bar-Gill & Parchomovsky 2003, p. 15).

²² For example, Barnett (2004) argues for “*widespread cooperation to better the position of an entire industry*” (p. 2), in particular if “*a firm perceives that ‘industry matters’*” (p. 3). Free revealing can be one form of such cooperation.

2.3.3 Risks

Free revealing can also involve significant disadvantages. This section gives a brief overview of the five biggest risks mentioned in literature, summarized in Table 2.3.

Market	<ul style="list-style-type: none"> • Lose earnings • Bear setup and maintenance costs • Generate reputation issues
Strategic	<ul style="list-style-type: none"> • Lose competitive advantage
Legal	<ul style="list-style-type: none"> • Face legal issues

Table 2.3 Disadvantages of free revealing
(own illustration based on Henkel 2004, 2007, p. 88)

Market-related reasons

Lose earnings. After revealing the details of an innovation to the public, a firm can no longer demand a license fee for its use. Thus, it forgoes a potential revenue source. The firm may, however, still commercialize the freely revealed innovation by using it in own products. For software released as OSS, two cases have to be distinguished. First, if OSS is produced at the request of a particular customer, it is quite common to charge a fee based on the development costs (Henkel 2007, p. 92f.). Second, no direct revenue stream will, however, come any longer from software such as IBM’s Eclipse, which is made available for free on a large scale.

Bear setup and maintenance costs. While the possibility of receiving external development support seems attractive at first glance, releasing an innovation does not automatically attract lots of users or firms who will build on it. Again, this fact can be observed very well in the context of OSS: First, setting up an OSS project may require significant effort and cause considerable setup costs (Behlendorf 1999; Henkel 2004). The software needs to be modularized and documented well in order to enable users to modify it (Baldwin & Clark 2000; Goldman & Gabriel 2005, p. 82). Source code also needs to be sanitized, business logic needs to be removed, and commercially-licensed code needs to be replaced (Hecker 1999; MacCormack et al. 2006). Second, maintaining an OSS project incurs costs as well, mainly for paying internal developers.

Generate reputation issues. If poorly done, free revealing might even harm a firm’s reputation. If source code is incomplete or of poor quality, the result may be public ignorance of a firm’s OSS efforts so that none of the expected benefits can be reaped, or worse, an impairment of the firm’s technical reputation (Henkel 2004; Goldman & Gabriel 2005, p. 132; MacCormack et al. 2006). In particular, security flaws can be easier detected in OSS than in proprietary software since the source code is readily

available (Raymond 2001, p. 30). While this transparency can result in better security, it constitutes a danger for a firm's reputation.

Strategic reasons

Lose competitive advantage. By providing free access to its IP, a firm may possibly lose a competitive advantage (Henkel 2007, p. 89): First, the revealed innovations can supply a firm's competitors with insights into its strategy, products and processes. Second, competitors may transform this knowledge into products or services which intensify competition and drive down margins.²³

Legal reasons

Face legal issues. Free revealing of previously secret innovations involves the risk that others can detect infringements of patents and copyright more easily. The long-lasting dispute between SCO Group and various Linux vendors and users illustrates these potential risks. Although SCO did not succeed, its lawsuits caused a lot of uncertainty and trouble (Markoff 2007). Another legal issue may arise when a firm licenses IP from a commercial supplier, merges it with its own IP and freely reveals the resulting work, thus violating the commercial license (Henkel & Baldwin 2009).

2.3.4 Business models

Free revealing can create additional value by receiving external development support or ensuring compatibility with other products, for example. To appropriate at least part of this value, firms use different strategies. In the case of OSS, a broad range of business models have been suggested (e.g., Behlendorf 1999; Hecker 1999; Raymond 2001, pp. 113-119; Koenig 2004; Dahlander 2005). The following paragraphs outline how OSS can reduce costs, generate revenues and support other, usually strategic, targets.

Reducing costs. Besides achieving vendor independence, the decision to *use* OSS components is usually driven by cost considerations. Since OSS does not involve any licensing fees, it has the potential to save significant costs (e.g., Raymond 2001, p. 159; West & Gallagher 2006). By *contributing* proprietary code to a related OSS project or

²³ Henkel (2007, p. 89) finds four main factors to determine the potential negative impact of revealing an innovation on a firm's competitive position: intensity of competition, competitive relevance of the innovation, availability of alternatives and specificity of the innovation with regards to the revealing firm. In his analysis on information trading, Schrader (1991) mentions the first three ones. Harhoff et al. (2003) analyze the fourth one.

releasing software as OSS, firms may harness the efforts of users who maintain and improve the software and reduce the number of internal developers (Lakhani & von Hippel 2003; Henkel 2004; Goldman & Gabriel 2005, p. 51). A thriving community can improve software quality, speed up development and give valuable feedback. OSS can thus save costs that would incur for getting comparable results without a community.²⁴

Generating revenues. The most straight-forward business model is to charge customers a fee for OSS similar to proprietary software. It is particularly common for custom developments (Henkel 2007, p. 92f.). For free software, providers may add a proprietary extension in order to make customers willing to pay again (e.g., Jeppesen & Molin 2003). Linux distributors usually supplement Linux with proprietary add-ons, e.g., for rendering certain media types (Novell 2009).

Under a dual-licensing strategy, the same piece of software is provided under two parallel licenses – an OSS and a proprietary one (Behlendorf 1999; Hecker 1999; Goldman & Gabriel 2005, pp. 128-135).²⁵ MySQL is the most prominent example of this practice. While the database software is available for free under the GPL, customers may decide to purchase a commercial license if they want to integrate MySQL into proprietary products and fear the viral effects of the GPL (Henkel 2004).

By bundling OSS with hardware, hardware vendors may save licensing costs for proprietary software and sell their products at a lower price (Koenig 2004; Alexy 2008, p. 49). Other business models building on complementary products or services include customization of OSS, training in its use, and problem resolution support for which professional users commonly pay a regular service fee (Dahlander 2005; Goldman & Gabriel 2005, p. 105f.).²⁶

Supporting strategic targets. OSS can be used as a “loss leader” to maintain the market position for proprietary software, which generates a direct revenue stream. This rationale was the driver behind Netscape’s decision in 1998 to open source its browser. Through this move, Netscape managed to prevent Microsoft from locking up the Internet Protocol HTTP and ensure demand for its HTTP-compliant web server (Raymond

²⁴ Sharing knowledge with a community can also reduce the risk of losing it in case it is concentrated on a few employees who may leave the firm. For that reason, Cisco released a tool for printer management as OSS since only two employees knew the software well. Of course, such a decision is only advisable for non business-critical programs as in the Cisco case (Henkel 2004; Goldman & Gabriel 2005, p. 90).

²⁵ For such a move, the firm needs to own the entire rights to the source code.

²⁶ As Henkel (2004) points out, all these business models require a close tie behind the complement and the OSS.

2001, p. 135). Other goals supported by free revealing include commoditizing a certain layer of the software stack, setting an advantageous standard and attracting talented employees (West 2003; Henkel 2004). All these benefits have more long-term than short-term implications; their financial impact is hard to measure (Alexy 2009).

2.3.5 Transition to free revealing

As the previous examples illustrate, free revealing requires new approaches to marketing and working with external partners as well as different business models (Cohen & Levinthal 1990; Teece et al. 1997). It strongly conflicts with existing routines (e.g., Henderson & Clark 1990; Henderson 1993), renders existing capabilities obsolete, and requires new ones (e.g., Abernathy & Clark 1985; Leonard-Barton 1992). Consequently, moving to free revealing can be regarded as radical or discontinuous change (e.g., Dewar & Dutton 1986; Henderson & Clark 1990).

Quite often, the benefits of free revealing are vague and might be outweighed by the potential downsides. Since executives tend to rely on past successes and avoid uncertainty (e.g., Reinganum 1983; Hill & Rothaermel 2003), they are not likely to adopt free revealing, unless there is a clear impetus for change such as changing customer preferences or the emergence of a new technology (e.g., Barley 1986; Tyre & Orlikowski 1994).

One support for this transition can be continuous learning and feedback through experiences and other success stories (Nelson & Winter 1982; Rosenberg 1983; von Hippel & Tyre 1995). Incremental learning might help firms to become better at free revealing and increase the share of innovations which are freely revealed. Since small organizations are usually more flexible than their larger counterparts, they are, *ceteris paribus*, expected to change faster than their incumbents (e.g., Hannan & Freeman 1977; Foster 1986). Besides, they may profit more from the benefits of openness, such as external development support, compared to large firms who have more resources at their disposal (Gruber & Henkel 2006). Overall, one would expect a gradual increase in openness led by small and flexible firms.

2.4 Individual innovators

The previous sections outlined how firms can appropriate value from their innovations, and specifically dealt with the economic rationale behind freely revealing innova-

tions. This analysis made the implicit assumption that innovators are firms that manufacture goods or sell services (Schumpeter 1942; Arrow 1962). In his seminal work “The Sources of Innovation”, von Hippel (1988) challenges this view. He finds that innovations originate from a variety of sources apart from product manufacturers. In order to distinguish those groups, he proposes “*categorizing firms and individuals in terms of the functional relationship through which they derive benefit from a given product, process, or service innovation. Do they benefit from using it? They are users. Do they benefit from manufacturing it? They are manufacturers. Do they benefit from supplying components or materials necessary to build or use the innovation? They are suppliers.*” (p. 3).

Von Hippel characterizes innovators in two aspects: First, he distinguishes between users, manufacturers and suppliers, based on their functional role in the innovation process between. Second, he separates individuals and firms, i.e., by institutional affiliation. Figure 2.1 visualizes this framework and provides one example for each source of innovation.

Sources of innovation			Example (Source)	
Institutional view	Firms	Chemical production processes (Freeman 1968)	Disk drives (Christensen & Bower 1997)	Industrial gases (VanderWerf 1992)
	Individuals	Sporting equipment (Shah 2000)	Cultural goods (Menger 2001)	Irrigation control water sensor (Macdonald 1986)
		Users	Manufacturers	Suppliers
Functional view				

Figure 2.1 Classification of sources of innovation (own illustration based on von Hippel 1988, p. 3)

Taking an institutional perspective, one may distinguish two kinds of innovators: Firms and individuals. Considering individuals as a separate source makes sense for this thesis as they frequently invent for reasons that differ from those of firms. Consequently, they tend to practice free revealing for different benefits than those presented in Section 2.3. Therefore, the remainder of this chapter focuses on individual innovators and their rationale for freely revealing innovations.

In comparison with firms, individuals are much less driven by the goal of generating rents (Bonaccorsi & Rossi 2006). For them, reasons such as filling a need, gaining reputation, giving back, managing a challenge, and having fun are more important (e.g.,

Lakhani & Wolf 2005; Giuri et al. 2007; Kim 2007). Individuals are also more likely to either license a technology or freely reveal it since they are usually either not interested in becoming manufacturers and turning an invention into a product or lack complementary assets like distribution channels or production know-how (e.g., Baldwin et al. 2006; Riggs & von Hippel 1994).

Individuals may assume three functional roles in the innovation process: users, manufacturers and suppliers. The case of individuals as users is straightforward and can be observed frequently, e.g., in sporting equipment (Shah 2000) or software development (Lakhani & von Hippel 2003). The other two combinations, individuals as manufacturers or as suppliers, are less obvious. Musicians, actors and painters are examples of individuals as manufacturers. These artists create innovations and commercialize them as services, e.g., by giving a concert, or as products, e.g., by selling CDs or DVDs (e.g., Menger 2001). Individual inventors mostly fall into the category of users or suppliers. The first case applies if they use their inventions; alternatively, they can be regarded as suppliers of IP. The American inventor Jerome Lemelson is a shining example of that case. Holding over 500 patents, he has earned so far around USD 1.5 billion in licensing fees from firms who use his inventions (Varchaver 2001).²⁷

The previous paragraphs introduced individuals as a group of innovators who can take different roles in the innovation process. The remainder of this chapter intends to shed further light on their characteristics, the way they exploit their innovations and the importance of their contributions (2.4.1). After that, their motives to innovate are explored (2.4.2 and 2.4.3). Finally, the extent and reasons for free revealing by individuals is examined (2.4.4).

2.4.1 Characteristics and contributions

Individuals can create extremely different innovations. By presenting three examples, this section provides the basis for their contributions and roles in the innovation process.

²⁷ Some critics question the quality of his inventions and claim that Lemelson engages in patenting rather than in inventing (Varchaver 2001), showing some characteristics of a patent shark/troll (Reitzig et al. 2007). However, as many firms license his patents, he can be regarded as supplier of IP.

OSS developers. OSS projects are frequently initiated by an individual or group to create needed software (Raymond 2001, p. 29 f; von Krogh & von Hippel 2006).²⁸ Since OSS projects do not pay developers, they depend on voluntary contributions of project participants who assume tasks such as coding, providing user assistance and reporting bugs (e.g., Kogut & Metiu 2001; Bonaccorsi & Rossi 2003; Lakhani & von Hippel 2003). A central team lightly coordinates these efforts and distributes tasks, but does not have the power to enforce instructions (Gallivan 2001; O'Mahony 2003).

At the time of this writing, there are several hundred thousand OSS projects.²⁹ These projects have yielded a large number of reliable and quality software packages, including successful programs like Linux, an operating system, and Apache, a web server. The adoption of OSS occurs for three reasons: First, it does not involve any royalties; second, it is frequently of high quality and reliability (Hissam et al. 2001; Stamelos et al. 2002); third, it gives users greater control (Raymond 2001, p. 142; De Laat 2005; Alexy 2008, p. 27). Given this economic success, OSS is an hallmark example of users jointly creating major innovations (Tuomi 2003; Ulhoi 2004) or, in the words of von Krogh and von Hippel (2006), “*an entirely new model of innovation*” and an “*institutional alternative to firm-based innovation*” (p. 976).

Artists. In contrast to OSS developers who collaborate intensely with a large group of people, artists usually create works alone or in small groups. Their ingenuity and creativity are crucial for producing exceptional cultural goods. Thus, artists determine the economic success of the cultural industries which include sectors such as publishing, film, or music (Rosen 1981; Adler 1985). Cultural markets are usually characterized by an oversupply of potential product creators (Hirsch 1972, 2000; Kretschmer et al. 1999a). There are two reasons for this situation: First, “*the raw material for the creative product, artistic endeavor, is subject to relatively low creation barriers*” (Gander & Rieple 2002, p. 249). Second, the attention of customers is usually scarce and focused on established artists to reduce search and transaction costs (Simon 1971; Rosen 1981; Adler 1985). In order to succeed, artists consequently depend on financing, marketing, and distribution by professional intermediaries (e.g., Hull 2004, p. 24). These circum-

²⁸ This observation is still valid for the vast majority of projects, including famous ones such as Sendmail and Apache. However, some projects (e.g., OpenOffice, Eclipse) have also been launched by commercial firms and for other reasons besides need.

²⁹ One large host of development activity, Sourceforge.net, lists more than 230,000 OSS projects (Sourceforge 2009). In addition, many OSS projects, including famous ones like Linux or Apache, are managed independently.

stances explain why only few artists can make a decent living from arts (e.g., Throsby 1994, 2007; BMAS 2000; Kretschmer 2005).³⁰

Inventors. Inventors may be regarded as an example of individuals who act as suppliers of IP. They may also decide, however, to become entrepreneurs themselves and sell products or services building on their own developments. Various famous inventors fall into this category including James Watt, who not only fundamentally improved the steam engine, but also founded a firm to manufacture such devices (Dickenson 1936). Lastly, many inventors are at the same time users who benefit from a better performance of a product they modified (von Hippel 1988).

If inventors are employed by a firm, they receive a salary in exchange for working on inventions.³¹ Independent inventors, who are responsible for about 10% of all patent applications (DPMA 2007), can monetize their inventions in three ways: by using them in their own products or services, by licensing them, or by profiting indirectly, e.g., through increased demand for services such as consulting or a better reputation leading to more lucrative job offers (e.g., Dasgupta & David 1994; Lerner & Tirole 2002). In contrast to the widely held prejudice that inventors are “*unworldly cranks*” (Macdonald 1986, p. 202), recent research suggests that independent inventors are frequently embedded into professional networks and communities (Jeppesen & Frederiksen 2006; Lettl et al. 2006, 2009).

Similar to artists who wrongly assume that high quality work is sufficient for economic success (e.g., Menger 2001), “*many individual inventors imagine that by inventing they have overcome the major hurdle to successful innovation*” (Macdonald 1986, p. 209). When they lack the resources to develop and market their inventions successfully, licensing their inventions becomes a common approach. However, firms frequently regard the inventions of independent inventors as being technically straightforward and of small commercial value which limits their willingness to acquire licenses (Macdonald 1986). This claim is in line with Lettl et al. (2009) who find that “*on average independent inventors generate inventions of lower technological impact than their*

³⁰ Of course, some artists, in particular so-called “superstars”, manage to derive a considerable income from their work (Rosen 1981; Adler 1985). These artists sometimes manage their careers independently and only source the services they need such as distribution from firms (Renner 2004; Bockstedt et al. 2006).

³¹ In Germany, firms must pay a special compensation to an employee who comes up with an invention which the firms intends to use. This obligation is specified in the Law on Employees’ Invention (Arbeitnehmererfindergesetz (ArbNERfG, §10)).

corporate counterparts” (p. 251). In contrast, Dahlin et al. (2004) do not detect a quality difference between inventions of firms and independent inventors.

2.4.2 Theory of motivation

Motivation is the internal state that activates or energizes behavior and gives it direction (Kleinginna & Kleinginna 1981; Deci & Ryan 1985). People do not only differ in the amount of motivation they have, but also in the kinds of motivation they exhibit (e.g., Ryan & Deci 2000). Two types of motivations are usually distinguished: intrinsic and extrinsic, which together determine the overall level of motivation towards specific tasks (Amabile 1983; Deci & Ryan 1985).

Intrinsic motivation is “*the motivation to engage in work primarily for its own sake, because the work itself is interesting, engaging, or in some way satisfying*” (Amabile et al. 1994, p. 950). Intrinsically motivated people perform an activity because of the associated fun or challenge, not because of external pressures or rewards (Ryan & Deci 2000). They enjoy working on tasks which they perceive as novel or interesting; in particular, activities which permit individuals to express their creativity or to accomplish something extraordinary are candidates for high levels of intrinsic motivation (Sen et al. 2008).³²

While intrinsic motivation stems from the satisfaction that is inherent with working on a task, extrinsic motivation originates from the environment external to the task (e.g., Petri 1991). It is defined as “*the motivation to work primarily in response to something apart from the work itself, such as reward or recognition or the dictates of other people*” (Amabile et al. 1994, p. 950). While intrinsically motivated people perform an activity because they perceive it to be valuable in itself, extrinsically motivated ones do so because of tangible or intangible benefits. Extrinsic motivation can come from various sources including the desire to please people one feels connected to, to gain recognition, to win a competition, to gain financial returns, or to comply with others’ orders (e.g., Deci & Ryan 1985; Amabile et al. 1994; Ryan & Deci 2000). People are usually

³² Lindenberg (2001) distinguishes between enjoyment-based and obligation/community-based intrinsic motivation. With regards to the latter type, he argues that people often perform certain actions to adhere to the norms of a community or to contribute to a community they identify with. Since these reasons hardly comply with the definition of intrinsic motivation given above, obligation/community-based motivation is not considered to be a subtype of intrinsic motivation.

not solely motivated by one type; instead, a combination of both dimensions encourages them to work on a particular task (e.g., Amabile 1983).³³

2.4.3 Motivations of individual innovators

Firms innovate to generate private rents; their main incentive is monetary rewards. The previous two sections have indicated that motives of individual innovators are usually broader than those of firms: Besides financial goals, individuals may be motivated by intrinsic benefits such as having fun or meeting a challenge as well as extrinsic ones like gaining recognition or supporting others one feels related to.

In a meta-analysis of the motivations of firms and individual programmers to engage in OSS, Bonaccorsi & Rossi (2006) find “*significant differences between the set of motivations of individuals and firms*” (p. 27). In the study, firms rank development support and quality improvements highest – benefits which can be translated into financial gains. In contrast, individuals’ most important motivation is developing new skills, followed by filling a personal need and supporting a movement or community one feels related to. Thus, the goals individuals pursue by engaging in OSS are mostly non-financial. Figure 2.2 highlights the key differences identified by Bonaccorsi & Rossi (2006). In the following, this work closely examines the motivations of the three groups of individuals previously studied, namely OSS developers, artists and inventors.

³³ A variety of laboratory experiments has shown that extrinsically motivated people show poorer performance in several situations. In particular, they are usually more impatient (Garbarino 1975), develop inferior concepts (McCullers & Martin 1971), have more difficulty solving complex problems (Glucksberg 1962), learn slower, have problems in approaching problems in an unconventional fashion (McGraw & McCullers 1979) and show lower levels of creativity (Kruglanski et al. 1971; Koestner et al. 1984).

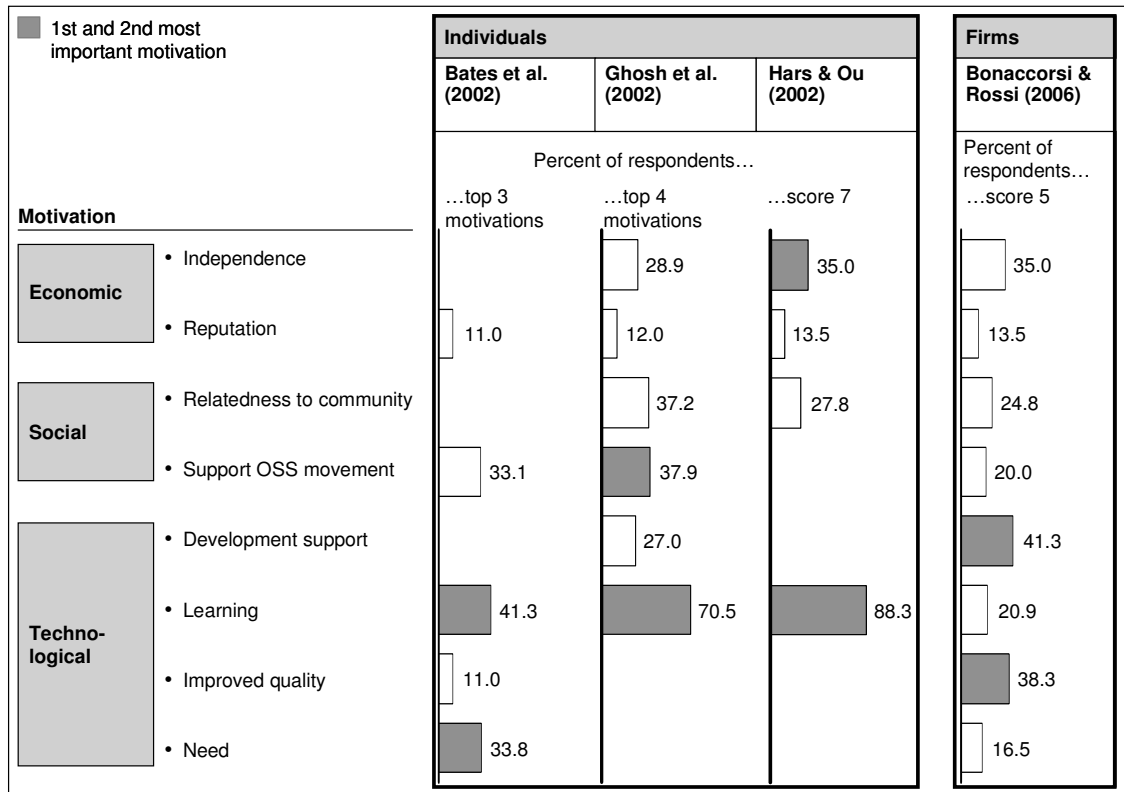


Figure 2.2 Comparison of the motivations of firms and individuals to engage in OSS (own illustration based on Bonaccorsi & Rossi 2006)

OSS developers. Summarizing the findings of the studies on the motivations of OSS developers, one could rank their motives in the following order: having fun and solving challenges, learning new skills, filling a work- or non-work-related need, gaining reputation, and supporting a community or the broader OSS movement.

For a lot of OSS developers, programming is a leisure activity (e.g., Bitzer et al. 2007). Coding for the sheer enjoyment is a classical example of intrinsic motivation (e.g., Franke & von Hippel 2003; Ghosh 2005). In this spirit, Linus Torvalds reports “*fun to program*” (Torvalds & Diamond 2001) as his impetus to start the Linux operating system. Playing around with the possibilities of software also provides a tremendous learning opportunity. In particular, developers may improve their skills as they master challenging and intellectually stimulating problems, as well as collaborate with highly-skilled coders (e.g., Lakhani & Wolf 2005). This benefit does not only apply to those who work on the most ambitious tasks, but even to those providing field support (Lakhani & von Hippel 2003).

In many cases, scratching a “*personal itch*” (Raymond 2001, p. 23) has been found to be the starting point of OSS projects. Solving a problem of immediate relevance to

the programmer is a direct and important benefit of developing OSS (e.g., Hertel et al. 2003; Ghosh et al. 2005).³⁴

OSS communities have certain characteristics of gift cultures in which a member's status depends on his contributions (e.g., Raymond 2001, p. 80). As OSS makes contributions transparent and gives credit for code, developers can gain recognition from their peers (Lerner & Tirole 2001; Feller & Fitzgerald 2002). For individuals caring about their acceptance within the community, this status and peer recognition may be a high factor in motivation (Zeitlyn 2003). Reputation gains can be rewarding itself, but can also enhance career prospects: For example, contributions to OSS projects can serve as signals of excellence to the job market (Hars & Ou 2002; Lerner & Tirole 2002)

Feeling strongly connected to the people they cooperate with, OSS developers may believe in a personal obligation to give back and support the project they are involved in (Hertel et al. 2003; Lakhani & Wolf 2005). Given the norm of reciprocity inherent in OSS, altruism might be an additional component (O'Mahony 2003; Zeitlyn 2003; Osterloh & Rota 2007). Some developers are also driven by political goals such as supporting the OSS movement or beating proprietary software (Lakhani & Wolf 2005).

Artists. Compared to OSS developers, artists' motivations are far less researched. While there is rich anecdotal evidence on their motives to create cultural works, quantitative data is missing. There is, nevertheless, wide agreement that intrinsic motivations play a major role for artists (e.g., Stratton 1982; Kubacki & Croft 2005). For example, novelist John Irving outlines love of creating as driving force to create: "*The unspoken factor is love. The reason I can work so hard at my writing is that it's not work for me.*" (Amabile 1989, p. 56) In addition to engaging in work primarily for its own sake, Hughes and McCullough (1982) find that authors also strive for recognition, quoting poet Sylvia Plath: "*Editors and publishers and critics in the world (...). I want acceptance there, to feel my work good and well-taken.*" (p. 305)

In order to be able to devote themselves fully to their art, as a form of recognition or as a value in itself, financial rewards matter to artists (e.g., Heise 2000); however, as poet Anne Sexton states: "*I am in love with money, so don't be mistaken. But first I want to write good poems*" (Sexton & Ames 1977). The low average income from artistic works (e.g., Kretschmer 2005) is another indicator that creating creative works comes from passion rather than money for most artists.

³⁴ For developers working for firms who contribute to OSS as part of their job, one might consider pay instead of need as their actual motivation.

For many creative people “*business and art are mutually incompatible*” (Kubacki & Croft 2005, p. 225). They perceive a trade-off between artistic integrity and commercial viability (Stratton 1982) or do not want to be bothered with commerce (Fischer et al. 2002). Thus, some artists forego pecuniary benefits of selling their art for the possibility of creating works that please their own tastes (Cowen & Tabarrok 2000; Kubacki & Croft 2004). In addition, some prefer to give away their works for free to see them widely read or viewed rather than restricting their distribution to maximize their returns (Kretschmer 2005; Montagnani & Borghi 2007).

Kim (2007) is the only quantitative empirical study this author is aware of which asks creators about their motivations. Kim finds that the love of creating is by far the dominant motivator, followed by considerations of reputation, as shown Figure 2.3. However, since most of the creators she asks are hobbyists and all of them permit sharing their work via a CC license, it is likely that other artists would rank other motivations, such as financial incentives, higher.³⁵

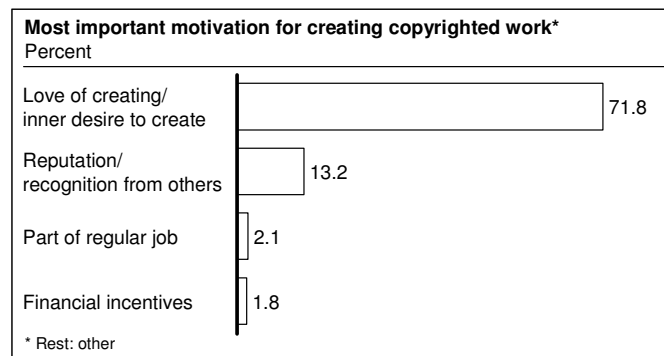


Figure 2.3 Motivations of creators of copyrighted works (own illustration based on Kim 2007)

Inventors. “*The inventor is essentially an individualist, an innovator, a leader, a non-conformist, a radical in the world of matter. He is forever dissatisfied with what he finds around him and is continually seeking to improve everything*” (Rossman 1931, p. 525). Although this characterization of inventors seems very idealistic, it is quite consistent with the findings of other scholars. Several researchers cite the intellectual challenge of solving a problem and developing new solutions as the most important motive for inventors (Hart 1927; Rossman 1931; Giuri et al. 2007; Sim et al. 2007). Consequently, inventors frequently dedicate themselves fully to technical subjects in order to work on the cutting edge of technology and show no inclination in assuming management roles or commercialize their inventions (Sim et al. 2007).

³⁵ Of course, the results may also be biased by social desirability, i.e., an desire of the respondents to comply with an attitude which considers a desire to earn money with art as inappropriate.

Experiencing a necessity or having the desire to come up with a better solution to a known problem are the starting points for most inventions. Thus, need is an important impetus behind inventors (Hart 1927; Rossman 1931). Inventors may also be motivated by the expectation of gaining reputation or signaling technical excellence to their current or potential employers (Rossman 1931; Giuri et al. 2007). Baldini et al. (2007), for example, find that academics – who are, in many respects, similar to inventors – patent inventions primarily to enhance their prestige, not to derive income from licensing. Inventors may also find it exciting to see their achievements widely adopted and used (Rossman 1931).

By licensing the technology or commercializing it as an entrepreneur, inventors may derive considerable income from their achievements (Åstebro & Dahlin 2005). Employed inventors can profit from inventions through direct monetary rewards or more attractive job-related prospects. While Hart (1927) and Baldini et al. (2007) do not find the desire to generate profits as particularly important, Lach and Schankerman (2008) and Lazear (1997) find that scientists respond to monetary incentives.

So far, two large-scale surveys have been conducted to examine the motives of inventors. Their results are given in Figure 2.4. Both studies find the desire to invent and solve challenges to be of particular importance; monetary rewards and work-related reasons also play a role. While the inventors in Rossman's (1931) study do not care a lot about reputation, the ones in Giuri et al.'s (2007) survey find it moderately important.³⁶

³⁶ As the latter study was conducted more than 70 years after the first one, this difference may reflect a general social trend.

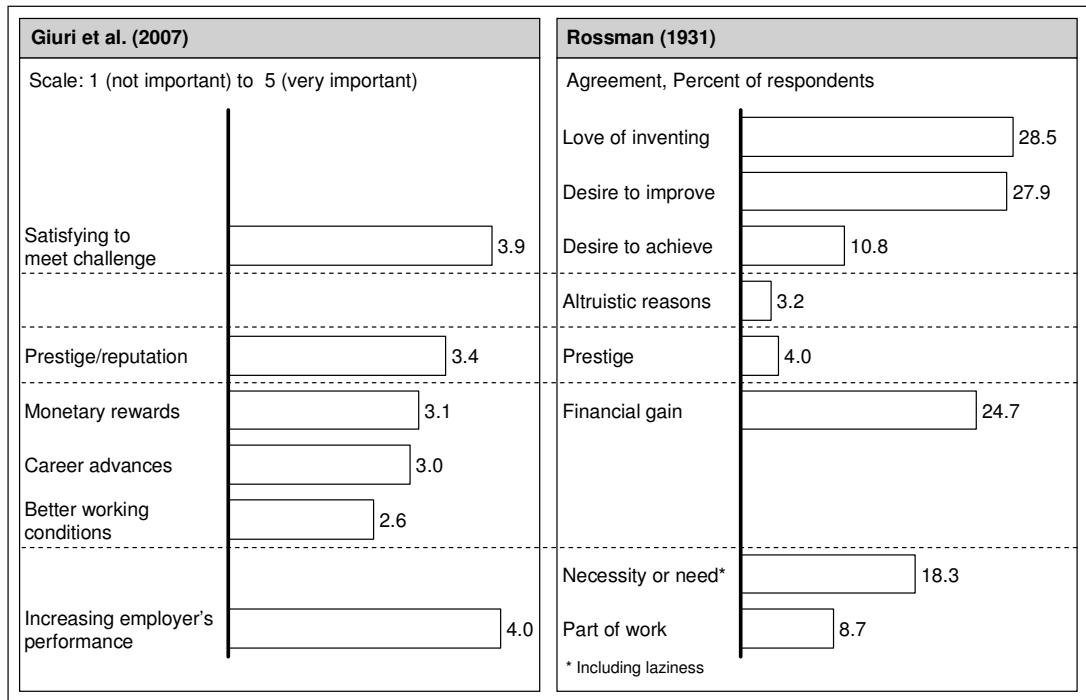


Figure 2.4 Motivations of inventors
(own illustration based on Giuri et al. 2007 and Rossman 1931)

Discussion. The empirical studies on the motivations of OSS developers, artists, and inventors are not directly comparable for a number of reasons. First, they are not consistent in the questions they ask; second, the demographics of the participants are quite different. For example, Kim's (2007) survey among artists is mostly based on responses from hobbyists while Giuri et al.'s (2007) study targets patentees who display a much higher degree of professionalism. Nevertheless, the studies highlight a few interesting differences:

- **Learning:** Artists and inventors do not share such a commitment since they work more independently and are usually not connected to a larger group. Working on challenging problems and obtaining feedback from others helps OSS developers to improve their programming skills. In contrast, the other two groups do not mention *learning* as a main reason to innovate.
- **Reputation:** Inventors are neither part of a strongly connected community such as OSS nor can they become as popular as artists. These characteristics may justify why inventors care slightly less about *reputation* than the other two groups.
- **Financial orientation:** Given their poor economic prospects and the lack of need, artists' higher degrees of *intrinsic motivation* and a rather *low financial orientation* make sense. Inventors are often employed by firms to discover and develop new technologies. This fact may partially explain why *need* and *financial gains* matter slightly more for them compared to the other groups.
- **Need:** Artists create works that listeners, viewers and readers consume as a pleasure or stimulation. Their works are not needed like a tool or program. Moreover, artists do not use their works themselves. Consequently, they do not, unlike the other two groups, mention *need* as a reason to innovate.

- **Obligation to give back:** Many OSS developers feel strongly connected to the development community they are involved in as well as to the overall OSS movement. This perceived *obligation to give back* is a major motivation for contributing source code.

Despite the observed differences in the motivations of OSS developers, artists and inventors, the studies also show considerable parallels. All find fun/challenge, reputation/career advances and financial incentives to be important motives to innovate. Thus, individual innovators seem to have a joint set of motivations despite their totally unrelated activities.

2.4.4 Free revealing by individuals

Within large groups, it makes more sense for a self-interested, rational individual to free-ride on the commons than to participate in producing a collective good (Hardin 1971). If such behavior is expected, established thinking suggests that individuals should have no incentive to contribute innovations to a commons (e.g., Dam 1995; Granstrand 1999). Despite these concerns, many individuals freely reveal their innovations. OSS developers make source code they have written a public good, user innovators disclose designs to manufacturers without any payments, musicians give away their music for free and permit its sharing. While Section 2.3 argued why free revealing can work as a profit-seeking strategy for firms, this section examines why free revealing can also be beneficial for individual innovators.

By freely revealing their source code instead of keeping it secret, OSS developers profit in several ways: they increase their knowledge through feedback on their software, they can build up reputation and influence the project's course, they become more likely to receive support or convince others to work on functionality they need, and their contributions may become part of the standard version of a program which may reduce the effort for maintaining compatibility. Furthermore, OSS developers would hardly make any money from keeping their source code secret. Thus, they have little to lose and much to gain from freely revealing their programs (e.g., Feller & Fitzgerald 2002; Hertel et al. 2003; Lakhani & von Hippel 2003; von Hippel & von Krogh 2003).

For user innovators, the picture looks quite similar: Freely giving away their innovations is often the best option. To follow this proposition, one should remember that user innovators are usually driven by the desire to fill a personal need. Being interested in the best possible product, it makes sense to share ideas with a community to make it even better. In addition, revealing knowledge enables manufacturers to turn users' designs

into a solid product, take ownership of its further development and produce it at lower cost. Since commercializing an innovation is usually not the goal of user innovators, they likewise have little to lose, but much to gain from free revealing (e.g., Baldwin et al. 2006; Franke & Shah 2003; Riggs & von Hippel 1994; Urban & von Hippel 1988).³⁷

2.5 Intermediate conclusion

This thesis studies the phenomena of openness and free revealing in the music business. Before the following chapters delve into the empirical setting and results, this chapter reviewed – largely independent of music – the relevant literature on openness and free revealing. In particular, it illustrated why giving up control can be a rational choice for firms and individuals. The remainder of this section summarizes the key insights that have emerged from this literature survey. It also points to various gaps in research that this thesis intends to fill.

Firms generate rents from their innovations by using them in their own products or licensing them to third parties (e.g., Demsetz 1967; Teece 1986, 2000; Arora 1997; Henkel 2007, p. 14). In order to improve the conditions for value appropriation, they usually try to prevent imitation via IPRs, secrecy, lead time or complementary assets (e.g., Levin et al. 1987; Cohen et al. 2000). Freely revealing innovations is very much the opposite of established practices of IP management. Various case examples, however, indicate its viability as a rent-seeking strategy (e.g., Allen 1983; Dahlander 2005; Henkel 2006). As an extreme form of openness, it is closely related to the paradigm of open innovation which recommends integrating external knowledge into the innovation process and finding new ways to profit from technology (Chesbrough 2003a, 2003b).

Besides from manufacturing firms, innovations can originate from a variety of sources, including users and suppliers from a functional and individuals from an institutional perspective (von Hippel 1988). Examples of innovating individuals are inventors, users, artists and software developers. In contrast to firms who primarily seek financial advantages from innovating, these people possess a broader range of motivations (e.g.,

³⁷ Besides the cases of OSS developers and user innovators, various other examples of individuals freely sharing knowledge exist. As Benkler (2002) argues, “*peer production of information is a phenomenon with much broader economic implications than thinking of free software alone would suggest*” (p. 444). For example, several authors examine the case of knowledge sharing within firms (e.g., DeLong & Fahey 2000). Ardichvilli et al. (2003) find that “*when employees view knowledge as a public good belonging to the whole organization, knowledge flows easily*” (p. 64). Reasons for revealing knowledge range from altruistic considerations such as organizational commitment or care about colleagues to tangible benefits such as gaining recognition or being regarded as expert (McLure & Faraj 2000).

Franke & Shah 2003; Lakhani & Wolf 2005; Giuri et al. 2007; Kim 2007). Their motives typically include intrinsic ones such as having fun or mastering a challenge, as well as extrinsic ones such as filling a need, gaining reputation and earning money. Given the high importance of non-financial goals, individuals frequently practice free revealing.

This research intends to advance the understanding of free revealing and openness in two dimensions. First, it provides further empirical evidence by examining the case of record labels' and artists' use of DRM and CC licenses. Second, and more importantly, it answers three research questions – outlined below – on the emergence of free revealing and openness which have not been studied before.

Prior research has found free revealing and collaborative invention to be closely related (von Krogh & von Hippel 2003; Osterloh & Rota 2007). In particular, one of the major strengths of freely revealing innovations is the opportunity to receive external development support (e.g., Allen 1983; Shah 2000; Henkel 2006). The distributed development model that is required to harness this benefit and characterizes famous examples of free revealing such as OSS, however, “*may not easily be transposed to other industries*”, as Lerner and Tirole (2002, p. 231) note. Thus, the question remains whether and for what reasons free revealing occurs in settings – such as the music business – that lack the preconditions for distributed, collaborative development. This involves the following research question:

Research Question 1: What are the reasons to freely reveal innovations in the absence of distributed, collaborative development?

In order to decide whether openness and free revealing are advantageous, one must trade off the associated advantages such as increased diffusion and external development support against the disadvantages such as potential losses of competitive advantage and income. These pros and cons are well understood (e.g., Henkel 2007); however, it is only partially clear why firms, facing similar situations, deviate in their perceptions of these benefits and drawbacks and consequently exhibit different levels of openness (e.g., Henkel 2006). For this reason this work examines how a firm's history, market position, ownership of complementary assets, business model and goals influence its attitude towards and practicing of openness and free revealing. This implies:

Research Question 2: How do a firm's characteristics influence its perception and level of openness and free revealing?

Prior to the emergence of OSS, most people could not believe that individuals would contribute their innovations to a commons on a large scale (e.g., Dam 1995; Granstrand 1999). Individuals' motives to innovate and the benefits associated with free revealing, however, show an interesting overlap. For example, individuals may care about gaining reputation or seeing their innovations widely adopted (e.g., Hars & Ou 2002; Hertel et al. 2003). As free revealing accelerates diffusion, it supports such goals well. Whether freely revealing an innovation makes sense for an individual thus depends, among other factors, on his motives: If he pursues financial goals and wants to license his technology, free revealing does not usually make sense; if he wants to gain reputation or see his innovation widely adopted, freely revealing it seems to be the best available choice. With the exception of Jeppesen and Frederiksen (2006) who find that hobby users are more likely to share innovations than professional ones, research has not yet addressed the question under what circumstances individuals tend to freely reveal innovations. This work intends to fill this gap:

***Research Question 3:** What are the characteristics of individuals who practice free revealing?*

This dissertation explores the research questions derived above in the context of the music business. As openness and free revealing connote waiving of – at least some – protection measures, Chapter 3 outlines which protection measures are available in the music business and how they are traditionally used. Chapter 4 shows why the music business is well suited for studying the questions outlined above.

3 Foundations of profiting from music

Musical compositions may be regarded as innovations; however, the possibilities to protect them and appropriate their value differ from technical innovations in some important aspects. Thus, the question of profiting from musical innovations merits closer discussion. First, Section 3.1 below outlines the most important properties of music, based on the theory of information goods, and examines their impact. Next, Sections 3.2 and 3.3 introduce the two most important protection mechanisms: copyright and Digital Rights Management (DRM). Linking these two streams, Section 3.4 discusses the optimal level of protection for music. Lastly, Section 3.5 reviews the literature on Creative Commons (CC), an approach to waive some of the rights that come with copyright.

3.1 Information goods

3.1.1 Characteristics

Music is a typical example of an information good, a term Varian (2001) uses to describe “*anything that can be digitized – a book, a movie, a record, a telephone conversation*” (p. 3). Markets for information goods tend to exhibit symptoms of “market failure” which are caused by three special properties of such goods: experience goods, economies of scale, and public goods.

Experience goods. To assess the true value of an information good, a buyer needs to experience it (e.g., Bates 1988, 1990). Following Arrow’s (1962, p. 615) analysis of the information paradox, one question remains: Why would a buyer pay for information that he has already received? While this issue definitely exists for knowledge such as news, it is less critical for products such as music since they are usually consumed multiple times (e.g., Varian 2001).

Economies of scale. Information is expensive to create, but cheap to reproduce. This cost structure, characterized by high fixed and low marginal costs, implies strong economies of scale (e.g., Shapiro & Varian 1999, p. 21). Thus, the average cost per

copy declines rapidly with volume.³⁸ To recover the large up-front costs, producers need to set prices well above marginal costs (Arrow 1962).³⁹

Public goods. Purely public goods such as air or radio are nonrival and nonexcludable. *Nonrival* means that a good's use by one consumer does not affect other consumers' ability to use it; *nonexcludable* implies that one cannot exclude others from accessing a product after its initial release (e.g., DeLong et al. 2000). Usually, providing a public good to another person costs little; restricting access for that person, however, costs a lot (e.g., Kovarsky 2006). Information goods tend to have certain characteristics of public goods (Lamberton 1971; Wolpert & Wolpert 1986; Stiglitz 2000): Once they are digitalized, they are non-rivalrous in consumption⁴⁰; and, depending on the legal regime, excludability may be hard to establish.

Discussion. Due to these three properties, information goods need to be marketed in a distinctive manner (e.g., Laffont 1989; Bettig 1996; Bates 1998). The high fixed and low variable costs of information goods, for example, rule out cost-based pricing. In addition, consumers' valuations for information are often quite different (Varian 1995; Shapiro & Varian 1999). Thus, value-based pricing is more appropriate. Among the various techniques for differential pricing, versioning is of particular importance. It is defined as selling a good in different qualities at different price points.⁴¹ As Varian (2000a) notes, "*the point of versioning is to get consumers to sort themselves into different groups according to their willingness to pay. Consumers with high willingness to pay choose one version, while consumers with lower willingness to pay choose a different version*" (p. 190). As one example, record labels may sell CDs at a higher price than MP3 files which do not come with cover art and contain the music in compressed form, meaning it is of lower sound quality.

Besides versioning, Varian (1995) suggests bundling as a strategy for pricing information goods which denotes the concept of selling different products together as a

³⁸ The argument that copying is cheap is based on the assumption that the information component can be made nonphysical and thus copied at negligible costs (Negroponte 1995).

³⁹ If markets are competitive, the price tends to be pushed down towards marginal costs leaving no sufficient margin to recover the fixed costs. However, Varian (2001) finds that markets for information goods usually have the form of monopolistic competition which allows producers to charge higher prices.

⁴⁰ For example, a book can only be read by one person at a time. Thus, the use by one consumer affects other consumers to do so at the same time. Once a book is digitalized, it can be copied without quality losses an infinite number of times. Thus, its consumption becomes nonrival.

⁴¹ While versioning is of particular importance for information goods, it is frequently applied for other products as well.

package. It is profitable as it reduces the heterogeneity of consumers' valuation. In particular, it is much easier to predict consumers' willingness to pay for a set of goods than it is to do so for an individual good (Schmalensee 1984; Bakos & Brynjolfsson 1999).⁴²

Various researchers consider network effects to be highly relevant for information goods (e.g., Conner & Rumelt 1991; Shy & Thisse 1999; Liebowitz 2002). Network externalities apply when the utility a consumer derives from consuming a good increases with the number of other individuals also doing so (e.g., Katz & Shapiro 1985, 1986; Liebowitz & Margolis 1990; Brynjolfsson & Kemerer 1996). For software, network effects are obvious: the more users a certain program has, the more attractive it becomes for others to join. This is because collaboration becomes easier and knowledge of that program more valuable (Farrel & Saloner 1985, 1986). Network effects may apply to cultural products such as music as well, as Liebowitz and Watt (2006) note: "*The more popular a particular artist becomes (...), the greater might be the willingness to pay to listen to that music, (...) independent of the consumer's autarky valuation of the product*" (p. 527).

3.1.2 Protection mechanisms and value appropriation

Public goods typically suffer from free-riding, and this often results in a lack of investment in their production (Hardin 1968). In order to turn information goods from public into private goods, excludability is needed. In an analysis of the software business, De Laat (2005) found that exclusion is achieved by combining several protection mechanisms. As long as software and hardware were tied together, protection was not an issue. When they became unbundled, firms decided to provide their customers with only the executable versions of a program without the source code in order to keep its inner workings secret. Later, software producers made use of several legal means to prevent copying or imitation: Besides trade secret law and non-disclosure agreements, firms started to apply for copyright protection and later for patent protection. When it comes to value appropriation, lead time and complementary assets matter as well, e.g., if a software firm is the first of two providers to release a similar application or has exclusive access to distribution channels.

⁴² Again, bundling is not limited to information goods; however, the low variable costs of information goods make this approach particularly attractive for this kind of goods.

Compared to software, music is more difficult to protect. Patents cannot be filed for musical compositions and secrecy is useless because the inner workings of music are not relevant to consumers.⁴³ Thus, copyright remains the primary means to protect imitation and copying of music (Landes & Posner 1989; Bettig 1996; Frith 2004). In order to enforce copyright, technical protection measures are frequently applied as well (Buhse 2004, pp. 64-69; Fetscherin 2005; Picot & Thielmann 2005). Besides, lead time and complementary assets may serve as means to enhance the conditions for value appropriation. Lead time, however, is hard to achieve since piracy usually takes occurs the moment a song is released (IFPI 2006). Similar to other industries, complementary assets play a major role; most notable are better sales and service in the form of a broad product offering, superior ways of discovering new music (e.g., Fetscherin 2005), a large fan base (e.g., Gordon 2005, p. 139) and a well-known brand (e.g., Adler 1985).

3.2 Copyright

3.2.1 Characteristics

Copyright gives its owner the exclusive right to reproduce a protected work, make derivative works and perform, show or play it publicly (e.g., Bently & Sherman 2001; Besen & Raskind 1991). It applies mostly to literary, musical, dramatic, graphic and sculptural works, motion pictures, sound recordings and software (e.g., Gordon & Bone 1999; Landes & Posner 2003).⁴⁴ As copyright is an economic right, creators can sell or license these rights to third parties (Andersen et al. 2007). Copyright is asserted once a work is fixed in a tangible form, for example, when a song is written down as sheet music (Landes & Posner 2003). A registration is not necessary and an examination of the work's quality or originality does not occur (e.g., Posner 2005).⁴⁵ For this reason, the required standard of novelty is very low (Varian 2005).

⁴³ The inner workings of a sound recording are its musical composition, i.e., the sheet music. This composition has the same function for a sound recording as the human-readable source code has for a binary, executable software program.

⁴⁴ This section focuses on US copyright. Later, key differences to European copyright, in particular to the German law, are highlighted.

⁴⁵ Registration of the copyright of a work has several advantages such as establishing a public record of ownership, obtaining statutory damages and attorneys' fees in court actions and receiving protection against the importation of infringing copies (Gordon 2005; Passman 2006).

Copyright neither protects underlying ideas, concepts and methods of operation (e.g., Landes & Posner 1989; Varian 2005), nor independent (accidental) duplication of the same work (e.g., Goldstein 2003a). From the date of creation, copyright remains in place for an author’s life plus an additional 70 years.⁴⁶ For works owned by corporations, copyright lasts 95 years from the publication date or 120 years from creation, whichever is shorter (e.g., Gordon 2005, p. 17f.). After copyright expires, a work enters the public domain and can be freely used (e.g., Posner 2005).

Copyright and patents are closely related since they both share the purpose “*to promote the Progress of Science and Useful Arts*” (US Constitution, Art. I, 8, Clause 8, see also Walterscheid 1994). They both exhibit, however, a couple of key differences which are highlighted in Table 3.1. Put succinctly, patents are harder to obtain, but are more powerful since they protect expressions as well as ideas, which may partially explain their shorter duration.

	Copyright	Patents
Scope	Artistic and creative works**	Technical inventions
Height		
Registration	Possible, but not required	Required
Examination	No	Yes, based on the criteria of usefulness, novelty and nonobviousness
Breadth		
Protection of expression	Yes	Yes } As defined in claims
Protection of underlying idea	No	Yes }
Length	70 - 140 years*	20 years

* Assuming a maximal author's lifetime of 70 years after the creation
 ** Including, among others, literary, musical, dramatic, graphic and sculptural works, motion pictures, sound recordings and software

Table 3.1 Comparison of properties of copyright and patents
 (own illustration based on Kitch 1977, Vaidhyanathan 2001, Goldstein 2003a, Landes & Posner 2003, Gordon 2005, Posner 2005 and Varian 2005)

Copyright legally excludes free riders for a limited time. Thus, it improves the conditions to appropriate value from one’s creation and recover the initial investment (Liebowitz & Watt 2006). Its purpose is to establish conditions that make it attractive to invest time and money in the creation of new works (Hurt & Schuchman 1966) and ensure a sufficient supply of creative works (Landes & Posner 1989). Simply put, it turns public goods private (Frith 2004).

Copyright is, however, not intended to be a restrictive property right (Posner 2003; Ganley 2004; Lessig 2004a), but rather a “*policy that balance[s] the interests of authors, publishers, and readers*” (Vaidhyanathan 2001, p. 20) to enhance total welfare. In particular, it trades off the goal of maximizing access to existing IP against the one of

⁴⁶ In case of joint ownership, it lasts for 70 years after the last surviving author’s death (Gordon 2005).

creating an incentive to create new IP in the first place (Posner 2003). One example of this balance is the Fair Use doctrine (Depoorter & Parisi 2002; Ramello 2005; Watt 2000, pp. 201-205): It “*allows some copying of a copyrighted work without deeming the copier an infringer, even though the copyright holder has not authorized the copying*” (Landes & Posner 1989, p. 357). The main purpose of the Fair Use rule is to permit a broad range of private and scientific uses that would otherwise infringe a copyright owner’s rights. The activities which can be considered as fair use are not clearly defined; main criteria are the “*purpose and character of use, nature of copyrighted work, amount and substitutability of portion used, and effect on potential market for copyrighted work*” (Landes & Posner 1989, p. 357). Practices that are typically considered as fair use include news reporting, teaching or criticism, and copying a short excerpt from a book or creating a compilation CD for private, noncommercial purposes (e.g., Frith 2004; Goldstein 2003a, pp. 110-116). Compulsory licenses are a second kind of exception; for example, a copyright holder cannot prevent his music from being broadcasted on the radio. Unless he has made an individual agreement with the radio station, he is paid according to the terms of the compulsory license (e.g., Frith 2004; Passman 2006, p. 212f.).⁴⁷

The Anglo-Saxon culture understands copyright as a “*hard, utilitarian calculus that balances the needs of copyright producers against the needs of copyright consumers*” (Goldstein 2003a, p. 138). In contrast, the Continental European culture “*consider[s] copyright a natural right, one that morally derives from the very act of imagining and creating*” (Vaidhyanathan 2001, p. 8, see also Hurt & Schuchman 1966; Breyer 1970). These two philosophies result in different regulations on the transferability of copyright. In the US, copyrights can be sold. This property enables concepts like “work for hire” which allows a firm to claim authorship for a work that it commissioned an author to create (Passman 2006, p. 288f.). Since Continental European countries consider copyright a moral right inseparable from the author, it cannot be transferred to third parties (Hoeren 2003). Artists can, however, transfer so-called “ancillary copyrights” that enable record labels or publishers to exploit their works financially (Passman & Hermann 2004). In the past, Continental European laws have consistently protected authors’ rights more strongly (Vaidhyanathan 2001, p. 26). Driven by international standardization however, copyright laws in Europe and America have become quite

⁴⁷ In most countries, the law allows certain uses of copyrighted material without requiring permission from the rights holder which would normally infringe copyright. For example in the German law, §§44a-63a Urheberrechtsgesetz (UrhG) define such exceptions.

similar (Goldstein 2003a, p. 20). In particular, the economic implications of the remaining differences are minor.

3.2.2 Historic development

The history of copyright law is characterized by extensions in three dimensions: covered works, regulated uses, and duration.⁴⁸

Covered works. 80 years after the first copyright act in the world, the British “Statute of Anne”, the USA came up with its own copyright law in 1790. Initially, it only covered books, maps and charts (Vaidhyanathan 2001, p. 82), but was extended over time to include musical compositions (1831), photographs (1865), dramatizations (1870) and motion pictures (1912) (Vaidhyanathan 2001, p. 82; Goldstein 2003a, p. 45). Today it “*covers practically any creative work that is reduced to a tangible form*” (Lessig 2004a, p. 138), including computer programs, sound recordings or architecture.

Regulated uses. In 1790, the new law gave a copyright owner the exclusive control over commercial publishing; non-commercial publishing and derivative works were not regulated. Today, copyright gives a creator the exclusive control over both commercial and non-commercial copies as well as transformations of his work (Lessig 2004a, p. 170f.). Besides, laws such as the Digital Millennium Copyright Act (DMCA), which became effective in 1998, virtually repealed certain fair use provisions since consumers could no longer make private copies of copy-protected works without breaking the law (Foroughi et al. 2002; Bach 2004).⁴⁹

Duration. In 1790, copyright remained in effect for 14 years and could be renewed once for another 14 years. This duration was extended in 1831 to a maximum of 42 years and in 1909 to a maximum of 56 years (e.g., Landes & Posner 1989). 1976 brought a major change as the term of copyright was extended to an author’s lifetime plus 50 years. This changed again in 1998 to last for 70 years and remains this way still. In case of corporate authorship, copyright was set to 120 years after creation or 95 years

⁴⁸ To illustrate the evolution of copyright over time, this section examines changes in the US copyright. Since the development in other countries is in the same direction, it does not seem necessary to examine regional differences.

⁴⁹ The DMCA is simply a national implementation of the international WIPO Copyright Treaty (WCT) which has been created by the World Intellectual Property Organization (WIPO), a UN-funded organization, in 1996. Thus, it is not an initiative of the US legislation. Laws comparable to the DMCA have also been introduced in Europe (Emes 2004, pp. 198-202; Wilde & Schwerzmann 2004).

after publication, whichever is shorter (e.g., Vaidhyathan 2001, p. 2; Goldstein 2003a, p. 10). Figure 3.1 illustrates the evolution of the duration of copyright.

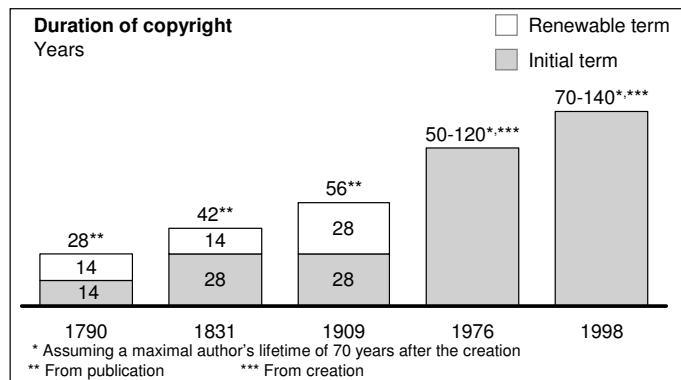


Figure 3.1 Evolution of length of copyright (own illustration based on Landes & Posner 1989, Vaidhyathan 2001 and Goldstein 2003a)

Technological advancements such as photography and motion pictures are clearly the main drivers behind the growing list of creative works covered by copyright. Besides, the emergence of technologies such as the VCR for recording movies or CD writers for copying music reduce the costs of copying. By giving authors more control over their works and lengthening copyright protection, policy makers intend to compensate them for losses due to increased copying (Landes & Posner 2003; Posner 2003).

3.2.3 Importance for value appropriation

The need for copyright protection is commonly accepted in research. Most scholars consider copyright as beneficial for society as it addresses the market failure caused by free-riding and enables creatives to generate returns from their effort, providing an incentive to produce new works (e.g., Landes & Posner 1989; Yoon 2002; Liebowitz & Watt 2006). A stronger copyright is therefore believed to have a positive impact on the conditions for value appropriation (e.g., Frith 1988; Towse 2004). “*Generally speaking, the broader the scope, the longer their terms, and the easier the enforcement of IPRs, the better for industry*” (Bach 2004, p. 19).

Despite a strong copyright protection, artists’ earnings from their creative activities are, on average, rather low. In 1993, 80% of the artists in the UK owning performance rights earned less than GBP 1,000 from performance royalties (MMC 1996). Andersen et al. (2007) conclude from this income distribution that “*copyright law has been transformed from a legal regime protecting individuals to one that primarily protects the economic interests of powerful organizations and conglomerates*” (p. 527, see also Toynebee 2004). This interpretation seems bold since there is no evidence indicating that

individual creators would be better off with a different legal regime. However, most individual artists seem to share this view and perceive copyright as relatively ineffective. In a small survey among British artists, “*not one subscribed to the view that copyright was a spur to creativity or was helpful in securing income*” (OpenBusiness 2006, p. 4). Solving this apparent contradiction, Kretschmer (2005) argues that copyright suits creators and intermediaries well who own other complementary assets, such as a strong reputation, but does little for ones that lack those assets.

While copyright improves the conditions for value appropriation for rights holders, it also involves several costs including restricting access for consumers and complicating second-generation creations (Landes & Posner 1989; Liebowitz & Watt 2006). Thus, policy needs to solve the difficult task of striking the correct balance between giving sufficient incentives to the producers and promoting wide access to and (re-)use of created works (Yoon 2002; Horn et al. 2004). Despite the general acceptance of the need for copyright, its past extensions caused considerable critique (e.g., Plant 1934; Liebowitz & Margolis 2005). In particular, critics claim that the most recent term extensions to 50 and 70 years after the author’s death have not provided any additional incentives for individuals to create new works or increased their actual income (Breyer 1970; Landes & Posner 2003). However, the extensions do enable firms to further exploit their back catalogues which may keep the costs of old works high and reduce their incentive to attract and develop new talent (Varian 2005; DTI & ESRC 2005).⁵⁰

Over time, copyright has regulated more and more uses. This made various authors criticize the prohibition of derivative works as being stifling to creativity. One of the most prominent forms of such transformative uses is *sampling*, which is defined as re-use of small portions of a sound recording in a new song, often in an altered way. This technique became extremely popular in HipHop and Electronic music and enabled many creative and innovative recordings (Hull 2004, pp. 61-64; Gordon 2005, pp. 203-210.). When this kind of re-use became illegal in 1991 unless explicit consent was given by the original creator, much musical creativity was lost (Vaidhyanathan 2001; Lessig 2004a, pp. 270-283). Thus, a too-tight copyright may paradoxically reduce the number of new works created (Landes & Posner 1989; Ramello 2005). In contrast to the majority of scholars which agrees on the need for copyright and struggle to find the right

⁵⁰ Thus, the most recent extensions are of particular value for owners of about-to-expire and still valuable copyrights. For this reason, some people refer to the “Sonny Bono Copyright Extension Act”, one of the most recent extensions of copyright, as the “Mickey Mouse Protection Act” (Wikipedia 2009a).

balance, a few researchers question the very need of any type of legal protection system (Plant 1934; Hurt & Schuchman 1966; Breyer 1970; Boldrin & Levine 2004). For various reasons, they believe that creators would be able to appropriate value from their works even if there was no copyright.⁵¹

3.3 Digital Rights Management

With the emergence of digital technologies, copyright has lost much of its effectiveness since its infringement is extremely cumbersome to detect and prosecute (Liebowitz & Watt 2006). The purpose of Digital Rights Management (DRM) is to restore the enforceability of copyright. It is defined as “*technology that protects content against unauthorized access, monitors the use of content, or enforces restrictions on what users can do with the content*” (Schreier 2000, p. 2). After a brief overview of the technological foundations of DRM (3.3.1), its benefits (3.3.2) and drawbacks (3.3.3) are discussed in detail.

3.3.1 Technological foundations

DRM can be regarded as a kind of electronic lock for digital content such as music, video, software and text. Users need a key to access DRM-protected content which is stored inside a “*secure container*” (e.g., Rosenblatt et al. 2002, p. 111).⁵² A DRM system consists of two parts: a server component that stores and provides the encrypted content and usage terms, and a client component that decrypts and renders the content (e.g., Buhse 2004, pp. 64-69). The decoding can either be implemented in hardware or require a separate software application. DRM enables providers to specify conditions under which their content can be used. For example, they can limit the period during which content can be consumed (Spenger 2003; Bach 2004).

⁵¹ One of the most cited reasons is lead time. To prove its importance, Breyer (1970) gives an example from the time when the USA did not recognize copyright of foreign authors. American publishers paid lump sums to English authors to access their works first in order to release them on the market before others could do so. “*Lead time was important enough that many English writers earned more from the sale of advance proofs to American publishers (despite lack of copyright protection in America) than from the copyright royalties on their English sales*” (Breyer 1970, p. 30). By having superior production capabilities, a publisher may also ward off unauthorized copies. If he is able to produce at lower costs than the pirate, he can issue a cheaper edition and thus push the pirate out of the market or threaten to do so (Goldstein 2003a). However, these arguments should be approached with caution as they were written in a time when copying was much harder than today (Liebowitz & Watt 2006).

⁵² For an introduction of the technology of DRM systems, see for example Rosenblatt et al. (2002), Spenger (2003) and Buhse (2004, pp. 64-74).

For some types of content, technology and content providers agreed on widely accepted DRM standards. The most famous example is the Content Scrambling System (CSS) that is part of the official DVD standard. Given the pervasiveness of this standard, consumers can view any copy-protected DVD on any standard-compliant DVD player (Cheng 2003).⁵³ In other fields such as music, no dominant DRM standard emerged (Buhse 2004, p. 132; Grimm 2005). Classical DRM systems actively restrict copying of content. A lighter, more passive, approach to protecting content is called watermarking, which hides imperceptible marks in the content (Petitcolas et al. 1999; Rosenblatt et al. 2002, pp. 100-102). They do not prevent copying, but rather enable content providers, under certain conditions, to detect when content is reproduced without authorization and identify the infringer (Foroughi et al. 2002; Fetscherin 2005).

3.3.2 Benefits

The use of DRM can support various objectives. Summarized in Table 3.2, this section outlines the main benefits that firms can derive from using such technology.

Existing revenues	<ul style="list-style-type: none"> • Enforce copyright and establish excludability • Reduce piracy • Ensure incentives for future creators
Additional revenues	<ul style="list-style-type: none"> • Enable new business models • Control distribution

Table 3.2 Benefits of using DRM for firms

Enforce copyright and establish excludability. Digital technologies enable ordinary users to make perfect copies of content at low costs and share them, relatively anonymously, on a large-scale with other users (e.g., Rosenblatt et al. 2002, pp. 52-56). As a consequence of this development, copyright infringement has become the norm rather than the exception (Hass 2002; IFPI 2006). To some extent, content has thus lost its characteristic as a private good (Buhse 2004, p. 68). To reverse this development, firms employ two strategies: technological means like DRM, which is the focus of this section, and legal means such as lawsuits against copyright infringers (e.g., Bakker 2005; Tang 2005). By employing DRM, creators actively protect content from being reproduced or used without their agreement (e.g., Arnab & Hutchison 2005). Thus, they manage to restore excludability and enforce their rights (Grimm 2005; Picot 2005).⁵⁴

⁵³ Regional codes form an exception; they prevent, for example, European customers from watching movies bought in the USA. The purpose of this restriction is discussed in Section 3.3.2.

⁵⁴ Unless the copy protection is circumvented. For a discussion of the effectiveness of current DRM systems, see Section 3.3.3.

Reduce piracy. Piracy is a major concern for cultural industries and is partially responsible for the economic decline of the music business (e.g., Liebowitz 2006, 2008; Zentner 2006, 2008).⁵⁵ By preventing unauthorized reproduction, DRM may be an effective tool to halt or at least reduce piracy (Mulligan et al. 2003; Fetscherin 2005). As DRM systems are frequently circumvented in practice, they are not capable of stopping piracy entirely (Biddle et al. 2002). Nevertheless, content producers expect DRM to serve as a “*speed bump*” (van Wijk 2002, p. 5) against piracy.

Ensure incentives for future creators. Establishing excludability, enforcing copyright and reducing piracy are all methods for improving the conditions for value appropriation and securing the investments of content providers (Klein et al. 2002; Tang 2005). Consequently, DRM may also be beneficial from a consumer perspective. While it restricts access to content in the short term, it may guarantee the availability of a diverse set of content in the long term and “*lead to a higher level of innovative activity*” (Picot & Fielder, p. 293).

Control distribution. DRM was originally intended to appease the impact of technological change and make the “online world” more like the “offline world” (Currah 2007). By “*gain[ing] back control over the distribution and usage of content by users*” (Clement 2003, p. 32), content owners tried to transfer their traditional business models into the digital era and preserve their role in the value chain (Emes 2004, p. 101).

By maintaining control over distribution channels, DRM can also be used to segment consumers and differentiate pricing. In the movie industry, for example, DVD prices vary by region. In order to curb the re-import of cheaper discs from foreign markets, DVDs are shipped with different regional codes (Bach 2004).

Content providers can also better skim customers’ willingness to pay by protecting content with a kind of DRM that requires a dedicated rendering device. They can either subsidize the device and charge a higher fee for the content, or they can sell the hardware with a premium and keep prices for content low. The first strategy is frequently used by games console manufacturers such as Nintendo or Sony who subsidize the hardware to create demand for expensive games. The latter strategy is, for example, used by Apple who generates huge returns from its high-margin iPod music player, which can be filled with low-margin music from its iTunes music store (George &

⁵⁵ Section 3.4.3 examines the impact of piracy on sales, primarily in the music business, in greater detail.

Chandak 2006).⁵⁶ Apple's iPod-iTunes ecosystem is usually referred to in another context as well: as an example of how DRM can be used to create lock-in situations for customers (George & Chandak 2006). Until recently, consumers purchasing music in the iTunes store could only play it on their iPod and not on other devices; vice versa, iPod owners could not purchase music from online stores besides iTunes. A successful, proprietary DRM standard can thus reinforce market dominance, exclude competitors and constitute a significant barrier for new entrants (Helberger 2006; Elkin-Koren 2007). Currah (2007) argues that the movie industry, for example, uses DRM to “*subdue, rather than explore, the technological possibilities of the Internet*” (p. 359) by creating “*a ‘closed’ sphere of innovation that limits the commercial use of their content*” (p. 361).

Enable new business models. Many authors primarily see DRM not as a means to lock up content, but rather to unlock a variety of new market offerings (e.g., Fetscherin 2005; Böhle 2006). Digital technologies and DRM dramatically reduce the transaction costs of selling individual copies, negotiating custom licenses, and enforcing copyrights (Goldstein 2003a, pp. 203-207). Thus, DRM enables a variety of new products and services that are tailored to users' needs; this, in turn, may enlarge the market for digital content and the size of the cultural industries (Foroughi et al. 2002; CDT 2006; IFPI 2008).

Innovative revenue models supported by DRM include subscriptions, time-limited usage, pay-per-view/-listen, windowing⁵⁷ and superdistribution (Sobel 2003; Spenger 2003; Fetscherin 2005; Böhle 2006; IFPI 2008). Among these models, subscription-based services are most popular because they provide users with access to a large catalogue of content for (unlimited) streaming or downloading as long as a monthly fee is paid. Superdistribution allows consumers to share purchased content with other people. After a trial period, the receiving users can decide whether to buy the content in order to keep it or not. In the first case, the original buyer typically receives a commission, which provides an incentive for viral marketing.

⁵⁶ In an interview, Apple's Senior Vice President Phil Schiller confirmed that “*the iPod makes money. The iTunes Music Store doesn't*” (Fried 2003). Thus, Apple's main goal for the iTunes store is to motivate purchases of high priced iPods (George & Chandak 2006). The low profit of the store becomes evident when one considers the comparably high fees which record labels, PROs and payment providers demand (see Figure 4.2).

⁵⁷ Owen and Wildman (1992) define windowing as “*the practice of staggering release dates to various media in order to exploit opportunities to discriminate in price*” (p. 2f.). It is particularly common for movies which are first shown in cinemas, later in pay TV, and last in free TV.

3.3.3 Drawbacks

As shown in Table 3.3, DRM involves a couple of disadvantages as well. This section presents the most important arguments, focusing on those affecting firms.⁵⁸

Lower product value	<ul style="list-style-type: none"> • Degrade functionality and interoperability • Repeal traditional customer rights • Harm privacy, security and quality
Lower sales and profits	<ul style="list-style-type: none"> • Harm customer relationships • Diminish willingness to buy • Generate additional costs and complexity
Low effectiveness	<ul style="list-style-type: none"> • Do not stop piracy
Long-term damages	<ul style="list-style-type: none"> • Prevent competition • Stifle innovation and creativity

Table 3.3 Drawbacks of using DRM for firms

Degrade functionality and interoperability. DRM-protected content can only be played on a rendering device which supports the same encryption technology. While a common DRM standard exists for some media such as film, it does not exist for others, including music (Fetscherin & Schmid 2003; Mulligan et al. 2003).⁵⁹ The lack of a widely-accepted DRM standard for music means that users cannot play files purchased from an online store on a portable player which uses a different DRM scheme (Grimm 2005; Helberger 2006).⁶⁰ However, customers demand interoperability and expect to use digital content without having to buy specific hardware or install new software (Dufft et al. 2005). Not only can DRM be a hurdle for customers, but it can also alienate customers who are afraid of being locked into a proprietary technology or of incompatibilities with future standards (Easley et al. 2003).⁶¹ DRM may also reduce the functionality of physical media; some DRM-protected CDs, for example, did not play in car stereos or made computers crash as their CD drives could not handle the DRM protec-

⁵⁸ Various authors criticize DRM from a legal or welfare perspective. For example, they claim that DRM overrules copyright, thus rendering the law somehow obsolete (e.g., Lessig 2006). Others complain that DRM limits access to ideas for society (e.g., Kretschmer 2003), users' ability to engage with content (e.g., Gillespie 2004), and narrows the public domain (e.g., Vaidhyanathan 2001). Since this critique does not directly affect firms, it is not covered in this section.

⁵⁹ With the Secure Digital Music Initiative (SDMI), the music business attempted to establish a standard for DRM. Due to interest conflicts between the involved parties and other issues, this initiative failed (e.g., Renner 2004).

⁶⁰ DRM does not prevent interoperability *per se*, as Mitch Bainwol, chairman of RIAA, stresses: "We're for interoperability, and there's nothing intrinsic to DRM that prevents interoperability." (P2PNet 2007). Indeed, the lack of a widely accepted DRM standard is the actual reason for the current issues. However, as standards are hard to agree on, DRM has the potential to reduce interoperability.

⁶¹ Microsoft serves an extreme example for incompatibilities caused by DRM. For example, its Zune music player did not even play files that were protected with Microsoft's own PlaysForSure DRM technology (Handke 2007b).

tion properly. Understandably, this upset many consumers (Horn et al. 2004; Renner 2004, pp. 251-259).

Repeal traditional customer rights. Traditionally, physical media such as CDs enable users to play or read them, make backup copies, share them with friends and family and resell them. DRM takes away some of these rights consumers are used to. Fetscherin (2005) and Dufft et al. (2005) find that most consumers are not willing to deal with the technological issues induced by DRM or to accept restrictions on the use of purchased content. Thus, DRM conflicts with their expectations (Cheng & Rambhia 2003; Felten 2003b; Elkin-Koren 2007). For example, most consumers do not like to listen to music on their computers, but instead transfer music to portable devices or burn them on CDs to use them in their cars. If DRM makes such common consumer habits impossible or requires time-consuming workarounds, then copy-protected products become less attractive (e.g., Foroughi et al. 2002; Sundararajan 2004). In this context, it is important to remember that content from illegal sources such as file-sharing networks is not equipped with DRM and this further diminishes the desirability of copy-protected content (Renner 2004, p. 258; Clement & Schusser 2006).

Harm privacy, security and quality. By tracking the use of media, DRM can analyze usage patterns and generate personal profiles (Fetscherin 2005). This monitoring raises privacy concerns (Cohen 2003; EPIC 2004). The most famous DRM-related security incident occurred in 2005 when SonyBMG released CDs that were equipped with a small program to prevent copying. It was designed as a rootkit, meaning that it automatically installed itself on consumers' computers once the CD was inserted in the CD drive and operated invisibly. Since it opened up security holes, it exposed consumers of legally purchased CDs to security risks (Fisher 2005; Bohn 2006b).⁶²

Harm customer relationships. Customers recognize the need for media companies to protect valuable content (Bohn 2006c). They do not, however, like to be restricted in actions they perceive as legitimate. Having been used for more than hundred years to the idea of owning books or records and using these media however they like, people do not accept the newly imposed restrictions (Mulligan et al. 2003; Wilde & Schwerzmann 2004; Dufft et al. 2005). As a result, most consumers do not perceive DRM as means to enable more choices, but rather as means to violate legitimate consumer rights. Consequently, they criticize DRM for "*treat[ing] everyone like a potential criminal*" and

⁶² Besides, some experts believe that DRM can reduce the audio quality of music (Renner 2004, p. 253).

“*tak[ing] all the joy out of buying and playing music*” (Mossberg 2003). As Leonhard (2008) claims, it “*has utterly destroyed the trust in the market space*” (p. 128) and lead to “*a crisis of legitimacy*” (Bygrave 2002, p. 6) for the recording industry.⁶³

Diminish willingness to buy. DRM-protected content deprives customers of various freedoms that are offered by DRM-free content. Consequently, DRM makes content less valuable for consumers and reduces their willingness to pay (e.g., Ünlü & Hess 2003; Sundararajan 2004; Strube et al. 2008). Besides, security and privacy issues, or a perception of not being treated fairly, may provoke concerned customers to avoid DRM-protected content and justify the obtainment of content from illegal sources (Renner 2004, p. 255; Dufft et al. 2005).

Generate additional costs and complexity. Setting up a DRM infrastructure is a costly matter (Ganley 2004; Fetscherin 2005; Ünlü & Hess 2005). If these costs are passed on to the consumers, content becomes more expensive and thus less attractive; if not, the margins of content providers suffer (Emes 2004, p. 203). The main cost factors include: setting up and maintaining the technical infrastructure, regularly upgrading the software to fight its breaking, paying license fees for underlying technologies, encoding content, and providing support to end users (Rosenblatt et al. 2002, p. 197; Horn et al. 2004). Furthermore, the additional complexity generated by DRM increases time to market and detracts music firms from their core business of marketing music (Buhse 2004, p. 114).

Do not stop piracy. Copy protection technologies are rarely 100% bullet-proof (e.g., Haber et al. 2003). In fact, they are frequently circumvented (e.g., Rosenblatt et al. 2002, p. 95). Thus, they are unable to stop piracy completely, specifically the unauthorized copying by professional pirates (Wolfe 2007). Instead, they are intended to act as a “*speed bump*” (van Wijk 2002, p. 5) to deter ordinary users from copying a work. For two reasons, DRM hardly achieves this goal: First, some users will always have unprotected copies of content, either from legacy media such as CDs or from their own circumvention of copy protection mechanisms (Haber et al. 2003; Dufft et al. 2005). Second, efficient peer-to-peer (P2P) file-sharing technologies enable ordinary users to easily obtain unprotected versions without having to break the copy protection them-

⁶³ The following incident gives an example of the negative effect of DRM on the relationship between record labels and their customers: In 2001, the SDMI posed a public challenge to break its DRM systems. Having successfully broken the SDMI’s DRM technology, some researchers intended to publish a paper containing their findings. When the music business noticed this plan, it threatened to sue the researchers based on the DMCA (Goldstein 2003a; Renner 2004). This action caused a lot of negative publicity for SDMI and the record labels involved in this initiative.

selves (Biddle et al. 2002).⁶⁴ The high levels of piracy can be seen as evidence for the low effectiveness of DRM to stop unauthorized reproduction (IFPI 2006; GfK 2007).

Prevent competition. DRM can be used to control distribution or lock customers into a proprietary technology. While this may be beneficial to distributors or hardware manufacturers, it may hurt content providers. In the music business, Apple's iPod-iTunes ecosystem has a market share of around 70%.⁶⁵ Due to DRM, both online store and mobile player used to be incompatible to products and services of competitors until recently.⁶⁶ This market dominance has the potential to hamper competition, the emergence of better products and, eventually, market growth (Helberger 2006; Kalker 2006; Enders Analysis 2007). Besides, Apple's dominant position weakens the standing of content providers when negotiating prices and terms.

Stifle innovation and creativity. Content industries see DRM as a means to secure value appropriation and create attractive conditions for future investments. However, there is some fear that DRM may endanger innovation and product diversity (Boyle 2003; Ganley 2004; Bates 2008). In particular, some scholars are afraid that DRM threatens individuals' ability to engage with cultural works (Lessig 2001, 2004a, 2006; Gillespie 2004). By making it increasingly difficult for users to modify content, producers may forego an opportunity to intensify the relationship with their audience and profit from valuable user-generated content (Landau et al. 2006; Flowers 2008).⁶⁷ Moreover, content industries have strongly profited from technical innovations such as radio, TV, CDs and DVDs in the past. Since strong DRM may impede the emergence of new

⁶⁴ The threat through file sharing highly depends on the type of content. Given the small file size of songs, music can easily be shared. However, sharing films via peer-to-peer networks is much more difficult as file sizes, and thus transmission times, are around two orders of magnitude larger (Renner 2004).

⁶⁵ Apple's market share for its iPod in the segment of MP3 players is currently around 70% (Cruz 2007; Dalrymple et al. 2009; Delahunty 2009). Apple's market share for its iTunes store in the segment of online music retailers is also currently around 70% (Hüber 2005; Goonan 2008; Yoskowitz 2008; Rechensteiner 2009).

⁶⁶ Until recently, the music sold in Apple's iTunes store was protected by its own FairPlay DRM technology. Since Apple did not license this technology to competitors, mobile players of other manufacturers such as Microsoft or Samsung could not play music purchased in the iTunes store. Vice versa, Apple's iPod player did not support the DRM technologies used by other online retailers such as Musicload or Rhapsody. Thus, iPod users could only buy online music from iTunes. Of course, they could also play unprotected MP3 files on their iPods which they could obtain from other sources such as ripping CDs.

⁶⁷ As an example, Horn et al. (2004) refers to Sony's AIBO robot dog. Since this toy was protected by DRM, modifications were not permitted. However, a leading edge customer managed to change the dog's coding so that it could perform dances and shared this program with others. Sony objected this modification until it realized that a dog which could perform more moves was more valuable than the original.

technologies, it has the potential to limit the future demand for content (Leonhard 2008).

3.4 Determining the optimal level of protection

The previous section outlined numerous advantages and disadvantages of using DRM. Based on the existing literature, this section intends to shed further light on the optimal level of protection. Since the benefits of protection highly depend on the negative impact of piracy, the theoretical and empirical research on this issue is reviewed first.

3.4.1 The impact of piracy

This thesis defines piracy as an illegal reproduction of copyright-protected content, independent of transformative uses that are also commonly referred to as piracy (e.g., Lessig 2004a, p. 53). Piracy is not a new phenomenon: Incidents date back to the 18th century, involving such famous artists as Haydn and Beethoven (Towse 2004). Today, piracy is ubiquitous and affects all kinds of content: software, music, videos, texts and photos (e.g., GfK 2007). The IFPI estimates, for example, that 1.2 billion music CDs were pirated and 20 billion tracks were illegally downloaded in 2005, generating up to 80% of the worldwide Internet traffic (IFPI 2006). Its negative potential is obvious: Having obtained a pirated copy, consumers will typically not buy the original version (Peitz & Waelbroeck 2006). Despite this evidence, some scholars argue that piracy can also increase sales through sampling, network effects, and indirect value appropriation.

Sampling. Piracy enables consumers to experience the characteristics of a product without having to buy it (Duchêne & Waelbroeck 2005; Bhattacharjee et al. 2006a; Peitz & Waelbroeck 2006b). Being able to make more informed purchasing decisions, consumers may buy more products or be willing to pay a higher price. Piracy can thus be seen to enable sampling and serve as a useful marketing tool. Various scholars argue that free trials and word-of-mouth advertising are indeed highly beneficial for unknown artists, but not for established ones (Zhang 2002; Duchêne & Waelbroeck 2006; Gopal et al. 2006).

Network effects. Piracy increases the number of individuals using a product. In the presence of network externalities, i.e., when the value of a product depends on the

installed base, this positive effect may overcompensate lost sales.⁶⁸ As long as copying enhances the demand for legal copies, it will raise producer's profits (Conner & Rumelt 1991; Takeyama 1994; Shy & Thisse 1999). Analyzing the diffusion of spreadsheet and word processing software in the UK, Givon et al. (1995) find that "*pirates helped significantly in creating legal penetration of these two types of software*" (p. 36).

Indirect value appropriation. Consumers' valuation of a good typically increases if they are able to copy it or share it with others. If a producer can capture part of this value, e.g., by increasing the price of the original, its profits may increase (Ordoover & Willig 1978; Besen & Kirby 1989; Boldrin & Levine 2004). As an example, Liebowitz (1985) shows that publishers of academic journals reacted to the advent of widespread photocopying by charging higher prices to libraries. Similarly, some scholars argue that some consumers may only buy a product if they can form groups to share it and spread the costs of the original (Bakos et al. 1999; Varian 2000b). Since piracy increases the diffusion of a good, creators may also profit from the additional popularity of their works through an increased demand for complementary products or services such as live performances (Curien et al. 2004; Gayer & Shy 2006). The additional income from such sources may mitigate losses due to piracy.

Discussion. To prove that content producers indeed profit from piracy as described above, a number of strong assumptions on the quality of copies, relative costs of producing originals and copies, and willingness to pay need to be realized (e.g., Besen 1986; Peitz & Waelbroeck 2006; Kinokuni 2003). For this reason, Peitz and Waelbroeck (2006) conclude that piracy is an activity that usually substitutes legal sales and reduces a firm's profits. Several theoretical models support this conclusion (Novos & Waldman 1984; Johnson 1985; Belleflamme 2003). If dynamic effects are taken into account, the harm caused by piracy may be even greater (Takeyama 1997). For example, Clement (2003) notes that consumers may get "*used to the fact that content is for free, which will reduce the long term willingness to pay dramatically*" (p. 10).

Apart from theoretical contributions, rich empirical evidence exists on the impact of piracy on sales, mostly stemming from studies on the effects of file sharing in the music business. In summary, nearly all studies conclude that piracy hurts record labels, as shown in Table 3.4.

⁶⁸ Network externalities exist for many kinds of software, but less for entertainment products such as music or films (e.g., Shy 2001).

Type	Study	Impact of piracy
Home taping	<ul style="list-style-type: none"> Greenspan 1983 Davies 1983 	<ul style="list-style-type: none"> Sales displacement of > USD 1 billion in 1982 in USA Sales displacement of > USD 600 million in 1979 in UK
CD piracy	<ul style="list-style-type: none"> Mannering 1994 Hui & Png 2003 	<ul style="list-style-type: none"> 38% of pirated CDs represent lost sales 6.6% of sales lost due to piracy in 1998
File sharing	<ul style="list-style-type: none"> Peitz & Waelbroeck 2004 Rob & Waldfogel 2006 Zentner 2005 Zentner 2006 Oberholzer-Gee & Strumpf 2007 Liebowitz 2008 	<ul style="list-style-type: none"> 20% reduction of worldwide record sales between 1998 and 2002 Each illegal album download reduces purchases by about 0.2 units 15% worldwide and 30% US decline in music sales between 1997 and 2001 8% reduction of record sales since 2002 for several European countries No significant effect of file sharing on sales Piracy-induced sales displacement larger than effectively measured one between 1998 and 2003; without file sharing, average consumer would have bought ~ 1 album more in 2003

Table 3.4 Impact of piracy on record sales

As early researchers, Greenspan (1983) and Davies (1983) find home taping to have a significant effect on sales displacement. Analyzing the piracy of CDs, Mannering (1994) estimates that 38% of all pirated CDs are lost sales; Hui and Png (2003) calculate that losses due to CD copying amount to about 6.6% of sales. While these studies show that the industry tends to overstate losses as seen in the argument that each copy represents a lost sale, they clearly indicate that piracy is harmful. Nearly all studies on file sharing come to a similar conclusion (Peitz & Waelbroeck 2004; Zentner 2005, 2006; Rob & Waldfogel 2006; Liebowitz 2008).⁶⁹ As an exception, Oberholzer-Gee and Strumpf (2007) do not find any negative effect of file sharing.⁷⁰

Other industries demonstrate more positive effects of piracy: Givon et al. (1995) document how illegally-copied software can boost the demand of legal copies, and Liebowitz (1985) explains how price increases after the occurrence of photocopying increased the profits of publishers of academic journals.

⁶⁹ Individuals practicing file-sharing can be split into two groups (Gallaway & Kinnear 2001; Molteni & Ordanini 2003): those who substitute purchases through downloads and are not willing to pay and those who download to discover new music and pre-select further purchases. Besides those reasons, file-sharing is driven by an aversion to copy protected content (Fetscherin 2005; Strube et al. 2008), a lack of a sense of wrongdoing (Levin et al. 2004; Huang 2005; Coyle et al. 2009) and a low likelihood of being caught (Fetto 2000; Bhattacharjee 2006c).

⁷⁰ The non-academic view of file sharing is more controversial. On the one hand, executives in content industries unanimously agree that piracy causes multi-billion losses (IFPI 2006). On the other hand, various practitioners still doubt that file sharing hurts sales at all: *“If someone would never have bought your music in the first place, but acquires the music through some other means (...), you haven’t ‘lost a sale’, you’ve gained a listener”* (Dubber 2008, p. 47).

3.4.2 Using DRM to fight piracy

Copy protection is one of several methods of fighting piracy.⁷¹ Given the focus of this work on legal and technical protection means, the role of copy protection in reducing piracy merits closer discussion. Therefore, both theoretical and empirical studies on this issue are reviewed.

Theoretical studies. In the rather exceptional case where piracy is profit-enhancing, employing copy protection is not recommended (Conner & Rumelt 1991; Shy & Thisse 1999; Domon & Joo 2006). When piracy is harmful, content providers need to trade off the effectiveness of DRM in deterring piracy against the value reduction of the legal product (Sundararajan 2004).

While liberal conditions increase the value of a product, they may facilitate copying and reduce sales (Shapiro & Varian 1999, pp. 98-102). Emphasizing the latter condition, Kiema (2008) argues that making “*an information good technically difficult to copy is always in the interest of the copyright owner*” (p. 317). In contrast, Jaisingh (2007) recommends a low level of technological protection based on the assumption that DRM is cumbersome and a disutility to users, forcing firms to charge lower prices for strongly-protected content. Stressing the drawbacks of DRM, he states “*that revenue decreases with increased protection*” (p. 329). Similarly, Gopal and Sanders (1997) find that preventive controls, i.e., technical protection, decrease profits while deterrent controls, i.e., lawsuits against copyright infringers, potentially increase profits. Athtiala (2006) as well as Shy and Thisse (1999) point to the importance of competing products. If unprotected alternatives are available, employing copy protection is generally not desirable since consumers are likely to find these competing products more appealing.⁷²

In summary, technological protection makes copying more cumbersome and thus makes buying more attractive. It does, however, restrict consumers’ use of a product and may interfere with their expectations, thus making the original less attractive. Given

⁷¹ DRM can be a complement as well as a substitute to other means like pricing or lawsuits (Cheng et al. 1997; Gopal & Sanders 1997; Png & Chen 2003; Sundararajan 2004). For example, Nascimento and Vanhonacker (1988) suggest the use of skimming pricing for unprotected and aggressive pricing for fully protected products. Other means of fighting piracy include instilling a sense of wrongdoing so that pirates have a harder time arguing that their behavior is ethically correct (Levin et al. 2004; Huang 2005; Coyle et al. 2009), increasing the quality of the original product to make buying more appealing (Conner & Rumelt 1991; Cheng et al. 1997) or adapting one’s business model to profit stronger from the increased demand for complementary products (Curien et al. 2004; Liebowitz & Watt 2006).

⁷² When interpreting the results of these models, one should keep in mind the strong dependency on the assumptions which may reflect the reality more or less accurately.

these contrary effects, several scholars argue for an intermediate level of protection (Nascimento & Vanhonacker 1988; Ünlü & Hess 2003; Sundararajan 2004).

All studies discussed above are based on mathematical models. When interpreting their results, the high sensitivity to assumptions should be kept in mind. One of the most important assumptions that was made by all previously presented papers is that DRM is, at least to some degree, an effective means of deterring piracy. Biddle et al. (2002) and Haber et al. (2003) challenge this assumption. They argue that ordinary consumers can easily obtain content from illegal sources such as file-sharing networks as long as a small portion of advanced users circumvents copy protection schemes and shares unprotected content. In this sense, DRM becomes an ineffective means for fighting piracy.

Empirical studies. Various empirical studies examine consumers' views on DRM and its impact on purchasing behavior (Bamert et al. 2005; Buxmann et al. 2005; Dufft et al. 2005; Fetscherin 2005; Strube et al. 2008). While consumers seem to know or care little about DRM, they tend to have a clear opinion on the restrictions they are willing to tolerate. As Figure 3.2 illustrates, they usually expect purchased music to be playable on all of their devices they own and be sharable with friends and family (e.g., Dufft et al. 2005; Fetscherin 2005).

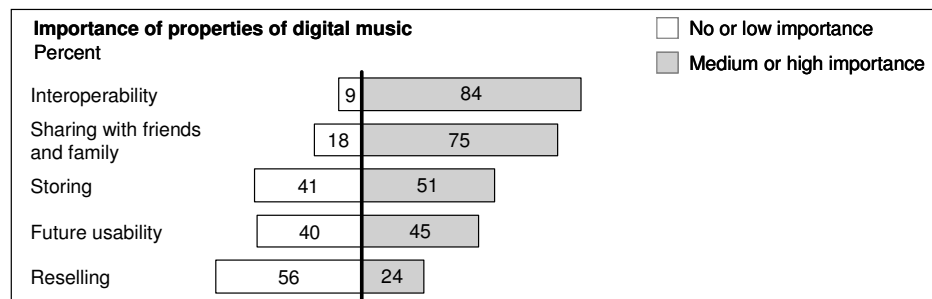


Figure 3.2 Importance of properties of digital music
(own illustration based on Dufft et al. 2005)

The discrepancy between consumer expectations and restrictions imposed by current DRM systems deters consumers from purchasing music. In Buxmann et al. (2003), 60% of respondents state that copy protection prevents them from buying CDs. In addition, DRM not only affects the likelihood of buying, but also the willingness to pay. In a conjoint experiment, Strube et al. (2008) reveal that consumers are willing to pay significantly more for DRM-free online music and that removing DRM would more than triple revenues for content providers. In their survey, Dufft et al. (2005) find that 86% would rather pay EUR 1 for a song that runs on any device than 50 cents for a song that runs on only one device. Indeed, online stores seem to consider this preference since

they charge higher prices for music that comes with liberal usage rights (Fetscherin & Vlietstra 2004).

Discussion. This section attempted to determine the optimal level of protection for musical content. Since the value of DRM highly depends on the context in which it is used, it cannot provide a definitive answer on this issue. In particular, parameters such as its effectiveness, piracy levels, consumer expectations and the availability of a common standard have a major impact on its desirability (e.g., Singleton 2007). Nevertheless, this section clearly indicates that in many cases, maximum protection is not advantageous (e.g., Sundararajan 2004; Jaisingh 2007). Instead, creators may be better off choosing a weaker level of copy protection or by not employing DRM at all.

3.5 Creative Commons

The previous sections discussed the two main mechanisms for protecting information goods: copyright and DRM. By using them, content providers can assert control. Continuing with the idea of the previous section that strong protection is not always desirable, as well as the thought from Chapter 2 that waiving some control can be beneficial for a variety of reasons, this section reviews the academic literature on Creative Commons (CC) licenses, a tool to give up some of the rights that come with copyright.

3.5.1 Goals and origins

The CC initiative originated from the criticism directed against the current copyright regime that perceives copyright law as a barrier to accessing, sharing, and reusing creative works. Recognizing that artists frequently build on or gain inspiration from existing works, several scholars believe that copyright deters creativity (e.g., Lessig 2001, 2004a, 2006; Vaidhyathan 2001; Elkin-Koren 2006, 2007). They criticize the fact that its past extensions have strongly limited the amount of works available for building upon and engaging with. In particular, the opportunities created by digital technologies and the restrictions imposed by copyright are perceived to represent a strong contradiction. On the one hand, digital technologies lower the barrier for users to become creators themselves and to exchange creative works with a large group of people (Benkler 2006; Hughes & Lang 2006). On the other hand, the law prohibits these activities which

makes Lessig (2004a) criticize copyright as a “*punitive system of regulation [that] will systematically stifle creativity and innovation*” (p. 192).⁷³

The CC initiative is aimed at transforming copyright in a way that promotes sharing and re-use. Lessig, who founded the US-based non-profit organization in 2001, characterizes its goal: “*Our aim is to build a movement of consumers and producers of content (...) who help build the public domain and, by their work, demonstrate the importance of the public domain to other creativity*” (Lessig 2004a, pp. 283-284). By making creative works available for transformative uses, CC expects to make it easier for prospective creators to develop subsequent works and to enable people to actively interact with culture instead of passively absorbing it (Dusollier 2006; Elkin-Koren 2006, 2007). In this sense, CC intends to become a catalyst for creativity.

To achieve its goals, the CC organization developed a set of licenses which make it convenient for creators to permit reproductions and transformations of their work, and for users to identify such works (Klang 2005; Dusollier 2006; Hietanen 2008). It is important to note that CC licenses do not replace copyright; instead, they can be regarded as an adjustment to copyright which reverses some of its past extensions (Creative Commons 2007; Montagnani & Borghi 2007). Lessig (2004a) emphasizes that CC “*does not compete with copyright; it complements it. Its aim is not to defeat the rights of authors, but to make it easier for authors and creators to exercise their rights more flexibly and cheaply. The difference, we believe, will enable creativity to spread more easily*” (p. 286).

By offering a set of licenses and making their use voluntarily instead of trying to change the underlying copyright, CC takes a pragmatic “*minimalist approach*” (Elkin-Koren 2006, p. 8). Its foremost goal is to expand the range of creative work available to build upon and share. By creating such a pool of free works, CC also intends to build momentum for changes in copyright law (Wong 2007), as Lessig (2004b) admits: “*Neither change will happen, however, unless policy makers recognize the distance between*

⁷³ Apart from the critique on copyright, CC has a second point of origin: free or open source software. This kind of software grants users the right to distribute the work, to inspect the source code and to modify it (OSI 2001; FSF 2007). Embracing the same philosophy of openness (Benkler 2002; Hughes & Lang 2006; Wong 2007), CC is an attempt to apply these principles to other, less technical, forms of creative expressions (Hill 2005). However, since the interests and needs of creators differ, CC could not simply adjust existing licenses; it needed to develop new ones (Cheliotis 2009).

the concerns driving the copyright wars, and the concerns behind the free culture movement” (p. 975).⁷⁴

3.5.2 Licenses and Adoption

CC licenses can be applied to all works protected by copyright. Complementing and building upon copyright, they offer creators the ability to calibrate the level of control they want to retain over their works. In simplified terms, CC licenses grant users two privileges: the right to *share*, i.e., to copy, distribute and transmit the work, as well as the right to *remix*, i.e., to adapt and transform the work. These freedoms can be restricted through four conditions (Creative Commons 2009f):

- **Attribution (BY)**: Licensees may share and remix the work if they attribute the work in the manner specified by the author or licensor.
- **NonCommercial (NC)**: Licensees may share and remix the work if they do not use it for commercial purposes.
- **No Derivative Works/NoDerivs (ND)**: Licensees may share the work, but not alter, transform or build on it.
- **ShareAlike (SA)**: Licensees may share and remix the work if they distribute the resulting work under the same license that governs the original work.

Combining these conditions produces 16 possibilities, out of which six are valid CC licenses.⁷⁵ Figure 3.3 lists these licenses including their freedoms and adoption.⁷⁶

⁷⁴ Changes proposed to copyright law include reintroducing registration and renewal periods, shortening the periods of protection, enhancing fair use rules, introducing statutory regimes for derivative works, and re-defining non-commercial and non-infringing uses (Lessig 2004; Jones & Cameron 2005).

⁷⁵ Besides the six main licenses, a couple of obscure or scarcely used ones exist such as “Sampling”, “Sampling+”, “NC-Sampling+”, “Developing Nations”, “Public Domain Certification” and “Founder’s Copyright”. The human-readable summaries of the six main CC licenses as well as the two sampling licenses can be found in Table A.1 in Appendix A.1.

⁷⁶ CC licenses are the most prominent example of so-called “Open Content” licenses. Hietanen and Oksanen (2004) define Open Content as a “*creative work that comes with a license which explicitly allows reproduction and distribution*” (p. 3). Thus, Open Content is a more general concept than CC. However, as the latter term is far more popular, this thesis concentrates on CC licenses. Examples of other Open Content licenses are the Free Art License, the GNU Free Documentation License, the Free Music Philosophy and the Open Audio License (Bildstein 2007).

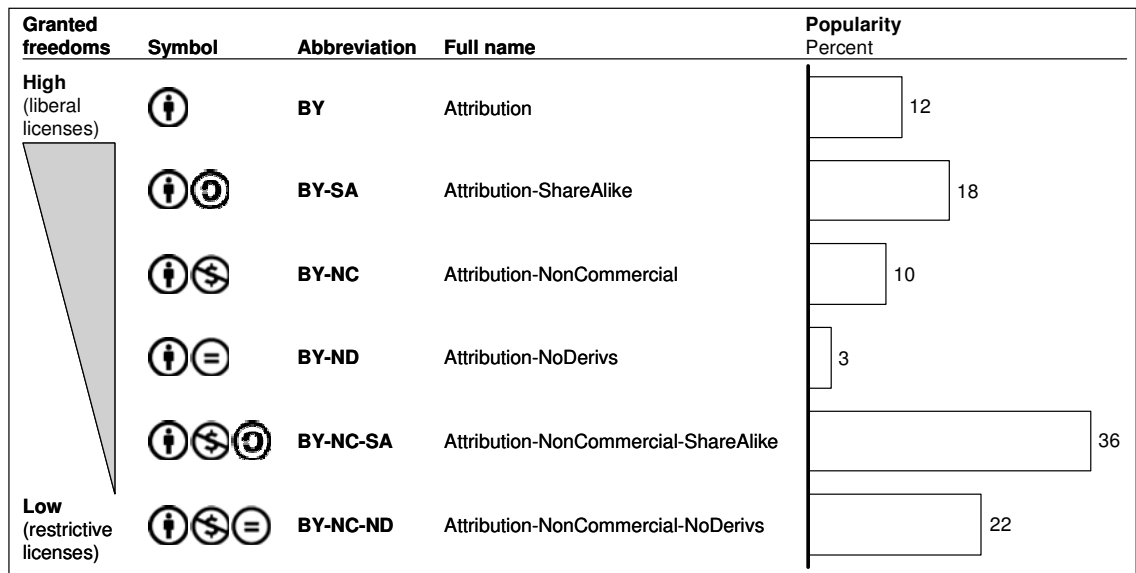


Figure 3.3 Properties and popularity of CC licenses
(own illustration based on Cheliotis 2007 and Cheliotis et al. 2008)

In order to make the use of the licenses convenient for creators and guarantee their legal enforceability, each CC license comes in three versions: a human-readable summary, a machine-readable version⁷⁷ and the full legal code (e.g., Klang 2005; Elkin-Koren 2006). CC licenses are both non-revocable, meaning they cannot be terminated, and non-exclusive, meaning creators are allowed to release a work under different terms (e.g., Hietanen 2008). So far, the CC licenses have been ported to 52 jurisdictions to enforce compliance with local laws (Creative Commons 2009f). Since CC's intention to encourage wide dissemination is incompatible with the purpose of DRM to restrict sharing, it is not permitted to protect CC-licensed content with DRM (Creative Commons 2009c).⁷⁸

According to a recent estimate, approximately 150 million works are currently available under a CC license (Creative Commons 2009b).⁷⁹ The biggest adopters of CC

⁷⁷ After choosing a license, creators receive a “Digital Code” version of the selected license which is “a machine-readable translation of the license that helps search engines and other applications identify your work by its terms of use” (Phillips 2007). It is usually embedded into the source code of the web site on which the work is published.

⁷⁸ Despite their common origin, CC licenses deviate in various aspects from free or open source software licenses. As defined by the Free Software Foundation (FSF 2007) and the Open Source Initiative (OSI 2001), free/open source software grants four freedoms: to run the software for any purpose, to inspect its source code and modify it, to redistribute copies (at a price or for free) and to release derivative works to the public. Since some CC licenses prohibit derivative works while others prohibit use or redistribution for commercial purposes, CC licenses are in general not compliant with the requirements of OS licenses.

⁷⁹ When analyzing the proliferation of CC licenses, one has to keep in mind that many professional creatives do not have the option of using CC licenses. Since they have transferred their rights to intermediaries such as publishers, collecting societies or record labels, they are not permitted to (re-) release their works under a CC license (Hull 2004; Montagnani & Borghi 2008).

licenses are developed countries with high political and economic freedom (Cheliotis et al. 2008; Creative Commons 2009g). While the chosen licenses vary widely between different types of content and regions, restrictive licenses are, on average, significantly more popular (see Figure 3.3).⁸⁰

Attempting to characterize creators using CC licenses, Weatherall (2006) speculates that “*early adopters of CC licenses are hobbyists, academics, and other people who make their living by means other than selling creative outputs, rather than professional artists*”. Wong (2007) and Cheliotis et al. (2008) share the view that most CC users are amateurs or people who do not rely content production for their income. Garlick (2005a) tries a more elaborate classification of CC users: “*Adopters of the CC licenses tend to fall into four general categories: the pragmatists who want to get their work distributed and known to as many people as possible; the idealists who are committed to the principle of sharing knowledge; the artists whose art form is sampling, remixing, and recontextualizing the works of others; and finally, the academics and educators*”. However, none of these propositions are backed up with empirical data.

3.5.3 Benefits

Having discussed the properties of CC licenses and their adoption, the question of why creators decide to use them still remains.⁸¹ This section outlines the main reasons for using CC licenses which emerge from literature. They can be grouped into three classes: those relating to market, collaboration, or idealism.⁸²

Market aspects. Permitting the sharing of one’s creative works may result in a wider dissemination (Garlick 2005a; Montagnani & Borghi 2007). In addition, allowing derivative works may further increase their popularity as consumers feel encouraged to

⁸⁰ The tendency to choose more restrictive licenses is consistent with observations made in the context of OS. De Laat (2005) and Sen et al. (2008) find that strong-copyleft licenses are by far the most popular ones, followed by weak-copyleft and non-copyleft licenses.

⁸¹ This section studies the reasons for using CC licenses without paying specific attention to the properties of the different variants. Examining creators’ license choices, Cheliotis et al. (2008) argue that the use of the ND restriction is mainly motivated by concerns about the artistic integrity of their work while the use of the NC restriction is either motivated by an aspiration to exploit a work commercially or a wish to protect the work from commercial exploitation.

⁸² Apart from these benefits, two other reasons may motivate use of CC licenses: a need to fulfill legal requirements and a desire to assert control. First, using a CC license may simply be legally required if a work is transformed that comes with a “Share Alike” condition. Second, some authors may find CC licenses to be an effective way to clearly state which uses they do *not* allow. Since copyright is a complex matter which a lot of people either do not understand or simply ignore (Goldstein 2003a), authors may actually use CC licenses “*as a means of asserting more control over their works rather than relinquishing some of it*” (Cheliotis et al. 2008, p. 41).

engage with one's creations (Hughes & Lang 2006). The increased publicity of works is likely to raise an author's visibility and reputation (Cheliotis et al. 2008). For artists seeking recognition, such reputation gains may be a value *per se* (Dussolier 2006). This fame, as well as the broader dissemination, may also translate into future financial returns through additional demand for one's creative works, complementary products or services or paid licenses for commercial uses (OpenAccessNow 2004; Dussolier 2006; Hietanen 2008).

Collaboration aspects. For many artists, sampling and remixing other works forms the core of their creative activities (Garlick 2005b). Given the legal trouble that is associated with sampling and remixing (Théberge 2004), creatives practicing such activities may release their works under a CC license to spare other creators this burden. Additionally, releasing a work under a CC license can signify to users that modifications are welcome (Gordon 2005, pp. 203-207). User-generated compilations and mash-ups may have an additional value for artists as they increase the popularity of their original works (Cheliotis et al. 2008). Furthermore, CC licenses may serve as legal infrastructure for the distributed creation of cultural works (Cheliotis et al. 2008).

Idealistic aspects. By releasing works under a CC license, creators legitimize sharing of their works and, potentially, their re-use. Apart from tangible benefits, this decision may be motivated by an ideological conviction that such activities should be legal (Garlick 2005b; Klang 2005; Cheliotis et al. 2008). Many authors acknowledge that they frequently borrow or gain inspiration from previous works (Wong 2007). Thus, they may regard it as fair to give something back to society (Cheliotis et al. 2008). Furthermore, they may be altruistically motivated and want users to freely enjoy their works (Cheliotis et al. 2008). Along similar lines, many creators disagree with the current copyright law and its strict enforcement by the content industries (Dussolier 2006). Using a CC license is one way to disassociate oneself from these practices and express "*an anti-copyright/pro-piracy attitude*" (Cheliotis et al. 2008, p. 27).

3.5.4 Drawbacks

In addition to the benefits listed in the previous section, using CC licenses may also involve a couple of drawbacks. This section summarizes the most frequently mentioned reasons not to use a CC license. While practitioners tend to emphasize that using CC licenses may cause a loss of income and a loss of control, academics criticize CC primarily for causing legal problems and its approach to change copyright.

Financial loss. Many critics believe that earning money with CC-licensed works is impossible. By using a CC license, authors would give up “*both commercial and promotional rights*” (Gordon 2005, p. 208) and waive “*their economic benefit from their IP*” (Weinstein & Wild 2005, p. 368). Thus, CC licenses are not suitable for professional artists whose income depends on their creative works (Gordon 2005, p. 212; McDonald 2006). If creators permit commercial use, their works may be used commercially without any compensation. Thus, they would forego income from sources such as licensing and advertising. If artists only allow non-commercial distribution, they retain several important rights such as the one to grant commercial licenses. However, the availability of free copies may diminish the value of their creations for commercial purposes, as Dusollier (2006) notes: “*One should not be naive: the existing circulation of the work for free under a CC scheme reduces the commercial interest in the work*” (p. 111). In addition, selling the work to consumers may become difficult, given the potential competition from free copies (Hietanen & Oksanen 2004). “*It is really difficult to imagine much revenue coming to a composer from a song that is broadly available on file-sharing networks.*” (Weatherall 2006).

Professional creators usually grant intermediaries, such as collecting societies, publishers or record labels, exclusive licenses to exploit their works (e.g., Montagnani & Borghi 2007). These exclusive transfers are valuable to firms since they gain the possibility to use a work however they like. However, granting a CC license conflicts with the nature of an exclusive transfer (Gordon 2005, p. 212; Weatherall 2006). Thus, the use of a CC license may rule out financially attractive deals.

Since most CC-licensed content is available for free, the licenses may raise the expectation that “*creative people would give away their work for free*” (Weatherall 2006). Thus, CC licenses may in the long term diminish consumers’ willingness to pay, reduce the perceived value of cultural works, and weaken artists’ position (Dusollier 2006).

Loss of control. Some artists disapprove derivative works since they wish to preserve their work as intended in its original form. Even though some CC licenses allow transformations, artists may fear that CC licenses violate their artistic integrity (Cheliotis et al. 2008).

Legal issues. CC licenses are partially incompatible among themselves (Möller 2007; Garlick 2009). This lack of compatibility increases transaction costs and impedes re-use of creative works. In other words, it limits the value of CC licenses for creators

being interested in wide re-use of their works.⁸³ Besides, several authors find CC licenses to have considerable practical issues. In particular, the terms “non-commercial” and “non-derivatives” are considered to be vaguely defined and insufficient to entirely ban commercial or transformative uses (Pawlo 2004; Prodromou 2005; Dusollier 2006).

Vision and approach. By designing a couple of licenses that accommodate a wide spectrum of needs and viewpoints, the CC organization took a very pragmatic approach to reach its goal of a more flexible copyright and a richer public domain (Cheliotis 2009). Some academics criticize CC for this approach: They complain that CC lacks a consensus on its goals and minimum rights, a clear and comprehensive vision and a strategy to get there (e.g., Välimäki & Hietanen 2004; Elkin-Koren 2005, 2006; Pasquinelli 2008). Since CC licenses are based on copyright, some experts are even afraid that CC may strengthen the law and enhance its validity rather than change it (Jones & Cameron 2005; Dusollier 2006; Kleiner 2007). Kleiner and Richardson (2006), for example, criticize that “*CC legitimizes, rather than denies, producer-control and enforces, rather than abolishes, the distinction between producer and consumer*”. These critics mostly argue for a political approach and a legal reform of copyright law to effectively enhance the commons.

3.5.5 Business models

The question of how artists can appropriate value from CC-licensed content is hardly researched. The only CC-based business model documented in literature is dual licensing. In this model, artists give away their work for free for non-commercial purposes, but charge a fee for commercial uses (Creative Commons 2009c). In this way, allowing non-commercial uses may serve as a “door opener” for commercial licenses (Gordon 2005, p. 212). The frequent claim for an “*alternative compensation system*” (Pasquinelli 2008, p. 5) to reward creators is another indication for the lack of proven and documented CC-based business models. The situation is further complicated by the fact that the CC organization does not even clearly state whether it is permitted to charge a fee for CC-licensed content.⁸⁴

⁸³ For example, it is impossible to merge a work licensed under BY-NC-SA with one licensed under BY-SA since both licenses require the derivative work to be licensed under the same terms of the original work. This lack of compatibility is particularly an issue for creators practicing techniques like sampling or remixing which frequently involve the combination of multiple works.

⁸⁴ The CC website suggests that CC-licensed works are free. However, it neither states explicitly that charging a fee for content that comes with a CC license is allowed nor that it is prohibited (Creative

3.5.6 Empirical studies on creators using CC licenses

Kim (2007) and OpenBusiness (2006) constitute the two main empirical studies on the views and characteristics of creators using CC licenses. Their results are based on surveys with 280 and 83 users of CC licenses, respectively. In both surveys, hobbyists represent the bulk of respondents. For example, only 3% of the participants in Kim's (2007) survey derive their primary income from copyrighted works.

Kim (2007) concludes from these data that creators generally release works without any commercial value under a CC license. This explanation seems plausible as OpenBusiness (2006) finds that all of its participants use CC licenses selectively, i.e., apply full copyright to some works as well. Intrinsic motivation seems to be the main driver for creators using CC licenses since 72% of respondents in Kim's (2007) survey state "love of creating" as their most important motivation, followed by reputation (13%), job-related need (2%)⁸⁵ and financial gain (2%). Analyzing the demographics of its respondents, OpenBusiness (2006) also deduces that most creatives produce art as a passion rather than as a career choice.

The participants in Kim's (2007) study use a CC license to legitimize sharing (52%), improve their reputation (26%) and enable a wider distribution which might result in future opportunities to make money (9%). In OpenBusiness (2006), 50% of the participants opt for "practical" reasons. Unfortunately, the study does not further specify this construct. As a second major driver for CC adoption, OpenBusiness (2006) identifies a negative perception of copyright: 96% of its respondents characterize copyright as too complex and one sided; not a single artist considers it important for securing income. In contrast, artists appreciate the simplicity and clarity of CC licenses.

Despite the interesting insights into the motivations and characteristics of creators using CC licenses, the two studies face a few severe limitations. First, both address mostly hobby creators. For example, 61% of the creators in Kim's (2007) sample apply a CC license solely to their personal blogs which limits the validity of the results for more serious groups of artists such as musicians or painters. Second, both studies only

Commons 2009c). Several attempts made by the researcher to gain a clarification on this issue from the CC organization were unfortunately not answered. A law professor specializing in copyright contacted by the researcher held the view that the CC licenses would clearly require that CC-licensed content *must* be made available for free, i.e., that it is illegal to charge a fee for CC-licensed content (apart from dual licensing).

⁸⁵ These creators "*indicated that producing creative works was part of their regular job*" (Kim 2007). Academics publishing research under a CC license may, for example, belong to this group.

superficially discuss the motivations for using a CC license. For example, the finding of the OpenBusiness (2006) survey that “practical” benefits of CC licenses matter most is very vague as it encompasses a broad range of reasons such as broader dissemination, reputation gains, financial benefits or easier collaboration with other artists. Third, none of the papers specifies and tests an econometric model to explain artists’ CC adoption or the choice of a specific license.

3.6 Intermediate conclusion

This thesis began with a general introduction to the different ways of appropriating value from (2.1) and protecting innovations (2.2). In this chapter, these aspects were studied for information goods. Besides complementary assets, literature considers copyright, backed up by DRM, as the most important means to improve the conditions for value appropriation (Landes & Posner 1989; Liebowitz & Watt 2006). Consequently, this chapter studied these two protection mechanisms in detail.

While mainstream literature and practitioners regard copyright as indispensable for securing income (e.g., Yoon 2002; Frith 2004), several scholars challenge this view and assign a lower importance to copyright (e.g., Hurt & Schuchman 1966; Breyer 1970). The situation for DRM looks similar. When file-sharing technologies emerged, there was a broad consensus that copy protection technologies were crucial for the economic success of content industries (e.g., Rosenblatt et al. 2002; Buhse 2004, pp. 19-23) and the “*saviors in the battle against illegal offers*” (Becker & Günnewig 2003, p. 669). Nowadays, the picture is less clear since the disadvantages associated with strong technological protection, such as a lower product value for consumers, became evident (e.g., Foroughi et al. 2002; Fetscherin 2005). Weighing the benefits and drawbacks, most theoretical models conclude that – despite the presence of piracy – maximum protection is not desirable (e.g., Sundararajan 2004; Jaisingh 2007). Empirical studies confirm this recommendation (e.g., Dufft et al. 2005; Strube et al. 2008).

Chapters 2 and 3 addressed the questions of appropriating value from innovations and finding the right level of protection from different angles. Chapter 2 is based on the literature on innovation management, Chapter 3 on the literature on information goods, copyright and related phenomena. Interestingly, these two research streams come to similar conclusions: Both argue for a balanced management of IP instead of a one-sided and narrow focus on control and exclusion.

CC licenses are an application of the general concept of free revealing to creative works (Lessig 2004a, pp. 282-287; Hughes & Lang 2006). Thus, their benefits and drawbacks show some parallels to the ones known from the analysis of free revealing. In the past, CC licenses have seen particularly strong adoption by hobby creators (Kim 2007; Cheliotis et al. 2008). This is not surprising since the goals of amateurs are mostly in line with the benefits of CC licenses such as broader dissemination or easier collaboration.

The literature review on copyright, DRM, and CC indicates several gaps in the existing research. While theoretical and empirical studies argue for a modest use of DRM, firms employ such technology very differently: Some have never used it apart from test runs, others have strongly relied on such technology. However, the significant differences in firms' DRM policies as well as their massive shifts in the use of DRM over time are surprising, especially when their products and business models are comparable and have remained rather constant. Furthermore, little is known about the actual market impact of DRM, i.e., whether its use eventually increases or decreases sales.

While the approach taken by CC and its licenses have been thoroughly analyzed from a legal perspective (e.g., Elkin-Koren 2005, 2006; Pasquinelli 2008), research on its business aspects is scarce: Neither artists' motivations for using CC licenses nor the financial implications of doing so are well explored (OpenBusiness 2006; Kim 2007). In particular, relevant case studies and rigorous empirical data are missing.

This thesis intends to fill the identified gaps. Using qualitative empirical evidence, it sheds light on the questions how and why firms' DRM policies differ. Furthermore, it gives an indication of the market impact of DRM. As main focus, this work studies CC licenses: First, it explores their benefits and drawbacks as well as CC-supported business models using qualitative data; second, it studies artists' motivations and experiences based on a large-scale survey of musicians and explains the drivers for their usage of CC licenses; third, it analyzes the adoption of CC licenses for music over time using quantitative data; fourth, it investigates whether consumers are willing to pay a premium for the additional freedoms that come along with CC-licensed content based on a large-scale survey among students. Since none of these aspects have yet been analyzed empirically, this thesis contributes to the research on DRM and CC.

Beyond the objectives listed above, the more general goal of this thesis is to draw general conclusions on the emergence of openness and free revealing. For this purpose, the subjects of DRM and CC are well-suited: Waiving copy protection or legal rights

via CC licenses constitute a significant deviation from traditional thinking of exercising strong control and are a discontinuous change both from an organizational and a market perspective. By studying these two phenomena, this thesis accomplishes its main goal of explaining drivers for openness and free revealing and answering the research questions previously identified.

4 The music business as empirical setting

In order to put the empirical findings of this thesis into perspective, this chapter provides an introduction to the key characteristics of the music business. The following sections are dedicated to presenting background information on the industry (4.1), recent developments (4.2) and their impact on value appropriation (4.3).

4.1 Industry background

The music industry comprises three segments: recorded music, live entertainment, and music publishing (Hull 2004, pp. 21-27).⁸⁶ As its name indicates, the recorded music business devotes itself to the activities of creating, marketing, and selling records in physical (e.g., CDs) and non-physical (e.g., downloads) formats. The live entertainment business organizes concerts and other forms of live musical entertainment. Music publishing is an IP business focused on exploiting the copyrights associated with a song. In total, the market size of the music business globally is estimated to be around USD 75 billion (Kusek & Leonhard 2005; Williamson 2008). This thesis focuses on the recording industry since it is largely responsible for making the decisions to legally and technically protect music.⁸⁷

4.1.1 Recording industry

Since records are facilitating the revenues of music publishing and live entertainment, the recording industry is commonly regarded as the dominant force in the music business (Hull 2004, p. viii; Kromer 2008).⁸⁸ Thus, the terms “music industry” and

⁸⁶ Furthermore, music stimulates sales of a variety of related products and services offered by consumer electronics companies or Internet service providers (Hull 2004; Leonhard 2008). Leonhard (2008) estimates the revenues of these music-enabled products to be a 150 times larger compared to those of the music business itself.

⁸⁷ When discussing the financial implications of more or less protection, all income streams of artists and record labels are taken into consideration (see e.g., Section 7.2.7). For example, a lower level of protection may reduce record sales, but increase the demand for concerts.

⁸⁸ Sound recordings are the most important way for artists and songs to become popular. In particular, they allow an unlimited number of people to listen to music simultaneously, either by playing purchased records or by listening to other media such as radio. Without sound recordings, the demand for concerts would be much smaller since few people attend a concert which features music they have never heard before. For music publishing, a similar argument can be made.

“recording industry” are often used synonymously.⁸⁹ Its global revenues peaked in 1997 with USD 45 billion and were estimated to reach around USD 23 billion in 2009 (Enders Analysis 2007). Its value chain consists of three players: content creators (composers, lyricists and performing artists), content developers and marketers (record labels) and distributors (direct and indirect sales channels) (e.g., Premkumar 2003; Buhse 2004, p. 25; Emes 2004, p. 190). The remaining part of this section further examines the roles of the different actors in the value chain of the recorded music business which is illustrated in Figure 4.1.

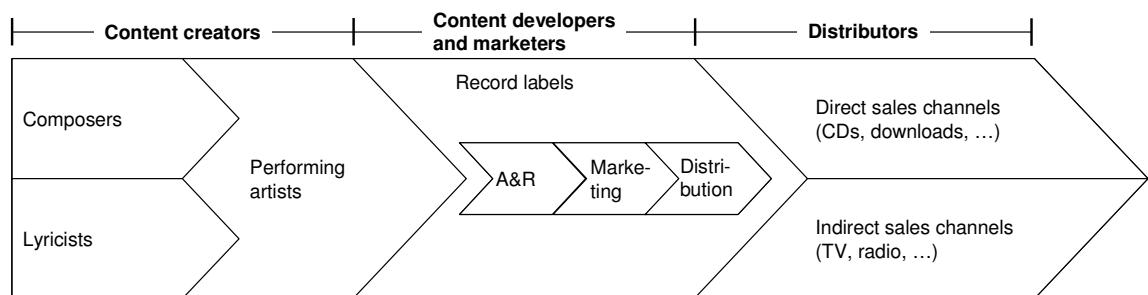


Figure 4.1 Value chain of recorded music industry
(own illustration based on Buhse 2004, p. 25 and Emes 2004, p. 190)

Composers and lyricists. Composers and lyricists create sheet music and texts for a new song. Unless they record it themselves, they either offer it directly to a performing artist for recording or authorize a publisher to market it (e.g., Emes 2004, pp. 40-44). Collecting societies, also known as performance right organizations (PROs), usually administer composers’ and lyricists’ rights and collect license fees from businesses that use their music (e.g., Passman 2006, pp. 234-242).

Performing artists. Performing artists record music. In total, they release around 20,000 to 40,000 albums per year (Emes 2004, p. 87; Kusek & Leonhard 2005; Coyle et al. 2009). Sales are highly skewed: Less than one percent of releases accounts for nearly 50% of the total sales (Rob & Waldfogel 2006).⁹⁰ In 2002, only 128 artists managed to sell half a million albums (Coyle et al. 2009). In contrast, 80-85% of releases in 2000 sold less than 1,000; 97% sold less than 5,000 copies (Howe 2003; Seabrook 2003; Kusek & Leonhard 2005). From an artist’s perspective, selling 50,000 units would represent the approximate break-even point (Gordon 2005, p. 235). Thus, most musi-

⁸⁹ For example, the association of the German recording industry calls itself “Federal Association of the Music Industry” (“Bundesverband Musikindustrie”).

⁹⁰ As a different ratio, Caves (2000) estimates that 10% of artists generate 90% of turnover.

cians do not manage to recover their costs (e.g., Baskerville 1995; Vogel 2004) or generate significant income from record sales (e.g., Kretschmer 2005; Coyle et al. 2009).⁹¹

These financial conditions are strongly criticized by performing artists who are signed to a record label. In particular, artists often perceive the low share of sales which they receive, usually around 5-15% or USD 1-2 per unit sold, as unfair (Hull 2004, p. 147; Towse 2004; Gordon 2005, p. 235).⁹² Since performing artists generally keep a higher share of revenues from live performances, this format is typically a more important source of income compared to record sales (e.g., Gordon 2005, p. 233).⁹³ However, it must also be stated that few famous artists generate major ticket sales (e.g., Hull 2004, p. 99). In summary, the economic prospects for most artists are poor, the likelihood of becoming famous and rich are very low (e.g., Kusek & Leonhard 2005; Kessler 2006).⁹⁴

Record labels. The oversupply of released products (Hirsch 1972, 2000; Throsby 1994), in combination with highly differentiated consumer preferences (Lancaster 1979; Moulin 1987), clearly justifies the existence of record labels as commercial intermediaries to select and market promising music (Kretschmer 1999b). Record labels perform four pivotal activities which places them at the centre of the music business:

- Discover and develop new musical artists⁹⁵
- Finance and produce recordings
- Market and promote artists and songs
- Distribute sound recordings to retailers and license other uses (e.g., Schulze 1996; Kretschmer et al. 1999b, 2001; Tschmuck 2003; Briegmann & Jakob 2005)

The recording business is an oligopoly, consisting of four major firms: Universal Music, Sony Music (previously SonyBMG)⁹⁶, Warner Music Group (WMG) and EMI.

⁹¹ Hull (2004, p. 148) calculates that under the terms of a standard recording contract, each member of a highly successful four-piece band selling the considerable number of 500,000 copies of an album gets over a two-year period only USD 32,000 per year before taxes.

⁹² Artists' revenue shares strongly depend on their bargaining position. Naturally, famous stars are in a much better position to negotiate higher revenue shares than young, unknown artists at the beginning of their careers (Laing 2004).

⁹³ For example, income from selling CDs represents less than one third of the total income of USD 522 million of the rock band Rolling Stones between 1989 and 2002 (Clement & Schusser 2006).

⁹⁴ American artist Roger McGuinn characterizes the economic prospect of musicians as follows: "You'd be better off working at Seven-Eleven [a retail store] than being a recording artist as far as the amount of money you can make." (Paharia 2005a)

⁹⁵ This activity is often referred to as A&R since it falls under the responsibility of the "Artist & Repertoire" (A&R) department.

⁹⁶ In 2004, SonyBMG was established as a joint venture of Sony Music Entertainment and Bertelsmann Music Group (BMG). In 2008, Sony acquired Bertelsmann's shares of SonyBMG and renamed the firm to Sony Music Entertainment.

The main reason for this highly concentrated industry structure is that large firms are in a better position to own the crucial competence for commercial success (Alexander 1994b; Kretschmer et al. 2001; Steinkrauß et al. 2005). These include “*marketing competences and bargaining power to establish market awareness, sufficient financial resources to absorb inevitable product failures and to fund promotional campaigns, and a large output to allow it to benefit from available scale economies in distribution and manufacturing*” (Gander & Rieple 2002, p. 250).⁹⁷ The close bond of major record companies to retailers, radio and TV is commonly regarded as one of their main sources of power: Since they can strongly influence which music is offered in stores and played in the media, they can effectively control the market (Lopes 1992; Hull 2004, p. 130).

The business model of record labels has some parallels to the one of venture capitalists. Record labels invest in a whole roster of acts of which few artists will become successful, some will do moderately well and most will generate little if any sales (Jakob 2005b; Kusek & Leonhard 2005). On average, less than 20% of recordings released by record labels recoup their costs (Hull 2004), and less than 10% make a significant profit (Denisoff 1986; Horn et al. 2004). As Renner (2004) stresses, the high number of commercial failures is not an “*accident*” (p. 112), but part of the record labels’ business strategy. He argues that in a setting characterized by diverse and hardly predictable consumer tastes, it makes sense to release such a high number of albums. Consumers’ preference for the music of superstars also contributes to this skewed distribution of sales (Rosen 1981; Adler 1985; MacDonald 1988).

The four major record labels collectively release about 15-25% of albums (Hull 2004; Rob & Waldfogel 2006) and have a market share of around 70-75% (IFPI 2005; Spellman 2006). The remaining albums, excluding ones directly released by artists, are sold by thousands of so-called independent labels which hold a market share of 25-30%. The term “independent labels” highlights the fact that these firms typically neither own distribution networks nor studios (Music Business International 1999; Hull 2004).⁹⁸

In line with theoretical and empirical findings that suggest that small firms are more successful in pursuing radical innovations (e.g., Foster 1986; Henderson 1993), several

⁹⁷ Some of these value-adding activities, in particular manufacturing and distribution, may be outsourced for cost reasons (Graham et al. 2004; Lewis et al. 2005).

⁹⁸ Hull (2004) defines independent labels as those firms who are “*not owned by one of the major labels*” (p. 136). This definition covers everything from an one-person label to Disney which is part of a major entertainment company. Thus, all descriptions of a “typical” independent label are a strong simplification and should be approached with caution.

scholars consider independent labels to be more creative, innovative and keen to experiment (e.g., Christianen 1995; Gander & Rieple 2002; Negus 1996). For example, independent labels were the first to promote Jazz (Phillips & Owen 2004) or Rock'n'Roll music (Mabry 1990; Gillett 1996). Despite their low market share, independent labels thus perform an important function for the market by detecting and developing new musical trends and talents (Shaw 1974; Peterson & Berger 1975).⁹⁹

Independent labels are often founded by former or active musicians (Mabry 1990; Burke 1997). They usually specialize in market niches, often focusing on artistically ambitious or progressive music (Spellman 2006; Andersen et al. 2007) and giving artists more creative freedom (Gruber 1993; Vormehr 2003). Due to the small volumes of sales, this specialty music is usually not profitable for major labels (Hull 2004).¹⁰⁰ To some degree, independent labels are thus perceived as an “antithesis” to the purely commercially-driven major labels and enjoy a higher credibility with fans (Frith 1981; Handke 2007a). However, Thompson (1989) and Garofalo (1994) point out that most independent labels are – without any doubts – profit-oriented.¹⁰¹

The competitive advantage of independent labels stems mainly from their clear focus on a market niche, their higher reputation with both artists and customers, lower fixed costs and lead time advantages in finding new music and bringing it to the market (Burnett 1992, 1996; Negus 1996; Gander & Rieple 2002).¹⁰² Independent labels, however, face severe structural disadvantages compared to major labels since they often lack sufficient financial resources, strong promotional power, and access to distribution channels (e.g., Mabry 1990; Lopes 1992; Kusek & Leonhard 2005). In particular, they do not possess the power to create superstars who attract a lot of attention of consumers (Adler 1985). While some experts characterize the relationship between major and independent labels as rather hostile (Peterson & Berger 1971, 1975; Chapple & Garo-

⁹⁹ Some authors challenge the assumption that independent labels are still more innovative. By having changed their organization and created a large number of semiautonomous label divisions which perform A&R and marketing independently, major labels no longer ignore new musical trends as they did in the past (Lopes 1992; Hull 1994).

¹⁰⁰ Average sales of an album released by a independent label range between 5,000 and 10,000 copies (Kessler 2006).

¹⁰¹ Independent labels usually pursue non-monetary goals as well, such as promoting and sharing music they have discovered and produced (see Section 5.3.3). Nevertheless, it is important to note that most owners run their independent labels as a profit-oriented business in order to make a living.

¹⁰² Hull (2004) emphasizes the lower break-even point of independent labels. While a major labels needs to sell 15,000 copies to recover its costs, an average independent label starts making profits after selling only 5,000 units. The reason for this difference is that independent labels usually keep production and marketing costs far lower than major labels.

falo 1977; Garofalo 1994), others see the frequent alliances between independent and major labels and acquisitions of independents by majors as an indicator of a symbiotic and healthy relationship (Hellmann 1983; Burnett 1990, 1996; Lee 1995; Dowd 2004).

Direct sales. Since the invention of the phonograph in the late 19th century, record labels' primary source of income is the sale of physical products such as records, CDs or tapes (Enders Analysis 2007). Today, physical sales account for about 70% of labels' revenues (Bundesverband Musikindustrie 2008; WMG 2008). Since 2003, music as a product has been increasingly distributed over other channels as well, most notably through downloads of individual tracks and albums, subscription services and ringtones (Kromer 2008).¹⁰³ Figure 4.2 illustrates how revenues generated from selling CDs and downloads are split across the value chain, highlighting the pivotal role of record labels.

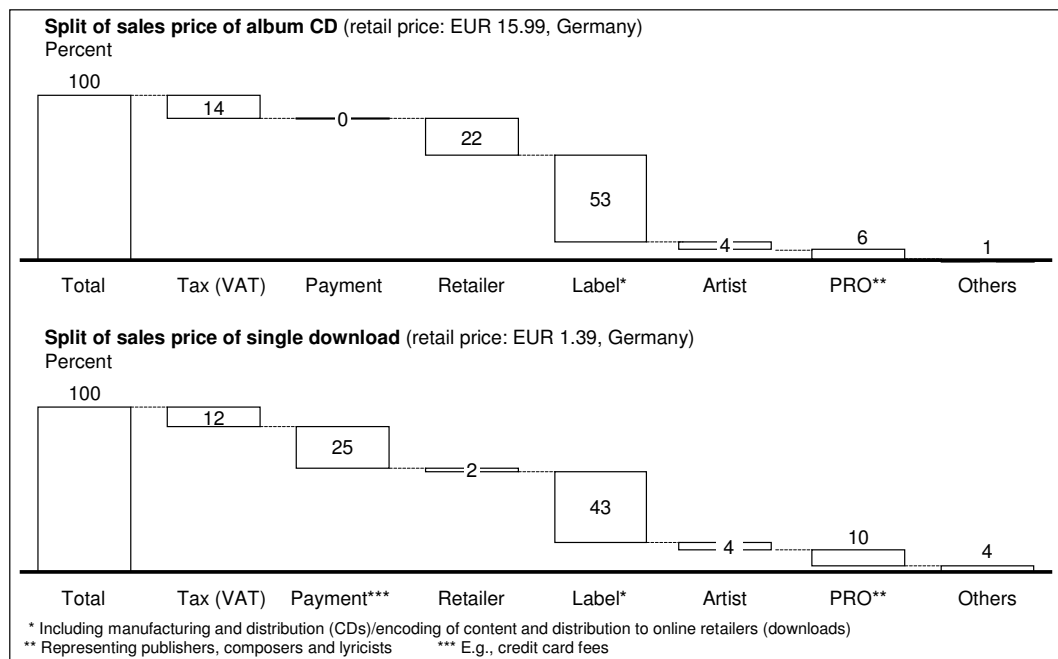


Figure 4.2 Split of sales price of CDs and downloads
(own illustration based on Hottes & Block 2007)

Indirect sales. Besides physical and digital sales, record labels derive income from licensing their uses to a variety of media including music television, radio, synchronization (use in films), advertising and video games (Gordon 2005, p. 79; Kusek & Leonhard 2005; Kromer 2008). While the revenues from such uses are still rather limited (WMG 2008), the demand for music in such media increases constantly, as Frith (2004) notes: “*Providing sounds for radio and television, for films and advertisements, for*

¹⁰³ To enable digital sales, a label has to encode music as well as prepare artwork and other information. While major labels usually perform this activity on their own, content aggregators preprocess the content of independent labels (Kromer 2008).

computer games and mobile phones, for public spaces generally, is nowadays as commercially important as directly pleasing the public” (p. 176). In addition, such media expose consumers to new music and motivate purchases (Hirsch 1972; Hull 2004; Renner 2004, p. 228).¹⁰⁴

4.1.2 Live entertainment

Traditionally, recorded music and live entertainment constituted two separate sectors (Koster 2008). Record labels regarded concerts primarily as promotional vehicles to generate exposure for artists and drive record sales. As such, they did not attempt to venture into the concert business (Hull 2004). Nevertheless, the economic impact of live entertainment is significant: In 2000, consumers spent more money for concerts than for records (Tresp 2002). Besides, the popularity of live shows has been increasing steadily over the past years (Krueger 2005; Connolly & Krueger 2006; Perry 2007).

4.1.3 Music publishing

Publishers are specialized in the marketing of creative works and exploitation of the associated copyrights (Frith 2004; Handke 2006a; Kessler 2006). Their revenues mainly come from royalties for recordings of songs (so-called mechanical reproductions), performances and synchronization (use in films) (e.g., WMG 2008). Since music publishers do not depend on successful recordings as much as record labels, and since they derive income from a variety of sources such as radio airplay, live performances or sheet music, their profits are more stable (Hull 2004; Enders Analysis 2007).

PROs collect royalties for the use of creative works from entities such as TV and radio for which it would be too cumbersome to negotiate individual agreements with each artist. These revenues are distributed amongst publishers, composers and lyricists based on the commercial success of their works (Frith 2004; Kessler 2006).¹⁰⁵ To participate in this income stream, collecting societies require authors to transfer their rights either exclusively (e.g., in Germany) or non-exclusively (e.g., in USA) (Hietanen & Oksanen 2004; Passman & Herrmann 2004; Passman 2006, p. 234).

¹⁰⁴ This property is the main reason why for example radio in the USA does not pay license fees to record labels (e.g., Enders Analysis 2007). Similarly, record labels do usually not make much money with music television (e.g., Hull 2004).

¹⁰⁵ PROs do not represent performing artists (Emes 2004, p. 199).

4.1.4 Historic development

Between the 1960s and the 1990s, the recorded music industry saw an impressive growth: Units sold grew around 5% per year, as Figure 4.3 illustrates. Rising prices caused an even stronger increase in revenues (Gronow & Saunio 1998, p. 137).

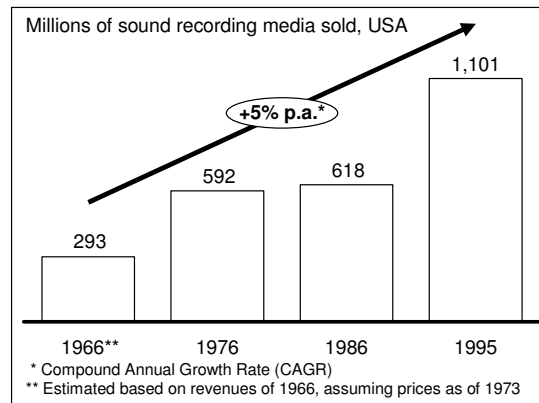


Figure 4.3 Market development of recorded music industry, 1966-1995
(own illustration based on Gronow & Saunio 1998, pp. 137, 193)

There are two main reasons for this development: the emergence of new musical styles and technological innovations. During the last 50 years, many musical styles were invented, including Rock'n'Roll, Punk, HipHop, and Dance music (Toop 1984; Frith 1988; Straw 1988). These new styles enabled the music industry to offer more appealing products and address new customer segments (Lopes 1992).

In addition, several technological advances favored the industry (Kulle 1998). In the 1970s, cassette tapes were introduced, which represented a more convenient medium than records, and enabled people to listen to music on the go. In the 1980s and 1990s, CDs propelled the consumer experience by offering better sound quality, easier use and higher durability (Renner 2004, pp. 19-25). Because of the medium's higher value, the industry underwent a boom in the 1990s as many people purchased the CD version of records or tapes they already owned (Kusek & Leonhard 2005). In addition, new media such as music television led to more exposure for artists, generating additional sales of their albums.

4.2 Digital technologies as discontinuous change

With the introduction of CDs in the 1980s, the music business switched from analogue to digital media. These media enabled perfect copies; in other words, reproductions without quality losses. In the early stages, private copying of CDs was not a concern as it required sophisticated and costly technical equipment. Thus, content and

physical media remained inseparable (Hass 2002). However, three technological developments removed this barrier. First, CD writers became affordable which enabled consumers to duplicate CDs at home (GfK 2007). Second, compressing algorithms such as MP3 reduced the amount of data associated with a CD, allowing music to be stored and played on regular computers (Carey & Wall 2001; Bakker 2005). Third, the emergence of the Internet as wide-area network and efficient distribution technologies such as file-sharing networks allowed users to exchange compressed digital files on a large scale (Alexander 1994a, 2002; Negroponte 1995). Together, these developments constituted a fairly radical change as they enabled consumers to obtain music for free. This change was disruptive for two reasons: First, it challenged the record labels' traditional control over manufacturing and distribution, two of their core competencies. Second, it threatened record labels' existing business model of selling music in physical formats. As a result, digital technologies can be considered discontinuous both from an organizational and a market perspective (Tushman & Anderson 1986; Henderson & Clark 1990; Christensen & Bower 1996).¹⁰⁶

4.2.1 Effects on music business

Digital technologies have had far-reaching effects on the industry.¹⁰⁷ Since its peak in the 1990s, the market for recorded music has declined by around 30-40% (IFPI 2004; Bundesverband Musikindustrie 2008). Rising online and mobile sales have not been able to offset the losses due to falling CD sales and are unlikely to be sufficient for top

¹⁰⁶ Christensen and co-authors (Christensen & Rosenbloom 1995; Christensen & Bower 1996; Christensen 1997) define disruptive technologies as ones having lower performance compared to established products and usually lower margins, but also have features that some customers value and the potential to out-perform existing products in the long term. Music downloaded from the Internet fulfills all of these criteria. The compressed files have an inferior sound quality and may promise lower margins (Enders Analysis 2007). The latter argument rests on the assumptions that consumers spend much less for music when they have the option to buy individual tracks instead of an entire album, and that the costs for producing and marketing music do not decline as strongly as the revenues (Enders Analysis 2007). Despite the lower sound quality, the convenience of non-physical products as well as the possibility to obtain music for free are appealing to some customers. Due to increases in bandwidth and storage, existing quality issues are likely to disappear. Thus, online music has the potential to outperform music sold in physical formats.

¹⁰⁷ Handke (2006b) characterizes the impact of digital technologies on the music business as a process of creative destruction (Schumpeter 1942). It is characterized by a high number of market entries by small record companies, which may lead to more diversity and further market growth.

line recovery in the near future (Enders Analysis 2007).¹⁰⁸ Figure 4.4 shows the decline of the market for recorded music in Germany between 1997 and 2008.

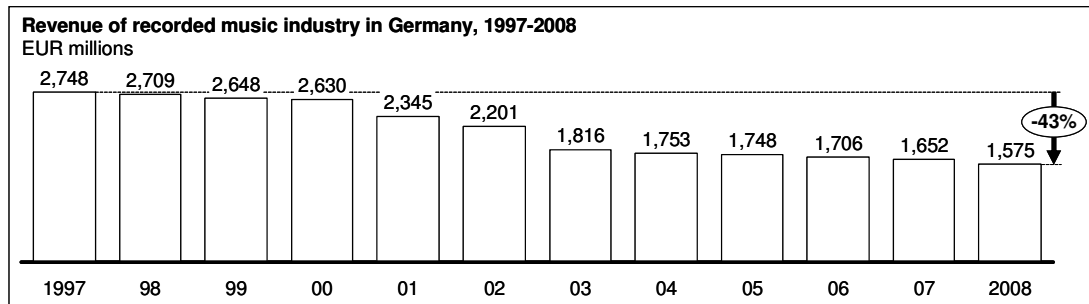


Figure 4.4 Revenue of recorded music industry in Germany, 1997-2008 (own illustration based on Bundesverband Musikindustrie 2008)¹⁰⁹

The explanations given for the economic trouble of the recorded music business are manifold. Piracy has unquestionably contributed to its decline (Liebowitz 2006, 2008; Zentner 2006, 2008). Other explanations include a reduced number of retailers carrying CDs (Hull 2004), strong competition from other entertainment products such as DVDs (Oberholzer-Gee & Strumpf 2007), non-competitive pricing of CDs (Kusek & Leonhard 2005), labels' slowness in creating compelling online offerings (Renner 2004, pp. 163-169; Emes 2004, pp. 67-78), cherry-picking behavior of consumers (Enders Analysis 2007), a lack of compelling music (Renner 2004, pp. 163-169) and an end of the atypically high sales in the 1990s caused by library replacements (Oberholzer-Gee & Strumpf 2007; Liebowitz 2004).

4.2.2 Reactions of music business

Record labels took several measures in reaction to the challenges posed by digital technologies.¹¹⁰ Besides fighting piracy and optimizing their traditional business to secure existing profits, they began to sell music online and exploit new revenue streams.

Fight piracy. Record labels perceive rampant piracy as the root cause for the decline in CD sales (IFPI 2006). Thus, taking actions against piracy is the logical re-

¹⁰⁸ Gordon (2005) and Kusek and Leonhard (2005) point out that despite the serious troubles of the recorded music industry, the music business overall is growing. Both the music publishing and the live entertainment sectors are in a good shape.

¹⁰⁹ Please note that none of the sales numbers provided in this thesis, e.g., like the ones in Figure 4.4, are inflation-adjusted.

¹¹⁰ Of course, digital technologies offer various advantages for record labels, too. These include more efficient production and distribution (Premkumar 2003; Lam & Tan 2001), more effective marketing (Clement & Schusser 2006), new business models (e.g., subscription-based services, superdistribution) (Vaccaro & Cohn 2004), new products (e.g., ringtones) (Hass 2002) and a broader product offering available to consumers (Anderson 2004; Dubber 2008).

sponse. The anti-piracy strategy of record labels is based on two elements: suing operators of file-sharing networks and individual file-sharers (e.g., Bach 2004; Bockstedt et al. 2006), and implementing DRM to prevent the copying of CDs and digital files (e.g., van Wijk 2002; Renner 2004, pp. 252-258).

Optimize traditional business. By lowering prices of CDs and introducing higher-value products like Super Audio CDs (SACDs) or music DVDs, record labels intended to make music as a product more appealing (Curien et al. 2004).¹¹¹ While the price cuts seemed to be successful (Bamert et al. 2005; Buxmann et al. 2005, 2007; König et al. 2006), the new media formats did not appeal to customers (Bundesverband Musikindustrie 2007; Kromer 2008). As a response to the shrinking sales, record labels also cut their costs by trimming down the artist roster, dismissing staff, cutting A&R and marketing budgets, consolidating operations, and merging with competitors (Renner 2004, pp. 75-83; Jakob 2005b; Enders Analysis 2007).¹¹² By reducing costs, record labels also managed to reduce the break-even points of records, thus making more releases economically viable.

Sell music online. Three years after the emergence of the popular file-sharing network Napster, record labels launched their own digital music services in 2001 (e.g., Easley et al. 2003; Gordon 2005, pp. 88-92).¹¹³ Literature provides several explanations as to why record labels embraced the new opportunities created by digital technologies rather slowly. While some sources stress the complexity of creating legal offerings, e.g., through time-consuming clearings of rights (e.g., Heise 2000; Renner 2004, p. 157; Clement & Schusser 2006), most authors believe that record labels lacked the willingness to offer music in the Internet (e.g., Kretschmer et al. 2001; Kusek & Leonhard 2005; Steinkrauß et al. 2005). As Gordon (2005) believes, “*the labels didn’t really want to compete with Napster. They wanted to kill Napster and discourage online delivery of music by keeping the price high and the content difficult to access. They wanted to retain the old way of doing business that made the labels so profitable in the first place*” (p. 88). Given the highly successful CD business and the lower profitability of online

¹¹¹ Increasing attractiveness or lowering prices of legal products can also be an effective means to fight piracy (Gopal and Sanders 1997; Curien et al. 2004; Watt 2004).

¹¹² One of the main reasons for the growing market share of independent labels is the layoffs some artists are experiencing by major record labels. Independent labels signed many of these artists since their lower cost base enabled them to produce and market this music profitable (Kessler 2006).

¹¹³ The first regional online services were already launched in 1998 (Renner 2004).

music, record labels' prudent moves into the online business are comprehensible.¹¹⁴ Their actions are also in line with the known difficulties incumbents have in coping with technologies that have lower performance and margins (Christensen & Bower 1996).

Find new revenue streams. To compensate the losses in their traditional business, record labels were eager to tap into additional income streams. For example, they intensified their efforts to license their music to video games, films and advertising and began to sell it in new formats such as ringtones (Emes 2004, p. 48; Kromer 2008). Additionally, several record labels explored new business models such as advertising-funded services which are free for consumers (Kirkpatrick 2006; DataMonitor 2007; Leonhard 2008). While record sales were falling, the popularity of concerts increased steadily over the past years (Krueger 2005; Connolly & Krueger 2006). Record labels tried to take advantage of this trend by participating in this income stream as well. EMI, for example, advanced Robbie Williams USD 20 million for a share of his income from concerts and other non-recording activities (Hull 2004; Emes 2004, p. 59). Such deals, usually referred to as "360 degree" contracts, enable record labels to diversify their revenue streams and profit more strongly from their investments in artists (IFPI 2008; Curien et al. 2004; Stein et al. 2005).

4.3 Value appropriation in the music business

4.3.1 The impact of digital technologies

In the pre-Internet era, record labels were positioned favorably to appropriate value from their content. The appropriability regime was tight as music was hard to copy due to its strong connection to a physical sound carrier medium; strong promotional power and control of distribution channels served as effective complementary assets. However, the emergence of digital technologies has clearly weakened the appropriability regime

¹¹⁴ Online music "allows consumers to 'cherry-pick' the tracks they really want, instead of forcing them to buy whole albums" (Enders Analysis 2007, p. 1). Due to this unbundling of music, most consumers spend significantly less for online music than they used to spend for CDs. For most record labels, this change in consumer behavior makes online music less profitable than CDs. Carl Mahlmann, an EMI executive, confirms that such considerations deterred record labels from offering their music online: "People expect much lower prices in the Internet. However, we cannot make offers that hurt our CD business." (Obermeier 2000)

for recorded music since musical content could be easily copied without quality losses and shared on a large scale (van Wijk 2002).¹¹⁵

4.3.2 Improving conditions for value appropriation

To reverse the effect of digital technologies and strengthen the appropriability regime, content providers have relied on three strategies: taking legal action against copyright infringers, implementing technical means to prevent piracy, and lobbying to tighten copyright laws.¹¹⁶

Take legal actions against copyright infringers. In 1999, the recording industry began taking legal steps against file-sharing networks and web sites that violated its copyrights (Hull 2004; Koster 2008). These lawsuits led to the shutdown of many popular online music services, including Napster, KaZaA and MP3.com (IFPI 2008). In 2003, record labels also began suing individual users of file-sharing networks (Bakker 2005; Tang 2005). At peak times in 2006/07, the industry initiated around 1,000 lawsuits per month against private file-sharers in Germany alone (Röttgers 2006). Figure 4.5 shows the massive growth in the number of civil cases in Germany since 2004.

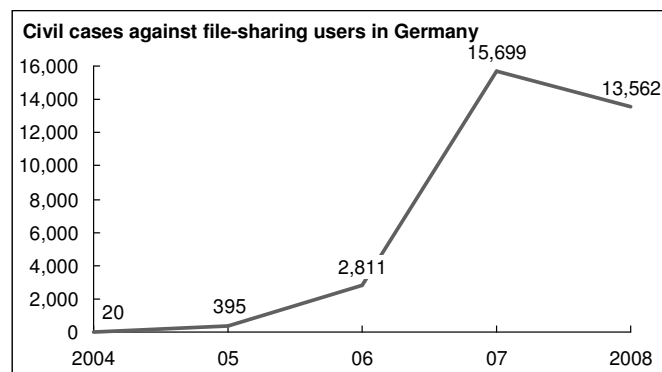


Figure 4.5 Civil cases against file-sharing users in Germany (own illustration based on Bundesverband Musikindustrie 2008)

Implement technical means to prevent piracy. As discussed in Section 3.3.2, anti-copying mechanisms such as DRM raise the barriers of replication (van Wijk 2002). By

¹¹⁵ The effect of digital technologies on record labels' complementary assets is hard to determine unambiguously. While several authors argue that the Internet reduces the importance of some of their capabilities like marketing, manufacturing or distribution (Clemons et al. 2002; Graham et al. 2004; Lewis et al. 2005; Bockstedt et al. 2006), others see possibilities to strengthen capabilities like sales and service, e.g., through instantaneous delivery or individualized products (Worren et al. 2002; Anding & Hess 2004; Horn et al. 2004; Leonhard 2008).

¹¹⁶ Kovarsky (2006) considers copyright enforcement and technical protection means as substitutable means of regulating access to creative works. For less sophisticated audiences, he proposes the use of DRM, for more sophisticated ones, he considers copyright to be more effective.

making duplication difficult and costly, music purchasers are expected to see buying legal copies as a more attractive alternative (Sundararajan 2004; Fetscherin 2005; Kiema 2008).¹¹⁷

Tighten copyright laws. Content industries have strongly pushed for the strengthening of copyright laws in two aspects (Ganley 2004; Lessig 2004a; Tang 2005; Duchêne & Waelbroeck 2006; Bates 2008). First, they intended to criminalize circumvention of DRM to increase its effectiveness. Second, they wanted to raise penalties in order to impose a greater risk to copyright violation.¹¹⁸ At the moment, the current legal strategy of the recording industry focuses on encouraging Internet Service Providers (ISPs) to take responsibility for piracy, as John Kennedy, CEO of IFPI, declares: “*There must be obligations on the ISPs to warn, suspend and eventually disconnect infringing users and to apply filtering measures*” (IFPI 2008, p. 2).

Discussion. All attempts to adjust IP legislation and introduce technical protection measures can be regarded as an effort to strengthen the appropriability regime for music (van Wijk 2002); the effectiveness of these actions, however, is unclear. As highlighted in Section 3.3.3, many authors doubt that DRM is able to contain piracy in the presence of file-sharing networks and unprotected legacy content (Biddle et al. 2002). Lawsuits against individuals or operators of file-sharing networks, as well as attempts to change laws, are commonly regarded as more effective (e.g., Gopal & Sanders 1997; Bhat-tacharjee et al. 2006b).

While legal actions leading to the shutdown of illegal file-sharing systems may reduce the supply of free music, systematically suing individual copyright violators increases the costs of file-sharing and may thus reduce the demand for it (e.g., Becker & Clement 2006). Several studies claim that the increased probability of getting caught, a consequence of the massive amount of litigation, has caused a decline in piracy (e.g., Schwartz 2004; IFPI 2006). For example, Rainie & Madden (2004) report a 50% drop in the number of file sharers after the RIAA began filing suits. However, the reported

¹¹⁷ Another technical means to prevent copying is the bundling of music with a non-copyable product (van Wijk 2002). An example could be a CD that comes with an autograph signature or that grants exclusive access to concert tickets. Flooding file-sharing networks with corrupted files to make illegal downloading frustrating is another example of a technology driven strategy to prevent piracy (Fetscherin 2005).

¹¹⁸ Recently passed laws include the “No Electronic Theft (NET) Act” of 1997 or the “Digital Millennium Copyright Act (DMCA)” of 1998 which prohibit the circumvention of technical protection measures (Merges et al. 2000; van Wijk 2002) as well as the “Sonny Bono Copyright Extension Act (CTEA)” of 1998 which extends the duration of copyright. For example, the DMCA is the implementation of two 1996 treaties of the World Intellectual Property Organization (WIPO). Consequently, comparable laws were introduced in other regions of the world as well (Helberger 2006).

numbers raise some doubts as the number of file sharers in Europe in 2007 was roughly the same as in 2003 (IFPI 2008).¹¹⁹ In support of this, there is some evidence that former file sharers continue to pirate music using other means like stream ripping or exchanging music offline (GfK 2007).¹²⁰ It can also be argued that the ongoing lawsuits may accelerate the development of more advanced and anonymous file-sharing networks (Clement & Schusser 2006).

Preparing legal actions, lobbying for more strict copyright laws and designing protection technologies requires significant management attention. Several authors believe that “*investing 90% of its efforts*” (Wigand 2003, p. 270) into such activities distracts the recording industry from exploiting the new opportunities and makes them believe that sticking to the old business models is a viable option (Gordon 2005, pp. 88-92; Kromer 2008; Wigand 2003). Furthermore, public attention on these issues creates the perception that file sharing “*is the best way of getting music*” and “*force[s] customers to focus on and talk about stupid counterproductive stuff instead of focusing on music, per se*” (Peter Fader [Gordon 2005, pp. 112-113]). Besides, the lawsuits initiated by record labels harm their reputation (Bach 2004; Gordon 2005, p. 112f.).

Given the drawbacks of these approaches to strengthen the appropriability regime, some content providers decided to fight piracy by improving their complementary assets position (Fetscherin 2005, 2006). In particular, they attempted to provide consumers with a better sales experience and a superior product, to improve their reputation, and intensify the relationship with their fans.

Provide better sales and service. File-sharing services have a number of quality issues such as unreliable and slow downloads, poor sound quality, and viruses and spam (Bakker 2005). These problems enable paid services to outperform illegal services (Kusek & Leonhard 2008; Leonhard 2008). In addition, paid services can score with features such as cover art, exclusive access to concert tickets, recommendations of new music based on previous purchases, and combinations of digital and analogue products (Renner 2004, p. 259; Bakker 2005; Clement & Schusser 2006).

¹¹⁹ Maffioletti and Ramello (2004) argue that the potential risk for a user of actually being caught is too low to deter people from piracy.

¹²⁰ In this context, stream ripping denotes the process of capturing the media stream from a source on the Internet, such as a web radio, storing it on a hard disk and decomposing it into individual songs. Since software programs for stream ripping are highly automated, this technique enables users to easily obtain a large amount of music. In contrast to file-sharing, this technique does not require cooperation with other users since the content is retrieved from public sources on the Internet.

Build reputation and a relationship with fans. Most users know that downloading music from file-sharing networks is illegal (GfK 2007). By creating a trust-based relationship with their customers, record labels may create loyalty (Leonhard 2008) and convince file sharers to change their behavior (Gupta et al. 2004; Coyle et al. 2009). By abstaining from technical protection measures and launching campaigns like “*No Copy Protection – Respect the Music*” (Röttgers 2004), various record labels have attempted to improve their image and strengthen the connection with their fans, hoping that fans who feel appreciated will buy more and pirate less (see Chapter 5). To amplify this effect, some record labels and artists even release music under a CC license which grants users the freedom to share and modify their works (see Chapter 6). Evidence for the viability of such a strategy exists: For example, citizens tend to be more compliant with laws, e.g., show a higher tax morale, if they feel trusted and perceive laws to be fair (Thibaut & Walker 1976; Tyler 1990).

4.4 Intermediate conclusion

In summary, actors in the music business reacted to the challenges posed by digital technologies in one of two ways. Some attempted to strengthen the appropriability regime via legal and technical measures, while others abstained from such actions and focused on their complementary assets and capabilities. For example, all major record labels used to actively enforce their copyright and employ DRM. In contrast, most independent labels neither enforced their copyright against consumers nor protected their content with copy protection technology. Some artists even legalized sharing of their music through CC licenses.

Given this continuum of protection and openness as well as the strong variation between different actors in the way they treat their IP, the music business is ideally suited to study the question of why some actors move towards a more “open” model while others maintain their traditional “closed” one.

This thesis researches the actions of abolishing full DRM and adopting CC licenses as two stages of openness. As the use of CC licenses constitutes the more significant deviation from the traditional practices, focus is put on this phenomenon. Using qualitative research methods, Chapter 5 studies the use of DRM. With the same techniques, Chapter 6 explores the use of CC licenses. Chapters 7, 8 and 9 concentrate on quantita-

tive aspects and examine artists' motivations for using CC licenses, the adoption of CC for music, and consumers' perception of CC-licensed music, respectively.

5 Exploring the use of Digital Rights Management

Most business models in content industries, including music, are based on control over distribution. Therefore, most record labels relied on the power of copyright as well as technological means such as DRM. However, employing copy protection yields some severe disadvantages. These drawbacks convinced record labels to abstain from such technology at different points in time. This chapter aims at studying the changes and differences DRM policies between firms, and their impact on the market.

5.1 Research questions

The use of DRM is a logical response to the harm caused by piracy (see Section 3.4.1). While the disadvantages associated with such technology may explain why record labels waive its use (see Section 3.3.3), it remains unclear why the attitudes of record labels towards DRM differ. In addition, the triggers for changes in their DRM policies are not well understood. It is also not yet agreed upon whether more or less protection eventually leads to higher sales. By answering these questions, this chapter contributes to our understanding of the drivers, evolution and impact of openness.

5.2 Research design

5.2.1 Data collection methods

Exploratory qualitative research was considered most suitable for understanding the differences in the use of DRM and analyzing the underlying drivers (Eisenhardt & Graebner 2007; Snow & Thomas 1994).¹²¹ Its purpose was to gain a deeper understanding of the relevant relationships and developments. This study used two techniques for data collection: semi-structured interviews and document analysis.

The semi-structured interviews aimed to explore the opinions of different market participants on DRM. They were conducted using an interview guide to steer the discus-

¹²¹ Edmondson and McManus (2007) suggest the use of quantitative techniques or precise models where mature theory exists and qualitative techniques where theory is nascent. Given the recent changes in the DRM policies of record labels, qualitative methods were considered to be most effective for studying the proposed research questions.

sion (Stier 1999, p. 188; Schnell et al. 2005, p. 322). Its use ensured comparability of the obtained answers and left enough room to address new questions and give respondents room to express their views (Hopf 1978, 1995; Scheele & Groeben 1988, p. 35f.; Flick 2005, p. 128). When new insights emerged, the guide was adjusted accordingly (Eisenhardt 1988). Its final version can be found in Table A.3 in Appendix A.1. Due to the different roles of the interview partners, not all questions could be applied to each case. In total, 26 interviews were conducted between March 2008 and February 2009 in one of three methods: in person, by phone or by e-mail. The interviews lasted 39 minutes on average. Most interviews were recorded and transcribed into written English or German.¹²² Confidentiality and anonymity were assured to create a risk-free environment. Table A.2 in Appendix A.1 lists all interviewed institutions including the interviewees' positions as well as type and length of interaction.

In addition, publicly available documents served as an important source of information (Corey et al. 1990). These included newspaper articles, industry-specific magazines, press releases, presentations and notes from conferences. Given the broad coverage of the music business and DRM in the media, plenty of information could be retrieved from these sources. This data served as an additional source to corroborate findings from the interviews. It also provided valuable information on firms' actual DRM policies since changes in the deployment of DRM were usually announced in press releases and/or commented in newspapers.

5.2.2 Data sources and sample

This study aimed at covering all relevant classes of stakeholders being affected by the use of DRM.¹²³ Record labels (7 interviews) and retailers (10 interviews) constituted the core of interview partners since they jointly decide whether DRM is used or not. Retailers were considered due to their extensive customer contact which enables them to comment on consumers' views on DRM as well as its impact on sales. Despite the fact that major labels account for approximately 75% of the total recorded music market (IFPI 2005), most interviews were conducted with comparably small independent labels. This is mainly because the actions of major labels receive broad attention in media and thus much information on their DRM policies is publicly available. In contrast, the far less known attitudes of independent labels had to be explored in interviews.

¹²² In two cases, handwritten notes were taken instead since permission to record was not granted.

¹²³ Consumers were excluded since their views on DRM are very well understood (see Section 3.3).

Content aggregators (3 interviews) are intermediaries who prepare the music of independent labels for online sales. Since they deal with both record labels and retailers, they usually have a good view on market dynamics as well as the views of their business partners. Technology providers (3 interviews) build and sell DRM systems to record labels and retailers. They can outline the use of DRM over time and characterize changes in the demand and views of their main customers, record labels and retailers. Experts (2 interviews) with a high profile in the music business are considered to verify provisional propositions. Table 5.1 lists all 26 interviewed institutions.¹²⁴

Record labels	Retailers	Content aggregators
<ul style="list-style-type: none"> • Cherry Red Records • Defbeat • Four Music • Kitty-Yo • Magnatune • Naxos • Warner Music Group 	<ul style="list-style-type: none"> • Akuma • Amie Street • CD Baby • Ezmo • Finetunes • Kazzong • Musicgremlin • Musicload • Prefueled • Simfy • Spiralfrog 	<ul style="list-style-type: none"> • Ioda • Kontor New Media • Zebralution
Technology providers		Experts
<ul style="list-style-type: none"> • CoreMedia • SDC • SunnComm 		<ul style="list-style-type: none"> • Berlecon Research • VUT

Table 5.1 Interview partners for DRM study

To ensure reliability, multiple participants from each group were included. To account for all relevant differences in views and policies, firms whose DRM policies varied strongly or which were expected to be representative for a larger group were given preference (Bortz & Döring 2006, p. 336; Eisenhardt & Graebner 2007). In addition to different types of firms, the sample included firms of different sizes, ranging from small (e.g., Kitty-Yo) to large (e.g., Warner Music Group (WMG)). To account for regional differences, firms from different geographical areas were considered: 17 firms were located in Europe, eight in North America, and one in Asia.

5.2.3 Data analysis

The interviews and archival data were analyzed using the qualitative content analysis technique (Mayring 2002, 2004). Based on extant literature and initial hypotheses, a coding scheme was developed to categorize the available content (Glaser & Strauss 1967; Bortz & Döring 2006, p. 330). The interviews were continuously categorized and codes revised, when necessary (Miles & Huberman 1994, p. 65). The final coding

¹²⁴ For reasons of anonymity, experts and content aggregators are considered as one group, named “Content aggregator”, when discussing the results in Section 5.3.

scheme consists of 179 codes at four levels.¹²⁵ Qualitative research, in particular interviews, is difficult to repeat (Lamnek 1993, p. 177; Bortz & Döring 2006, p. 327). Nevertheless, this work achieves a decent level of objectivity, reliability and validity (Flick 1987; Kvale 1988). First, information was collected from a broad range of sources and covered the perspectives of different stakeholders. Second, proven techniques of qualitative research including standardized procedures were used when applicable (Kirk & Miller 1986; Miles & Huberman 1994, p. 278f.).

5.3 Results

This section presents the results of the qualitative study. Its key goal is to create a better understanding of firms' motivations in choosing a weaker level of protection; in other words, to become more open. First, the main reasons for giving up DRM are recapitulated (5.3.1). After that, the history of DRM (5.3.2) and differences in stakeholders' attitudes towards it are analyzed (5.3.3). Lastly, an attempt is made to determine the market impact and competitive importance of DRM (5.3.4). Special focus is put on similarities and differences in the views of interview partners. Anonymous quotes and other empirical evidence substantiate propositions.¹²⁶ Key findings are summarized as stylized facts.

5.3.1 Benefits and drawbacks of using DRM

The level of utilization of DRM is mainly driven by the perception of its benefits and drawbacks. Since the interviewees largely confirmed all pros and cons presented in Section 3.3, it just remains to highlight such benefits and drawbacks associated with DRM which received particular support in the conversations.

Benefits. Unauthorized reproduction of music has caused significant damage for the music business. Thus, its reduction was and still is a priority for record labels. Among others, DRM was regarded as one measure to fight piracy, as Gerd Gebhart, a WMG executive, confirms: "*We have to do this. Otherwise we are out of business soon*" (Die Welt 2001). "*As long as there is a flagrant imbalance between illegal and legal*

¹²⁵ The coding scheme was implemented in NVivo 7, a software for qualitative content analysis. An excerpt of the coding scheme can be found in Table A.4 in Appendix A.2.

¹²⁶ German quotes were translated into English. For reasons of anonymity, they are not explicitly marked.

downloads, you cannot blame anyone for protecting his IP" (Michael Haentjes, CEO of independent label Edel [Bundesverband Musikindustrie 2007]).

Control over distribution channels is one of the primary assets of record labels (Lopes 1992; Hull 2004). However, digital technologies have taken away this power from record labels to a large extent as they enable consumers to share music and artists to distribute their music independently. Record labels perceived DRM as a tool to restore control. *"Record labels' biggest fear (...) is to lose control. DRM always gave them a feeling of 'I can still control it'"* [Retailer]. Maintaining control had a second benefit: Record labels could set the speed of the transition towards the Internet. *"There was a desire to explore these things, but there was also a desire to balance that with the risks from piracy"* [Record label].

Besides securing the traditional business of record labels, DRM is an enabler of new business models. A McKinsey quarterly article from 2001 indicates the growth DRM could unleash: *"If consumers instead paid an average monthly subscription fee of, say, USD 10 for 'all-you-can-eat' access to music, they would receive a superior value proposition – access to the entire catalogue – and spend twice as much (USD 120). In that endgame, global industry revenues could double, to USD 80 billion, from today's 40 billion"* (May & Singer 2001). Given this potential upside, it is not surprising that the first offerings available online were all subscription-based and, consequently, DRM-protected.

Drawbacks. Given the lack of a common DRM standard, many customers encountered problems when they attempted to play music purchased from one retailer on a device which used a different DRM technology. Since customers demand interoperability (Dufft et al. 2004), DRM alienated and frustrated customers. *"98% of all the questions we have at our customer support are not related to our product offering or new releases – it's always related to why the hell are we selling DRM files"* [Retailer]. Given the unwillingness of technology companies to agree on a common standard, *"there was really only one solution to that [problem], which was to remove DRM and go MP3"* [Record label].

DRM imposed restrictions on consumers they were not used to. *"If I buy a CD for nine dollars (...), I can copy it, I can do whatever I want, I can share it with friends, I can upload it onto my computer (...) – to me that standard should sort of be employed in the same way with downloads"* [Retailer]. Not permitting such uses, DRM experienced low acceptance among consumers as it was perceived to reduce the value of products

and prevent legitimate uses. In addition, customers had an attractive alternative to buying DRM-protected content: file sharing. *“It is not that consumers don’t have a choice. They can simply copy it illegally”* [Technology provider]. Eventually, the conflict between the restrictions imposed by DRM and customers’ expectations resulted in a *“market pressure from customers (...) which became so large so that [the record labels] had to give in”* [Technology provider]. Furthermore, market research of record labels indicated that DRM reduced consumers’ willingness to pay. For example, an experiment conducted by EMI revealed that consumers were willing to pay approximately 30% more for music in open formats (Nolde & Winckler 2007).

Incidents like the SonyBMG rootkit scandal (see Section 3.3.3) created a lot of negative press for record labels and harmed customer relations. *“This resulted in an incredibly negative atmosphere”* [Content aggregator]. Therefore, one retailer criticizes the use of DRM. *“We felt that one of the worst decisions the music industry ever made was to take advantage of people and treat customers like criminals before they even committed any crimes”* [Retailer]. By contrast, some firms gained reputation and positive attention by deliberately avoiding DRM. For example, Amazon reported that it had *“received thousands of e-mails from our customers since our September launch thanking us for offering the biggest selection of high-quality, MP3 audio downloads which play on virtually any music device they own today or will own in the future”* (Bill Carr, VP Amazon [WMG 2007]). Independent labels vocally increased their distance from the major labels’ use of DRM in order to improve their reputation and relationship to consumers (Wilson 2006). Some of them even put a note labeled *“No Copy Protection – Respect the Music”* (Röttgers 2004) on all released CDs.

In 2007, it was estimated that worldwide spending on DRM would reach USD 1 billion that same year (The Insight Research Corporation 2007). While this number covers all industries, it gives an idea of the substantial costs that DRM can involve, in particular for small firms. *“It is very costly to implement [DRM]. (...) Besides, we would likely end up with 20,000 support requests within three days which we would have to answer. In that case, we could shut down our business”* [Retailer]. Despite the significant setup and maintenance costs for a DRM infrastructure, such technology is commonly perceived to be relatively ineffective in achieving its main goal of reducing piracy. *“One of the reasons [for not using DRM] is (...) simply that there is no DRM which offers a sufficient level of protection”* [Content aggregator]. *“Considering the fact that people could just go buy a CD and get it from a CD, the whole idea [of using DRM] has never*

made sense to us” [Retailer]. Besides, the restrictions imposed by DRM may even encourage some users to turn to illegal services, as Steve Ballmer, CEO of Microsoft, admits: “*Part of the reason people steal music is money, but some of it is that the DRM stuff out there has not been that easy to use*” (Doctorow 2004).

The market of paid downloads is currently dominated by Apple’s iTunes store. Until recently, iTunes was the only online store to sell major label content which could be played on the iPod, the world’s best selling music player (Cruz 2007; Dalrymple et al. 2009; Delahunty 2009). By dropping DRM, record labels expected to foster competition and create a more vital market. “*The record companies, I think, have tried to convince Apple to open up their system. I don’t think that’s been successful. The choice now is to either go unprotected so everybody has the same shot and the market expands, or to continue down what I think is an unfriendly path for consumers and the industry, because I don’t think it’s growing as fast as it can*” (Hilary Rosen, former RIAA chairman [van Buskirk 2006]).

Change over time. The previous paragraphs summarized the main benefits and drawbacks that record labels and other market participants saw in the use of DRM. However, it is important to note that the perception of these pros and cons evolved over time. “*The entire industry has learned to rethink its actions in the past years*” [Retailer]. In particular, three factors supported this change: learning, need and renewed leadership.

First, as the music business gained experience, its evaluation of the effectiveness of DRM became more accurate. “*In the beginnings, one assumed by mistake that employing DRM would help to protect music from illegal dissemination*” [Retailer]. Second, the challenging economic situation increased record labels’ willingness to experiment and give up some level of control. “*I mean the labels are desperate, no doubt about it*” [Retailer]. The fact that EMI was the first major label to give up DRM is in line with this argument (Süddeutsche Zeitung 2007). “*EMI is one of the companies in the music industry that have been most in trouble over the last couple of years, and I think they needed to change strategy to hopefully gain online what they have lost in the real world*” [Retailer]. Third, record labels’ leadership teams changed dramatically within the last years. Younger executives, many from outside the music business, replaced older ones who had put stronger focus on protecting traditional business models and lacked a decent understanding of digital technologies. For example, Universal’s chairman Doug Morris admits that in the early days of the Internet, his firm “*didn’t have*

anyone who understood technology” (Goldstein 2003b). Again, the case of EMI supports this proposition: Being owned by the private equity firm Terra Firma, which brought in several executives from outside the music business (Masnick 2008b), change for EMI may have been easier compared to the other major labels.

5.3.2 Use of DRM over time

Currently, music is primarily sold in three forms: CDs, online downloads and, mobile downloads. This section explores the use of DRM for each of these media.¹²⁷

CDs. Compact Discs (CDs) are optical discs that store digital data. Developed in the early 1980s, they replaced tapes and vinyl records and became the standard physical medium for commercial audio recordings. Although the official CD standard did not specify any security mechanism, most consumers were initially not able to copy CDs as this required costly special-purpose hardware. Since 1999, three technological developments have enabled users to copy and share music without loss of quality on a large scale. These included increased storage capacity and processing power on personal computers, the emergence of the Internet and peer-to-peer networks, and the invention of MP3 as an efficient compression technology for music. Since file sharing has caused major losses for the music business and most of the shared music originated from CDs, all major labels started to copy protect CDs around 2000/01 (Stern 2000; AP Worldstream 2001; Computerwoche 2001). *“They were looking at their declining sales, and they were looking for ways to sure that up”* [Technology provider].

Copy protection schemes manipulate the structure of CDs to prevent them from being copied via computers (Röttgers 2004). However, these technologies have caused some frustration with customers as they frequently prevented playback on computers, in CD drives of certain cars and on advanced hi-fi systems, too (Stern 2000). Given the practical issues involved with the existing copy protection systems, less than 5% of all CDs released in 2001 contained DRM – far less than initially announced (Eberenz 2001; Focus 2001). As technology advanced, the use of DRM increased.¹²⁸ For 2005, estimates on the proliferation on copy protection for CDs reached up to 40% (Spiegel Online 2004).

¹²⁷ The use of DRM varies between different countries and among firms. For reasons of readability, this section studies the use of DRM mainly in one country, Germany, and focuses on the major record labels. Differences between major and independent labels are highlighted in Section 5.3.3.

¹²⁸ More elaborate copy protection technologies avoided some of the problems mentioned earlier and usually permitted a limited number of copies (E-Market-Online 2003; Röttgers 2004).

While the use of DRM increased slowly since 2001, the so-called “SonyBMG Rootkit Scandal” abruptly ended this development. In 2005, SonyBMG released copy-protected CDs which contained software that caused a huge uproar among consumers; a program was automatically installed on a computer without user agreement once a CD was inserted into the CD drive. The application opened up security holes and made computers vulnerable to remote attacks (Patalong 2005). Many customers, as well as the press, complained heavily about SonyBMG’s behavior for not taking this matter seriously enough or even sued the record label (Patalong 2005).¹²⁹ *“There were weeks when I got as many as 10,000 e-mails from students during this particular time copying the president of SonyBMG, and anybody else that could be copied, (...) saying that the company was basically the devil”* [Technology provider]. Given these negative sentiments, SonyBMG halted manufacturing of such CDs, exchanged all affected discs and offered reimbursements of up to USD 150 per customer (Schwab 2007). *“The wave of people who were against digital rights technology, any kind of DRM on CDs, was just overwhelming to the record companies, which were already experiencing declining sales, and worried that anything they would do to really tick off a consumer was not going to be a good thing”* [Technology provider].

While the other major labels did not experience comparable incidents, all of them stopped to copy protect their CDs until 2007 (VNUNet 2007a, 2007b).¹³⁰ Customer complaints constituted the main driver for this decision, as a statement from Tim Renner, then-CEO of UMG Germany, illustrates: *“When we received a lot of complaints from desperate consumers after the introduction of the fourth Cactus generation [a new copy protection technology], we decided within the German section of Universal to use a small trick. From mid of 2003 on, we distributed CDs which were explicitly marked as being copy protected, but which did not contain any system for protection”* (Renner 2004, p. 253).

Stylized fact 1: Record labels introduced DRM for CDs around 2001 to halt piracy. Driven by customer complaints, they abolished it again between 2003 and 2007.

¹²⁹ For example, Thomas Hesse, then Global Digital Business President at SonyBMG, told a reporter: *“Most people, I think, don’t even know what a rootkit is, so why should they care about it?”* (Wikipedia 2009b).

¹³⁰ Record labels usually announced the introduction of copy protection technology in order to signal that they were taking actions against piracy. However, they hardly declared publicly when they decided to drop copy protection for CDs in order to not encourage copying. Thus, the exact dates when record labels gave up the use of DRM for CDs are hard to determine.

Online. As a response to illegal services, major labels launched first pilots to make their content available online in the late 1990s (Renner 2004, pp. 139-143). In 2001, the first substantial offerings emerged (e.g., Gordon 2005, pp. 88-92). These services were subscription-based and came with strong DRM, reflecting the record labels' desire to control the use of their content and prevent piracy. By placing maximum emphasis on protection, the major labels sacrificed convenience and flexibility, as a product review noted: "*As suspected, Phonoline prioritized the prevention of illegal copies over usability and customer service*" (Schönert 2004). None of these early offerings succeeded commercially due to a variety of factors, including high prices, small product portfolio, low usability and restrictive usage rights (e.g., Lemkuhl & Remke 2002; Howe 2003; Lang 2003).¹³¹

In 2004, Apple launched its iTunes music store which "*place[d] substantially fewer restrictions on a customer's ability to download, share, and burn purchased MP3 files, at the risk of facing higher levels of piracy*" (Sundararajan 2004, p. 288). This service fueled the growth of the market for legitimate digital music and soon reached a market share of approximately 70%. While Apple created a service that satisfied many customers, its products did not work together with the services and devices offered by competitors.

Record labels always pursued the goal of establishing full interoperability in the market for digital music, as Edgar Bronfman, CEO of WMG, stresses: "*We of course want consumers to seamlessly access our music and to use the music they have purchased on any platform and with any service, physical or digital*" (WMG 2006). As a result, they initiated, for example, the Secure Digital Music Initiative (SDMI) in 1998 to establish an open standard for online distribution of music with built-in rights management (Rosenblatt et al. 2002, pp. 132-143). Despite this effort, SDMI ceased operations in 2001 because the interests of the involved consumer electronics firms differed strongly from those of the record labels (Buhse 2004, pp. 175-189). Given Apple's dominant market position and its unwillingness to license its proprietary DRM system to competitors (Jobs 2007), abolishing DRM remained the only manageable solution to establish interoperability. From 2006 on, all major labels began conducting trials with DRM-free downloads (Eichhof 2007). In April 2007, EMI was the first one to make its

¹³¹ The "Music on Demand" service launched in Germany in 1997 serves as an example for the excessive prices charged by the first services. It billed customers more than EUR 30 for a complete album, roughly twice as much as the regular retail price. On top of that, customers had to pay around EUR 7 for the file transfer (Renner 2004).

entire repertoire available without any DRM restrictions (EMI 2007a). Within one and a half years, Universal, WMG and SonyBMG followed suit (Christman 2007; Heise 2009). In several cases, the transition from full to zero copy protection involved an intermediate step: the use of watermarking technology. While watermarks lack the intrusiveness of regular DRM systems, they enable content owners to uniquely identify songs and control for their unauthorized distribution via file-sharing networks (Rosenblatt et al. 2002, pp. 100-105). Thus, they act like a “*license plate (...). While speeding, you never know whether you will be caught or not*” [Record label].¹³²

Stylized fact 2: *In the beginnings, record labels relied on restrictive DRM technology as they regarded maximum security as a key requirement for online distribution of music. Over time, they relaxed the imposed restrictions and eventually dropped DRM completely around 2007/08 to ensure full interoperability.*

Mobile. In contrast to paid downloads via the Internet, DRM is still standard for wireless downloads of full-track music files to mobile devices, so-called over-the-air downloads (König et al. 2006; Koranteng 2008). A higher degree of standardization causing fewer issues with interoperability facilitates the success of DRM for such mobile services (Hartung 2003). For example, the DRM system developed by the Open Mobile Alliance (OMA) “*is by now implemented on more than two billion mobile phones. (...) There is no DRM system that is available on more devices*” [Technology provider]. While this solution provides a decent user experience, problems occur if users transfer songs purchased with their mobile phones to their computers and vice versa (Grote 2007). Consequently, some mobile providers abolished DRM as well. Mobile entertainment provider Jamba, for example, announced in 2008 that it was “*excited to be the first company in Europe to deliver DRM free music to customers on both the mobile and PC*” (Reuters 2008).

Discussion. So far, this section has discussed the use of DRM for music sold as CDs, online downloads, and mobile downloads. For these products, a clear decline in the use of DRM was detected; however, these offerings are not the only ways to obtain music. Consumers may, for example, pay a regular fee for a digital radio service in order to get unlimited access to a number of channels as long as they continue paying. Furthermore, they may purchase music in other formats such as *ringtones* (the sound

¹³² Turning away from DRM as the main tool to fight piracy may have been encouraged by the perceived effectiveness of legal measures, too. In all major countries, record labels took legal actions against file-sharers. While the impact of these lawsuits on piracy is hard to determine, several interviewees believed that these measures reduced the amount of piracy and, indirectly, the need for technical protection. “*By now, a lot of users know someone who has been sued. This creates some respect for IP*” [Retailer].

made by a phone to indicate an incoming call) or *ringbacks* (the sound heard by the calling party after dialing before the call is answered). For all of these offerings, DRM is still common. *“There’s ringbacks, ringtones, there’s music in your car through a digital radio and other systems, that all has DRM. I think mostly they’re going to try and keep control except in those areas where it’s just too expensive”* [Record label]. Thus, despite the declining use of DRM for several formats, one may argue that there is no overall trend in the music business towards designing more open products or granting users more rights. David Hughes, head of RIAA’s technology unit, shares the perception of a continued use of DRM, particularly for innovative offerings: *“[Recently] I made a list of the 22 ways to sell music, and 20 of them still require DRM. Any form of subscription service or limited play-per-view or advertising offer still requires DRM. So DRM is not dead”* (Sandoval 2008).

***Stylized fact 3:** There is a clear trend in the music business towards abolishing DRM for certain products. However, DRM is not likely to disappear for all business models. In particular, consumers seem to accept DRM if such technology does not create technical issues and prevent uses they perceive as legitimate.*

5.3.3 Differences between major and independent labels

As illustrated in the previous section, all major labels used to rely heavily on DRM for downloads and, to a lesser degree, CDs. In contrast, independent labels were much more reluctant to employ such technology. *“I would say that at most two percent of all independent labels have ever voluntarily used copy protection at all”* [Content aggregator]. *“I’ve never, ever heard in the last three years anything about [an independent label] requiring DRM”* [Retailer].

Despite such assertions, anecdotal evidence suggests that not all independent labels refused DRM right from the beginnings, but rather changed their attitude over time. *“We went and sold [copy protection] technology to a lot of independent labels to start with”* [Technology provider]. *“When we started, all labels wanted DRM. Today, none of the labels we work with uses copy protection any more”* (Oke Göttlich, CEO of retailer Finetunes [Höverkamp 2004]). Besides, there is some variation between independent labels in different locations and of different sizes. *“Labels from East Asia, particularly Japan, tend to be very pro DRM”* [Content aggregator]. *“I believe, it is actually a matter of size: The larger a label, the more it tends to be pro DRM”* [Technology provider]. Based on a series of interviews with independent labels, Bohn (2006a) got the same

impression: “*The smaller and more independent the label, the more sympathetic it is to consumers’ convenience and perceived rights*” (p. 196).

In line with their lower focus on technical protection measures, most independent labels abstained from suing file sharers (Wilson 2006). However, some independent labels suffered so heavily from piracy that they reluctantly joined efforts of major labels to take legal actions against copyright infringers. “*For a long time, we relied on moral education campaigns. We were really committed to such campaigns. (...) We have no intention to sue fans, but (...) it does not seem to work otherwise*” [Record label].

Stylized fact 4: *Independent labels used DRM to a lower degree than major labels. In addition, their use of DRM declined over time.*

The previous paragraphs illustrated significant differences in the IP management of major and independent labels. Given the highly similar business models of both groups, these differences merit closer discussion. In a nutshell, literature and interviewees mention four characteristics of independent labels that may explain their lower use of DRM. These arguments are discussed below.

Smaller and partly positive impact of piracy. Literature argues that unknown artists are likely to profit from file sharing as this technology reduces the uncertainty associated with buying music from emerging artists (Zhang 2002; Gopal et al. 2006). In addition, sharing music may be an effective tool for less famous artists who are signed to independent labels because it can help them to bring more people in touch with their music and gain popularity. “*Indies struggle for attention, for customers, so the notion of someone actually digging a track and e-mailing it to ten of their best friends – doing self-promotion – that’s music to the ears of the indie record labels*”¹³³ (David Pakman, CEO of retailer eMusic [Anderson 2007]). Consequently, it does not make sense for independent labels to employ technology which restricts copying. “*Economically, a small firm (...) is more interested in promoting its music in order to sell it subsequently than in restricting its distribution through technical measures*” [Content aggregator]. “*If you’re an unknown artist, then propagation of your material, and getting people to know who you are, and listen to your music is paramount. If you’re Madonna or U2 or The Beatles, you don’t need popularity, you want payment*” [Record label].¹³⁴

¹³³ The term “indie(s)” is frequently used in the music business as a short form for “independent label(s)”.

¹³⁴ While many people in the music business believe in the positive impact of sharing for independent labels, some interviewees doubt the value of anonymous, large-scale file-sharing. “*I think that file-sharing networks are not helping indies (...). No indie is currently happy when it reviews its sales*

There is also some indication that independent labels are less affected by piracy which may explain their lower use of DRM. First, indies typically sell less popular music which is harder to find in file-sharing networks. “*We sell content which you possibly do not find in file-sharing networks at all (...) because most consumers indeed share chart music*” [Retailer]. Second, customers buying music from independent labels are less likely to engage in piracy as they are typically more mature. For this reason, Gene Rumsey of Concord Music Group recommends retailers targeting older customers to waive DRM while he advises those gearing towards a younger demographic to keep DRM (Graham 2006). Major labels seem to share this belief: For their first experiments with selling DRM-free music, they picked artists such as Norah Jones whose fans are usually older (Spiegel Online 2006).

Faster realization of drawbacks of DRM. In general, the transition to digital technologies proved difficult for many record labels due a lack of adequate expertise, as Doug Morris, CEO of Universal, explains: “*There’s no one in the record company that’s a technologist. That’s a misconception writers make all the time, that the record industry missed this. They didn’t. They just didn’t know what to do. It’s like if you were suddenly asked to operate on your dog to remove his kidney. What would you do?*” (Mnookin 2007). Tim Westergren, founder of the Internet radio station Pandora, got the same perception from his negotiations with record labels: “*I don’t blame them now for being cautious and uncertain about it; they just don’t understand it*” (Kirn 2007).

Of course, the emergence of digital technologies posed a challenge for independent labels as well, particularly as their managerial and financial resources were highly constrained. Regardless of constraints, they frequently adapted faster than large labels to the new realities. One example is their early discontinued use of DRM. Most interviewees see two reasons for this fact: First, independent labels realized the needs of the changing market faster due to their closer customer interaction. Second, their leadership teams were, on average, younger and thus more willing and skillful to adapt to the changing environment.

By maintaining close contact with their fans, independent labels gained immediate feedback on customers’ negative perception of DRM. They were thus able to realize the drawbacks incurred by such technology more quickly. “*Independent labels had more of a dialogue with independent record stores, and they would call the independent record*

numbers at the end of the month” [Content aggregator]. “*The consequences [of file-sharing] impact all of us: some more, some less*” [Record label].

stores, after using our technology, and get first hand information from those record stores about how difficult a time consumers were having making copies for their friends” [Technology provider]. Given their large staff, major labels most likely possessed a decent knowledge about market needs as well. However, their decision-makers did not have first-hand information on the impact of DRM. “*Decision-makers [at major labels] are not as close with the customers as I am. Let me give you an example: I still handle all customer inquiries on our website. (...) You will not find anyone leading a large corporation who does the same. Marketing people, label managers or A&R people may study extensively such inquiries. However, those folks have hardly any influence on top management decisions*” [Record label].

Various interviewees point to the fact that decision-makers at record labels are usually older and thus less savvy with technology. “*The problem of major labels lies in the old age and conservativeness of the international decision-makers. I know of younger executives at majors who would like to permit retailers to sell MP3s, but are called off by their international headquarters*” [Content aggregator]. “*A lot of Indies consist of a lot of younger people (...) [whom] you need to understand the Internet*” [Retailer]. In this context, it should be kept in mind that many independent labels are not *per se* against copy protection. “*Of course, the [major labels] are right: why should copying be permitted freely?*” [Record label]. “*We would have accepted DRM if a perfect solution had existed*” [Record label]. Thus, many independent labels did not waive DRM for idealistic reasons, but because customers disapproved its use. The significant share of independent labels using watermarking supports this proposition. “*There are a lot of [independent] firms who use watermarking, which I think is totally understandable and legitimate*” [Content aggregator].

Higher innovativeness and faster decision-making processes. Independent labels are generally perceived to be more flexible and innovative (e.g., Christianen 1995; Gander & Rieple 2002; Andersen et al. 2007). Sharing this opinion, several interviewees regarded this argument as one of the reasons why independent labels abolished DRM sooner.

Stressing the idea that need dictates change, one interviewee believes that “*innovation always results out of a need. (...) For sure, independent labels faced a more difficult economic situation than major labels. For example, they were strongly hurt by the increasing concentration among retailers in the nineties. Since they had to find ways to compensate such losses, they were more open for exploring new ideas and opportuni-*

ties” [Record label]. Besides, some experts characterize executives at record labels as being “*very risk-averse*” (David Del Beccaro, CEO of Music Choice [Bruno 2007]) and having a low willingness to experiment. “*The career planning of the senior management, which makes all major decisions, matters as well (...). Most of them are beyond sixty and will retire soon. (...). Of course, they will not tap into experiments with DRM-free downloads*” [Content aggregator].¹³⁵

Most independent labels are led by a small team, have a regional focus and cooperate with only a few artists. These parameters limit complexity and speed up decisions. “*The decision-making process was certainly shorter with the independent ones*” [Technology provider]. “*It takes longer for a tankship to change direction than for a motorboat. This much-cited picture applies here as well*” [Content aggregator]. The centralized decision-making processes of major labels in particular seemed to slow down the decision to drop DRM. “*A manager of EMI being responsible for digital distribution liked [our service] a lot. Nevertheless, he clearly stated: ‘I would give you our content, but I can’t. It is a decision made in America’*” [Retailer]. Oke Göttlich, CEO of Fine-tunes, discovered the same gap between the preferences of local executives and corporate guidelines. “*A lot of people consider our approach [of selling DRM-free music] as reasonable. However, deals are doomed to fail when there is a general firm policy which does not permit music to be sold in unprotected formats*” (Schuler 2007).

In addition to the higher internal complexity, obtaining artists’ consent to sell their music without copy protection can prove to be more difficult for major labels, too: “*In a global corporation, (...) contracts [between record labels and artists] are created by lawyers. If such contracts contain any kind of constraints [e.g., how an artist’s music may be distributed], using DRM is a must in order to fulfill such requirements. We (...) have the big advantage of maintaining a close contact to our artists (...), i.e., it is much easier for us to change [from using to not using DRM] than it is for a multi-national corporation*” [Record label].

More sympathy for needs and freedoms of fans. Apart from the structural differences between major and independent labels and a different perception of the practical issues associated with DRM, some independent labels oppose the idea of copy protection based on principle. Although independent labels are usually profit-seeking entities,

¹³⁵ In the akin movie business, Currah (2007) found “*a preference [among executives] to ‘sit and wait’ rather than risk their careers and reputation on a market that will likely produce benefits long after their tenure*” (p. 374).

they pursue other goals as well such as promoting ambitious music, creating exposure for their artists and maintaining a good relationship with their fans. These non-monetary goals tend to motivate a lower use of DRM. *“It is somewhat related to the philosophy of independent labels whose purpose, apart from earning money, is to share and spread the music they have discovered. I believe that this aim is a natural exclusion criterion for the use of strict DRM”* [Content aggregator]. *“As an independent label which advertises its independence, you can not start to restrict your own customers”* [Retailer]. In contrast, the focus of major record labels on financial performance is occasionally considered as a major driver for using DRM: *“Other than greed I can’t think of any other reason why the major labels would be inclined to go so far with aggressive DRM practices”* [Retailer].

Independent labels do not have large marketing budgets. Maintaining a good relationship with customers is important because labels rely on fans for promotion. For some independent labels, respecting their fans is not only motivated by tangible benefits, but also represents a core value. Oke Göttlich, CEO of Finetunes, even believes that *“indies define themselves by trusting their customers”* (Höverkamp 2004). Another retailer adds: *“There is broad consensus among [independent] labels that customers should have the freedom to do what they want with songs they purchased.”* While not all independent labels share such a mindset, the two statements indicate that treating fans well is – at least for some independent labels – a key part of their DNA.

Many people working at independent labels have either been artists themselves or are music-savvy. *“Independent labels consist of people who are highly affine to music and work for the sake of the music and for totally idealistically reasons, more or less”* [Content aggregator]. This statement probably idealizes the staff of independent labels; nevertheless, it highlights that these people may have a slightly different background and goals compared to the ones at major labels. This, in turn, may motivate a different perception of the needs and rights of consumers. As an example, the representative of one independent label explains that he rejects DRM because he, as a consumer, does not like to be restricted: *“Personally, I would not have accepted that. We could never have done that [with our customers].”* For another retailer, using DRM or not is not a practi-

cal question, but represents a fundamentally different approach to treating customers: *“It’s a philosophical question, a question of idealism.”*¹³⁶

While the independent sector considers itself to be very customer-friendly, some experts dispute the common belief that major labels care less about their customers.¹³⁷ Various public statements from major label executives, however, corroborate this perception. For example, Thomas Stein, former CEO of BMG Germany, stated that he *“would find it correct if CDs could not be copied at all. There is no law which states that I have to offer customers a possibility to copy”* (Seitz 2000). A few years later, SonyBMG’s chief anti-piracy officer Jennifer Pariser outlined her view of private copying: *“When an individual makes a copy of a song for himself, I suppose we can say he stole a song”* (Bangemann 2007). Having this mindset, major record labels considered the use of DRM legitimate. *“Of course, it is not illegal to make a private copy. However, this does not imply that one has a right to do so. Consumers need to accept the drawbacks of copy protection”* (Regine Hofmann, BMG spokeswoman [Berliner Zeitung 2001]). Another example that indicates a less positive mindset of major labels towards customer rights include considerations to introduce technologies that destroys a user’s hard drive or infect his computer with a virus if he attempts to copy a legitimately purchased CD (Stern 2000, 2002).

Stylized fact 5: *There are four characteristics of independent labels that may explain their lower use of DRM: (1) Smaller and partly positive impact of piracy, (2) earlier realization of drawbacks of DRM, (3) higher innovativeness and faster decision-making processes and (4) more sympathy for needs and freedoms of fans.*

5.3.4 Market impact and competitive importance of DRM

In its current form, DRM is commonly perceived to hurt sales and stifle market growth.¹³⁸ *“DRM has completely destroyed the incredible potential of the digital music industry”* [Retailer]. In particular, the technical issues caused by DRM are criticized

¹³⁶ Not all interviewees in the independent sector shared this unconditionally positive view of customers. For example, one commented the mindset to trust customers as follows: *“The question is: is this belief optimistic or naive?”* [Content aggregator].

¹³⁷ One interviewee noted that when major labels considered the use of DRM, they were highly concerned about its impact on customers, too. *“They didn’t want to do anything that would make matters worse with consumers”* [Technology provider].

¹³⁸ As an exception, one interviewee mentioned explicitly a positive impact of copy protection on sales numbers: *“Our copy protection technology proved successful, in that the album sales in the first month following the release of a popular CD went up when our technology was used, and the curves with which it started to fall off was extended”* [Technology provider].

because they irritate consumers. *“We have always intended to make buying and consuming music as easy and flexible as possible. (...) In our opinion, DRM has always been an obstacle to reach this goal”* [Retailer].

The first paid download services like Pressplay and Musicnet were heavily reliant on strong DRM.¹³⁹ Most of them were commercial failures and seized operations (Renner 2004, pp. 139-143). Various arguments have been put forth to explain their failure: strong competition from file sharing, a limited number of available songs, comparably high prices, and poor usability (Goldstein 2003a, p. 168f.; Steinkrauß et al. 2005; Becker & Clement 2006; Clement & Schusser 2006). In addition, the severe copy protection employed by such services, neither allowing users to download any music nor to transfer it to any other device, is frequently cited as another reason for their failure (Lemkuhl & Remke 2002; Lang 2003; Mossberg 2003; Schönert 2004).

Apple’s iTunes store, launched in 2004, has resolved most of the issues that contributed to the failure of previous offerings. It contains a large set of songs including most major artists, charges reasonable prices and has an impressively high level of usability and convenience (Bach 2004; Briegmann & Jakob 2005; Jakob 2005a). Consequently, it experiences a great deal of success. Moreover, iTunes grants users significantly more rights than earlier services which substantially increased its popularity, as many sources assume (e.g., Knight 2003; Sundararajan 2004; Briegmann & Jakob 2005; Jakob 2005a) *“The astonishing success seems to suggest that the Apple iTunes Music Store and its underlying format is one of the most consumer-friendly methods yet of buying songs electronically and legally. (...) Customers are permitted to keep the songs indefinitely, share them on up to three Macintosh computers and play them on any number of iPod portable music players”* (Wigand 2003, p. 266).

In contrast to most online stores which were required by major labels to use DRM, eMusic¹⁴⁰ always sold its music in the unprotected MP3 format. Consequently, it lacked music from all top-selling artists being signed to major labels. Despite this disadvantage, eMusic managed to become the second largest online retailer with a market share of approximately 11% (Graham 2006). eMusic’s David Pakman outlines the rationale for weighing compatibility higher than a broad product offering: *“It’s really not a phi-*

¹³⁹ Pressplay and Musicnet were subscription-based services. As noted before, this type of business model requires the use of DRM. However, the services are an appropriate example to illustrate the negative impact that placing too strong restrictions on consumers may have on sales.

¹⁴⁰ This section examines the eMusic store as launched in 2004. Earlier offerings under the same name with significantly different characteristics are excluded.

losophical decision; it's a practical one. Early on, the belief was that we had to sell music in the only universally compatible format that existed. (...) Everyone was putting MP3 in their device, so why not sell in a format that works in all those places?" (Anderson 2006). This decision provided a strong competitive advantage for eMusic since its music could be played on all devices, including the iPod. "There's no question the iPod success has worked in our favor. The consumer confusion over interoperable formats gives us a great advantage" (Graham 2006).

Similar to eMusic, many retailers began announcing in press releases or on their websites when music became available in the open MP3 format (Akuma 2006). For example, online retailer Prefueled tagged all songs available as MP3 with a red banner, as shown in Figure 5.1. This illustrates the importance retailers place on signifying the absence of DRM.

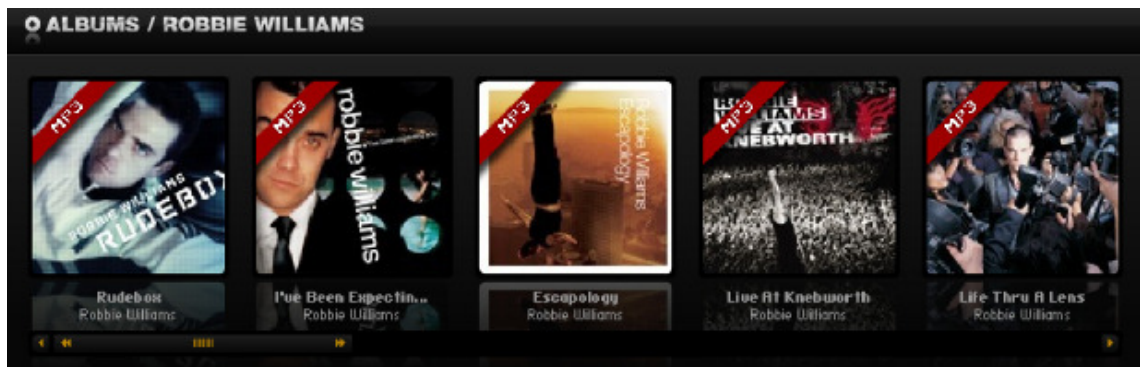


Figure 5.1 Accentuation of content in MP3-format at Prefueled

Within the last couple of years, most retailers or record labels dropped DRM. In line with academic studies, most practitioners believe that DRM-free music sells better than DRM-protected music. "DRM-free products are clearly preferred. Eventually, both artists and record labels will profit from increasing sales" [Retailer]. To substantiate this proposition, anecdotal evidence from various sources is presented below. While these examples cannot provide final proof for the positive impact of DRM-free formats, they are a strong indication.

One interviewed retailer reported that of the three million songs offered in its shop, the 46% songs sold as MP3 generate around 75% of all sales. Thus, DRM-free music sells significantly better.¹⁴¹ Various other testimonials point in the same direction. For example, Musicload and Four Music reported an increase in sales by 40% after drop-

¹⁴¹ The most obvious explanation, namely that DRM-free music is more popular *per se*, can largely be ruled out since DRM-free music is mostly provided by independent labels whose content reaches, on average, far lower sales numbers.

ping DRM (Kremp 2007).¹⁴² Without giving precise numbers, EMI also announced that sales of its DRM-free music were significantly better compared to music in protected formats (Farrell 2007).¹⁴³ When EMI agreed to sell its music without DRM, Apple created a new platform, called “iTunes Plus”, which offered DRM-free music at a higher bitrate while the regular iTunes store continued to sell DRM-protected music. In line with the previously reported cases, Apple made the experience that DRM-free music outperformed the DRM-protected equivalent. “*iTunes Plus has been incredibly popular with our customers*” (Eddy Cue, VP of Apple [Apple 2007]). “*iTunes Plus has struck like thunder*” [Retailer]. Since Apple’s prices were 30% higher for DRM-free music, revenues for Apple and record labels grew even stronger than sales numbers (Lischka 2008).¹⁴⁴ While it is unclear how sustainable the reported increases are in the long term and whether sales of MP3 files cannibalize CD sales, the reported results are nevertheless promising for the music business.¹⁴⁵

Once DRM was fully abolished, many experts expect the legitimate downloading market to really take off. “*You will see completely different sales figures. (...) When there’s MP3’s all over the platform, this will increase sales for everybody dramatically*” [Retailer]. Michael Pohl, CEO of Kontor New Media, even believes that, once DRM is no longer used, the “*market size will double, maybe even triple*” (Kontor New Media 2008). While this prediction may seem to be overly optimistic and overrate the importance of DRM at first glance, it becomes more reasonable when one keeps in mind that at the moment, illegal downloads outnumber their legal counterparts by a factor of 20 (GfK 2007). Furthermore, academic studies come to similar results; for example, Strube et al. (2008) conclude that revenues could roughly triple by abolishing DRM.¹⁴⁶

¹⁴² The positive effect that can be attributed to abolishing DRM may be smaller than 40% since Four Music’s music was heavily promoted at that time. However, since sales stayed at a significantly higher level after the promotional campaign ended, it seems likely that waiving DRM had indeed a positive impact (Source: Interview with Four Music).

¹⁴³ Bloomberg estimates that sales increased, on average, by 17-24%. EMI itself reported that sales increased to 350% after dropping DRM (Farrell 2007). Other sources report an increase between 7% and 115% (Pfannenmüller 2007). UK-based online store 7digital attributed a 130% increase in its site traffic as well as an increase in sales to the availability of DRM-free music (Rosenblatt 2008).

¹⁴⁴ When Amazon introduced a service selling MP3 files for 89 cents, iTunes lowered its prices for DRM-free music to 99 cents to stay competitive (Apple 2007).

¹⁴⁵ Again, not all interviewees agree. “*I haven’t seen any additional sales after dropping DRM*” [Content aggregator]. Given the lack of data, it is not possible to determine why firms profit differently from dropping DRM.

¹⁴⁶ Not all interviewees share the same level of enthusiasm about the post-DRM age. “*Personally, I do not believe that one will sell much more digital music after abolishing DRM. For 95% of users, DRM doesn’t matter*” [Technology provider]. “*People are used to buying downloads at iTunes. (...) DRM alone does not make a huge difference*” [Record label].

By selling DRM-free music, record labels could not only meet customers' expectations, but also reach a wider audience. For example, one interviewee notes that by not requiring DRM, he was "*therefore able to do deals with retailers like eMusic*" [Content aggregator] or Amazon which did not accept any DRM-protected content. While most retailers accepted DRM-protected content, most of them clearly preferred DRM-free formats. "*Of course, you have some advantages with the retailers over which you distribute your content. A DRM-free song is more likely to receive editorial support than a comparable DRM-protected song*" [Content aggregator]. After dropping DRM, record labels became able to close attractive deals with firms for which this technology used to be a roadblock. "*EMI's recent decision to drop DRM has had a hugely positive impact on our potential to collaborate with brands*" (Barney Wragg, Global Head of Digital of EMI [EMI 2007b]). For example, EMI recently closed a deal with Burger King which provides its customers with vouchers for EMI's music upon purchase. For this campaign, DRM used to be an obstacle.

Stylized fact 6: Waiving copy protection created a competitive advantage and resulted in higher sales for some record labels and retailers.

5.4 Intermediate conclusion

The emergence of file-sharing networks threatened the business models of record labels. Most of them reacted to this challenge by taking legal actions and introducing copy protection for their music. Around 2003-05, the use of such technology peaked; however, until 2009, all record labels gave up DRM – first for CDs, later for downloads. Among the various reasons that motivated this change, two stand out: technical issues and customer demand. Given the lack of a common standard, DRM restricted customers in the way they could engage with music. Many customers were not willing to accept those constraints. Seeing no other solution to satisfy the claims for interoperability, record labels decided to drop copy protection. Anecdotal evidence suggests that forgoing the use of copy protection created a competitive advantage and resulted in higher sales. Going forward, several experts believe that DRM-free offerings will stimulate growth and adoption of digital music.

Despite their similar business models, major and independent labels employed DRM to different degrees. While the former made extensive use of such technology, the latter used it substantially less frequently and abolished it earlier. Figure 5.2 illustrates a decision tree which partially illustrates why record labels employed DRM to different

degrees. The different choices made within the tree can be largely explained by the different characteristics of independent and major labels: In particular, independent labels face resource constraints and a lower market power, maintain a closer contact between decision-makers and customers, have faster decision-making processes and possess a greater sympathy for the needs and freedoms of fans.

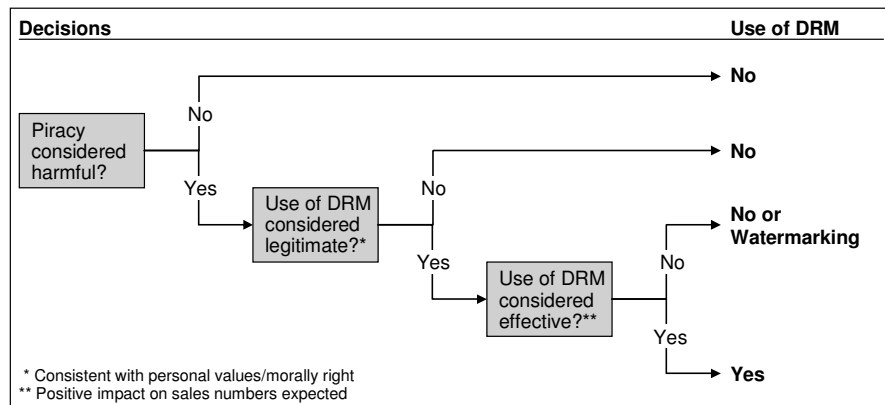


Figure 5.2 Decision tree for use of DRM¹⁴⁷

As a trigger for openness, customer demand had a huge importance in the music business. Copy protection for CDs, for example, was mainly abolished due to extensive customer complaints after the SonyBMG rootkit scandal became public. In most cases however, the transition to openness did not happen abruptly, but evolved over time. While the first download services imposed severe restrictions on users, later download services granted significantly more rights before DRM was finally abolished. Thus, the evolution of openness in the music business can be summarized as follows: With the emergence of digital technologies, new ways to consume music emerged that required open, interoperable formats. When the record labels refused to provide them, customers started to demand them. This triggered a gradual increase in openness which was facilitated by positive experiences and learning on the side of the firms. A comparable pattern was found by Käs (2008) in the embedded component industry. Similar to the case studied in this work, customer demand represented the key reason for firms to open up. As these firms learned to deal with openness and received positive feedback, their level of openness increased.

Section 2.5 outlined one research question (*Research Question 2*) linked to the aspects covered in this chapter which dealt with the relationship between firm characteristics and openness. Generalizing the results from the comparison of the DRM policies of

¹⁴⁷ The illustrated decision tree is a highly simplified representation of record labels' actual decision process whether to employ DRM or not. For example, firms typically evaluate the harm caused by piracy on a more differentiated and continuous scale, rather than with just "Yes" or "No".

independent and major labels, two propositions on the influence of firm characteristics on openness can be derived. They are in line with findings from literature, e.g., Gruber and Henkel (2006), who showed that openness can mitigate certain liabilities of smallness and newness.

Proposition 1a: *Firms owning limited resources experience greater profits from openness.*

Proposition 1b: *Firms having closer customer interaction and possessing less market power respond faster to customer demand for openness.*

Based on academic literature, Chapters 2 and 3 argued that maximum protection and exclusion are not always desirable. Studying the phenomenon of free revealing, Section 2.3 presented several cases that followed the same logic: Waiving control over innovations can lead to better results than keeping tight control (e.g., Allen 1983; Henkel 2007). Section 3.4 outlined various theoretical models that proposed not to use overly restrictive forms of content protection as they usually degrade the quality of the protected product (e.g., Sundararajan 2004; Jaisingh 2007).

By providing anecdotal evidence for the competitive advantage and positive market impact of less protected products, this chapter confirms and further substantiates the finding that lowering control can be beneficial to firms. Of course, the results of this study, having focused on the music business, cannot easily be translated to other industries since the positive and negative implications of copy protection vary between industries. For example, most people who use gaming consoles or watch movies do not have any issues with the involved DRM systems (e.g., Singleton 2007). Thus, this work does not recommend waiving copy protection in general, but proposes to trade off its advantages and disadvantages and choose the *profit-maximizing* instead of the *maximum* level of protection.

6 Exploring the use of Creative Commons licenses

One way that record labels and artists may practice openness is by reducing the level of technical or legal protection. While the previous chapter focused on the technical aspects of protection, this chapter studies legal control mechanisms. In particular, it intends to find out why record labels and artists deliberately waive certain exclusive rights granted by copyright by using CC licenses.

6.1 Research questions

Creators who use CC licenses are usually characterized as amateurs (e.g., Kim 2007) who produce works without commercial potential (e.g., Manes 2004) and/or share them due to ideological beliefs (e.g., Cheliotis et al. 2008). By using CC licenses, the creators are said to give up all current and future opportunities to generate returns from their music (e.g., Dusollier 2006; Weatherall 2006). However, all of these propositions come with a serious caveat: none of them are backed up by empirical evidence.¹⁴⁸

By examining artists' use and views of CC licenses, this work intends to confirm or disprove the current perception of CC licenses. Thus, various research questions immediately emerge: What are the characteristics of rights owners practicing this kind of free revealing? Why would someone voluntarily give up ownership of exclusion rights? What are the risks of using CC licenses? Do artists and record labels indeed waive all economic benefits by using CC licenses, or are there business models which can succeed?

6.2 Research design

This chapter intends to shed light on the phenomenon of using CC licenses and provide answers to the questions outlined above. It focuses on exploratory research to develop a conceptual framework and examine the causal relationships for using CC licenses (Miles & Huberman 1994; Maxwell 1996, p. 20f.). Since the process, context

¹⁴⁸ To readers being familiar with OSS, most of these prejudices may sound familiar. A few years ago, OSS faced similar critique. In particular, skeptics doubted whether OSS could meet the quality of commercial software or serve as basis for profitable businesses (Golden 2004, pp. 49-56; Weber 2004). Many publications managed to correct most of these myths (for an overview, see von Hippel & von Krogh 2006).

and outcome of using CC licenses has rarely been analyzed in literature, qualitative research techniques are highly suitable (Eisenhardt 1989; Eisenhardt & Graebner 2007). Since the design of the qualitative study mimics, in most aspects, the one presented in Chapter 5, only the main differences are highlighted below.

Semi-structured interviews and document analysis represented the two main techniques used for data collection. First, secondary resources were analyzed to gain an overview of the different ways to use CC licenses as well as the associated pros and cons. After that, semi-structured interviews were carried out with people and firms exhibiting attitudes and behaviors that seemed worthwhile to be studied. In total, 34 interviews were conducted in person, by phone or by e-mail between March and November 2008. The conversations lasted on average 42 minutes.¹⁴⁹ Interview partners were chosen based on a maximum variation logic to identify common patterns as well as differences. Table 6.1 lists the interviewed parties.

Artists	Record labels	Retailers
<ul style="list-style-type: none"> • Allison Crowe • BurnsheeThornside • Curious • Jammin Inc • Jonathan Coulton • Grünanlage • Kangaroo Musique • Nadja Adam • Pornophonique • Rob Costlow • Roger John • Tryad 	<ul style="list-style-type: none"> • 1-Bit Wonder • AF Music • Fading Ways • Kitty-Yo • Magnatune • Monotonik • Test Tube • Zymogen 	<ul style="list-style-type: none"> • Akuma • AmieStreet • ArtistServer • Jamendo • Jamglue • Kazzong
		Experts
	Content aggregators	<ul style="list-style-type: none"> • Berlecon • Blogstelle.de • Creative Commons (2) • Sunncomm • VUT
	<ul style="list-style-type: none"> • Neuland + Herzer • ZebraLution 	

Table 6.1 Interview partners for CC study

Three kinds of entities are usually involved in the process of releasing music (see Section 4.1.1): artists composing and performing music, record labels marketing it and retailers distributing and selling it. These groups are also involved in the decision to release music under a CC license. Thus, most interviews were conducted with artists (11 interviews), record labels (9 interviews) and retailers (6 interviews). In addition, six experts and two content aggregators were consulted for their views.¹⁵⁰ To incorporate a

¹⁴⁹ The conversations were led by an interview guide whose final version can be found in Table A.6 in Appendix A.2. Due to the different roles of the people interviewed, not all questions were applicable to all interviews. All interviews except two were tape-recorded and transcribed into written English or German. For the remaining interviews, handwritten notes were taken. Table A.5 in Appendix A.2 lists all interview partners including their positions as well as the type and length of interaction.

¹⁵⁰ Neuland + Herzer is an agency that conducts communication- and media-related projects. It was interviewed since it aggregated and released music on behalf of a major firm. The actions performed by the agency in the context of this work are roughly comparable to the ones of a record label or content aggregator. For reasons of anonymity, content aggregators are considered as record labels during the discussion of the results in Section 6.3.

variety of different opinions, interviewees were selected because of their varied views with respect to CC usage and professionalism. While some released all of their music under a CC license, others only released a few or no songs at all under a CC license. Twelve artists or owners of record labels who were interviewed could be classified as hobbyists who regarded music as a leisure activity; eight were professionals who made their living from music. Quality and reliability of the results were ensured due to a careful selection of representative cases, a sufficient number of interviews within each group and broad regional coverage.¹⁵¹ All information was analyzed and categorized by the technique of qualitative content analysis (Mayring 2002, 2004).¹⁵² Selectively, comments from survey participants were incorporated if they contain additional viewpoints.

6.3 Results

This section discusses the findings of the qualitative study. Its main purpose is to examine different methods of using CC licenses as well as the associated pros and cons. First, an attempt is made to characterize artists using CC licenses (6.3.1) and their use of these licenses (6.3.2). Apart from facilitators and inhibitors for adopting CC licenses (6.3.3), the expected benefits (6.3.4) and drawbacks (6.3.5) of such licenses are examined in detail. After that, business models are presented that support the use of CC licenses (6.3.6). Last, it is analyzed whether CC licenses are a suitable model for both emerging and established artists (6.3.7), under what conditions artists increase or decrease their use (6.3.8) and what alternatives exist to using CC licenses (6.3.9).

6.3.1 Characterization of CC users

Using a CC license can be initiated by artists, record labels or retailers.¹⁵³ In the first case, an artist decides to apply a CC license to a work, and then selects a distribution channel that supports the use of CC licenses. For example, he may publish the song on his own personal web site, ask a record label to take care of the promotion or get in

¹⁵¹ 12 interviewees were located in North America, 22 in Europe (e.g., Germany, Italy, Portugal, UK).

¹⁵² The coding scheme was implemented in NVivo 7, a software application for qualitative content analysis. An excerpt of the coding scheme can be found in Table A.4Table A.7 in Appendix A.3.

¹⁵³ The classical value chain in the recorded music business comprises three entities: artists composing and performing music, record labels marketing it and retailers distributing it (see Section 4.1.1). Of course, the two intermediaries, record labels and retailers, may be left out. For example, an artist or record label may sell music directly to consumers without involving a retailer.

touch directly with a retailer to sell his music or give it away for free. In this case, the artist is in the driver's seat. In the second case, a retailer or record label requires the use of CC licenses. If so, the artist must choose to either accept these terms or to relinquish the partnership. Most artists interviewed for this work deliberately chose CC licenses. However, some adopted CC licenses because it was made mandatory by a record label or retailer.¹⁵⁴

The record labels supporting CC licenses are niche players. Within this group, so-called "netlabels" form the largest group (Hartmann 2004). These labels are small record labels that typically release music on their web site for free. Usually, all releases are CC-licensed. In most cases, their owners run these web sites as a hobby (Cordaro 2007).¹⁵⁵ Besides, there are a few profit-seeking record labels that release CC-licensed music such as Fading Ways and Magnatune (Leyton 2003). Except for limited experiments, CC licenses have not yet been adopted by independent or major labels (Elektrische Reporter 2008).¹⁵⁶ Retailers supporting CC licenses are usually web sites such as Jamendo and Soundclick; they offer emerging artists a platform to promote their music (Haughey 2004; Kiss 2008). Since these platforms do not contain content of major or independent labels, they usually target consumers interested in discovering new music. As of today, none of the major retailers, such as iTunes and Napster, has so far added CC licensing as an option.

Only a small minority of all artists are CC users.¹⁵⁷ These musicians are usually independent, i.e., they have not yet signed a deal with a record label. While some interviewees regard music as a pure leisure activity and have no intentions to generate returns from their music or become professional artists, others either intend to or already manage to make a living from their music. In line with their ambitions, there is strong variation in artists' evaluation of the quality and commercial potential of their music.¹⁵⁸

¹⁵⁴ For example, Magnatune (record label) and Jamendo (retailer) require the use of CC licenses.

¹⁵⁵ Steffen Bennemann, co-founder of 1-Bit Wonder, characterizes the netlabel scene as follows: "*The netlabel scene has seen quite some development over the last decade – but with its lacking barriers for production and publication it will probably never achieve working mechanisms for quality self selection. These lacking barriers are bliss and fate for the scene at the same time – it ensures constant new input, but seen as a whole, we have a permanent input overflow within the system.*" (Redenz 2008).

¹⁵⁶ In May 2008, SonyBMG released a music video of the American rock band Pearl Jam for a few days under a BY-NC-ND license (Creative Commons 2006).

¹⁵⁷ Their demographic characteristics such as age and origin are studied in Chapter 7 based on a larger sample. For a quantitative analysis of the overall CC adoption in the music business, see Chapter 8.

¹⁵⁸ For example, various survey participants questioned the quality and commercial potential of their music: "*My music is so non-commercial, it won't sell anyway.*" "*I believed there was no commercial potential for the songs I licenced with CC.*" "*My music production is sometimes low quality.*"

For artists using CC licenses, the fun of making music seems to be the most important motivation. “Musicians are very often motivated by the pleasures of making, and the desire to share their work with others” (Sal Randolph, US artist [Paharia 2005b]). “Our foremost goal is to create music we love” (Jammin Inc, German band [Tonspion 2005]). Besides this intrinsic motivation, artists desire appreciation. “There is no point in making music without an audience” [Artist]. “[Artists want] their art to be recognized” [Record label]. Of course, all artists highly welcome income from music. In particular, most of them would like to earn enough to be able to dedicate themselves fully to music. However, they do not regard it as the main driver for making music. “I make music for the music. The prospect of making music just for money makes me sick to my stomach.” “For me, it is important to become known. Profit is secondary.” [Survey participants]. “Of course, they want to earn money, too, but in a pinch – when they would face the alternative of either earning money or having their music listened to – they would prefer to see their music recognized” [Record label]. Other goals such as idealistic or altruistic considerations are referred to less frequently, but seem to matter as well. “For me, music is an act of love that I sing for the benefit of the world” [Artist].

Stylized fact 1: Artists using CC licenses are primarily motivated by intrinsic benefits as well as a desire to spread their music and gain recognition.

6.3.2 Adoption of CC licenses

Artists employ CC licenses to varying degrees.¹⁵⁹ While most rights holders release all of their music under a CC license, some rely on both full copyright and CC licenses. By assigning CC licenses only to some of their songs, artists expect to spread their music to a wider audience and gain more publicity while limiting the risks of losing control or income. “We provide a sample of our music [under a CC license] (...) in order to generate attention” [Artist]. The songs released under CC are usually of lower commercial potential and quality. “What I do is share the folk songs, the compositions of which are public domain and which I have an interest in spreading and preserving. When I record a solo CD of new material, I keep that in the traditional copyright” (Roger McGuinn, US artist [Paharia 2005a]). “There was not commercial potential for the songs I licensed with CC” [Survey participant].

¹⁵⁹ CC licenses can be used by all rights holders. Since most rights holders using CC licenses are artists, the following sections focus on artists’ use of CC licenses. However, most conclusions are valid for record labels, too. For reasons of readability, these entities are not mentioned explicitly.

Most frequently, artists use CC licenses selectively by releasing some songs of an album under full copyright, others under a CC license. There are, however, more ways of practicing selective CC use. For example, American rock band White Light Riot released its music under a CC license on Jamendo, a European music platform, in order to become more popular in this area. In the US, where they were already more well-known, they continued to release their music under full copyright in order to continue to earn money in their domestic market (Dax 2007). Another band released music it had recorded earlier under a CC license after having finished a new album. By giving away a previous album for free, it expected to generate interest in its new work and lose little sales since the demand for that old music had already leveled off. *“The re-release [of the previous album] is wonderful advertisement for the upcoming album to be released in fall. The free downloads currently help us win a lot of new fans who will definitely appreciate the new album as well”* [Artist].

Apart from artists, some record labels practice selective use of CC licenses as well. One interviewee, running a profit-oriented record label as well as a non-profit netlabel, releases music with commercial value on his record label under full copyright while publishing music without such potential on his netlabel using a CC license. *“We were getting many submissions. Most of them were experimental and not pop-oriented like I was expecting them to be for [the record label]. (...) So I thought a netlabel is the perfect project to put this music into, because it will (...) give some visibility to the people producing the music”* [Record label].

Stylized fact 2: *While some artists release all of their works under a CC license, others use the licenses selectively, e.g., for works of lower commercial value.*

CC licenses enable artists to either permit or forbid commercial uses and the creation of derivative works. Nearly all interviewees favor the more restrictive CC licenses over the more liberal ones. In particular, prohibiting commercial use is a matter of course for most artists. *“[By using a CC license,] I can give out my music, knowing that it’s not going to be used commercially”* [Artist]. The decision to retain the rights for commercial uses has two reasons. First, artists want to keep the option of profiting financially from uses such as licensing. Second, they do not want anyone else to make money from their work. In contrast to the non-commercial clause, artists differ with respect to the use of the non-derivatives condition. Artists permitting transformative uses usually do so either for idealistic reasons, because they believe in sampling or remixing, or for practical reasons, because they expect to gain additional popularity

through re-use of their songs. Interestingly, most artists not permitting derivative works do not disapprove such uses *per se*; however, they want to be asked for permission to ensure that their music is not going to be used in an inappropriate context or transformed into an unacceptable form. “*The non-derivative aspect is something that is more philosophically. We reserve the right to [prohibit certain uses]. (...) In actual practice we’ve never stopped anyone from doing anything*” [Artist].

***Stylized fact 3:** Artists using CC licenses prefer restrictive over liberal licenses, primarily to prevent unauthorized commercial use.*

6.3.3 Facilitators and inhibitors for using CC licenses

Before analyzing the benefits and drawbacks of CC licenses, this section illustrates other factors that facilitate or inhibit the adoption of CC licenses. Lack of knowledge and awareness represents the most important inhibitor; facilitating factors include peer influence, ease of use, clarity and flexibility of the CC licenses, positive experiences with openness and negative experiences with the traditional closed model.

Lack of knowledge and awareness. In order to consider the adoption of CC licenses, artists need to be aware of their existence and understand their implications. However, CC licenses are still a niche phenomenon with limited publicity in the music business. This fact may represent one of the most important barriers for their further dissemination, as various comments from survey participants indicate: “*I really need more information on this subject before licensing anything with it.*” “*I suppose I could benefit from it. (...) I just worry about giving up something that’s mine without knowing exactly what I am doing.*”¹⁶⁰

Besides not being aware of CC licenses, many have misconceptions about CC licenses. They believe, for example, that using CC licenses is equivalent to giving up copyright or requires giving away music for free. “*Everyone thinks: ‘Oh, you’re giving it all away’. You’re not; you’re not actually giving anything away, because it’s still under copyright, you’re merely allowing certain uses of the work*” [Record label].

***Stylized fact 4:** The limited knowledge about CC licenses in the music business inhibits their broader adoption.*

Peer influence. In contrast to OSS developers, artists hardly cooperate extensively with other artists outside their band, nor are they part of a larger community. Neverthe-

¹⁶⁰ Besides lack of will, lack of knowledge is one of the two well-known inhibitors for the adoption of innovations (Hauschildt 1997, p. 135).

less, their peers have some influence on their actions, including the adoption of CC licenses (e.g., Cialdini & Trost 1998, Henkel & Block 2008). For example, one interviewee simply began to use CC licenses because all members in his peer group already did. *“I started releasing music under CC because all netlabels release under CC”* [Record label]. In contrast, some artists shy away from using CC licenses as they feel that CC does not yet enjoy sufficient acceptance among artists. *“When I hear about other artists using CC licensing, I will become more interested”* [Survey participant].

Ease of use. Apart from the perceived benefits, literature on innovation management identified ease of use as one key factor influencing the success of a new technology (Davis 1989; Davis et al. 1989; Roger 2003). This also applies for CC licenses. As a recent survey confirms, most artists perceive copyright as a rather complex matter (OpenBusiness 2006). In contrast, they appreciate that CC licenses are easy to understand and use. Since artists prefer spending their time making music instead of dealing with legal matters, ease of use is indispensable. *“Since we needed something simple, CC was godsend”* [Artist]. By being presented in a “human-readable”, a “lawyer-readable” and a “machine-readable” form, the licenses are perceived to be both legally valid and, *“most important, (...) easy for anyone to understand and use”* (Sal Randolph, US artist [Paharia 2005b]).¹⁶¹ The simplicity of the licenses makes some artists even refer to CC licenses as *“an easy form of copyright”* [Survey participant].¹⁶² Even critics such as the Australian Copyright Council (2006) praise CC for the simplicity of its terms, the instant authorization and the ease of locating CC-licensed works through certain search engines.

Clarity. The “human-readable” version is commonly regarded as a great asset of CC licenses as it makes the licenses easy to understand. *“They are written in terms that everyone understands. You know, nobody really understands copyright. (...) Copyright doesn’t necessarily mean something, it’s just this vague enigma”* [Retailer]. In contrast to the acclaimed “human-readable” summaries of CC licenses, their legal code raises some issues. In particular, *“the definition of non-commercial is a little unclear”* [Artist].

¹⁶¹ Platforms like Soundclick and Jamendo have made it even easier to use a CC license. When uploading a song, such web sites typically ask an artist whether he wants to use a CC license or not. Thus, artists do not need programming skills to release music under a CC license.

¹⁶² CC licenses are in many aspects easier to understand than copyright. For example, CC licenses always permit non-commercial distribution of works. In contrast, copyright only permits users to distribute a limited number of copies for non-commercial purposes if various preconditions are in place (see Section 3.2.1). Thus, a lot of people perceive the regulations of CC licenses to be easier to understand. However, one could also argue that CC licenses increase complexity as they build on copyright and do not replace it.

This fact attracted a lot of criticism, in particular from practitioners (e.g., Australian Copyright Council 2006; Cohen 2007). For example, McDonald (2006) points out that in Australia “*this wording still allows – without payment – any business or corporation to use your work in items such as corporate gifts, calendars, publications and websites*” (p. 3). However, most interviewees considered these legal ambiguities of minor importance. While they would welcome more clearly defined licenses, these issues did not affect their decision to adopt CC licenses.

Flexibility. The CC initiative offers a set of licenses that differ greatly among themselves in the restrictions they impose on the user of a work. Thus, CC gives creators a lot of flexibility in deciding which rights to retain and which ones to waive. By offering these choices, CC licenses fulfill the requirements of many creators. “*CC is an alternative to ‘copyright’ and ‘copyleft’, as it mediates the extreme consequences of both of them. This mediation ability, this interpretation of needs, the necessities of all the users that create content are the success keys of this project*” (Filippo Aldovini, founder of netlabel Zymogen [Cordaro 2007]).

Stylized fact 5: The ease of use, understandability and flexibility of CC licenses facilitate their adoption by creators.

Experiences. For several interviewees, the adoption of CC licenses was motivated by positive experiences with openness and/or negative experiences with the traditional “closed” model. For example, one record label used to permit sharing of its music long before CC licenses were available;¹⁶³ another artist was engaged in OSS. Having gained positive experiences with openness before, adopting CC licenses was a natural decision. For others, adopting CC licenses was motivated by negative experiences with the traditional model of protecting music. John Buckman, founder of the record label Magnatune, outlines his rationale for trying out a different approach: “*When my wife was signed to a British record label, we were really excited. In the end, she sold 1,000 CDs, lost all rights to her music for ten years (even though the CD has been out of print for many years) and earned a total of USD 45 in royalties*” (Buckman 2004). For another artist, keeping tight control over his music also did not yield the expected results: “*My previous band (...) only provided snippets of our music on our web page. We only sold ten CDs in a year. (...) I made the first-hand experience that the ‘old’ business model (...) does not work for small bands.*” The economic decline of the recorded music busi-

¹⁶³ The label used to put a notice on its CDs, saying “*you are free to copy this album and share it with all your friends as long as you like the album and can sit through it without any bashing breaks*” [Record label].

ness fueled artists' conviction to try something new. "CD sales are down for all major labels. (...) Therefore, we do not have any other option [than pursuing our career independently]. It is not as in former times when we still dreamt of getting signed and pursuing a career as rock stars" [Artist].

6.3.4 Reasons for using CC licenses

The previous section illustrated various facilitators and inhibitors for using CC licenses such as knowledge and previous experiences. With that basis, this section discusses the actual reasons for using CC licenses. Table 6.2 provides an overview of the reasons to use CC licenses that mattered most for the interviewed parties.

Market	<ul style="list-style-type: none"> • Gain publicity and marketing • Improve reputation • Build community and closer connection to fans • Satisfy customer demand • Open up opportunities
Collaboration	<ul style="list-style-type: none"> • Improve quality of music • Ease collaboration with other artists • Get inspiration from modifications
Idealism	<ul style="list-style-type: none"> • Treat users fairly and respect their rights • Contribute to cultural progress • Oppose copyright and business practices of record labels
Others	<ul style="list-style-type: none"> • Fulfill legal and business requirements • Enforce rights effectively

Table 6.2 Reasons for using CC licenses

Market-related reasons

Publicity and Marketing. Artists strive for recognition and popularity (see Sections 2.4.3 and 6.3.1). However, gaining publicity is not just a value *per se*, but a precondition for economic success (e.g., Adler 1985). "People have to hear music, then they will grow to like it, and then finally, if you're lucky, they will engage in an economic relationship in order to consume that music" (Dubber 2008, p. 15). Consequently, getting noticed and heard are key goals for all artists, particularly for emerging ones lacking a high profile, as Canadian artist Brad Sucks stresses: "I figured that spreading my music should be the number one goal" (Sucks 2009). Since consumers are overloaded with information and their attention is scarce (Simon 1971), one record label believes that "the real enemy is obscurity, not me getting pirated."

One technique to become known, mainly employed by unknown artists, is to give away music for free. By doing so, artists intend to familiarize people with their music and build a community of supporters. "Obviously, I don't get any money for offering free downloads. But at this level you really can't do it for the money. You've got to take

that opportunity to connect with the people who are going to become your fans and turn them into repeat customers who'll come see you play and buy your t-shirts" (Scott Andrew LePera, US artist [Haughey 2005]). *"It's almost a must, I mean especially with the first album, that you have to give this out for free. (...) If you want to get it in the right hands, if you want to get played on the local radio station, or on podcasts, or whatever it is these days, you have to pass that out"* [Artist].

Releasing music under a CC license is another way to get more publicity.¹⁶⁴ By legalizing sharing, artists enable their fans to promote their music. *"It's always been the case that music was marketed through friends. (...) The goal for any record label has always been to reach out to those connectors, the super fans, who would then tell their friends"* [Record label].¹⁶⁵ However, as many record labels criminalize this behavior, fans may not take the risk to share music among friends any more. By using a CC license, artists signal to their fans: *"You are definitely allowed to copy. You are allowed to make promotion for me. This word of mouth (...) is for sure a big advantage"* [Expert]. Thus, CC licenses help artists to reach a wider audience and become more popular. *"[CC] seemed like a great way of letting my music find its way to fans and a way of getting free marketing and promotion"* [Artist].

The positive marketing effect of music reviews in blogs or magazines is undisputed. Several now-famous bands such as Arctic Monkeys were first discovered by blogs or specialized magazines whose enthusiastic reviews contributed to their growing popularity (Pfannenmüller 2007). While a magazine or blog may discuss any song or album without explicit permission, copyright does not allow them to embed a copy of the music itself. In contrast, everyone is free to play and redistribute CC-licensed music for non-commercial purposes. This blanket permission reduces transaction costs (e.g., Williamson 1979) and makes it easier for magazines and blogs to broadcast or link to CC-licensed music (Chevalier & Mazylin 2006). Thus, writers may find it more convenient to discuss CC-licensed music, as one expert notes: *"One of the nice features of CC licenses is that I can review and present music without any hassles."* One artist confirms the positive impact of such publicity: *"After receiving support from some music-affine*

¹⁶⁴ In particular for artists making their music available for free, choosing a CC license seems a natural choice. *"If we're releasing for free, then we might as well make it easy for people to spread and enjoy the music"* [Record label].

¹⁶⁵ Many marketing scholars consider personal influence and word of mouth to be important drivers of sales (e.g., Foster & Rosenzweig 1995; Katz & Lazarsfeld 2006).

journalists in the Internet (...), the fans virtually beat a path to our website and our music spread like wildfire” [Artist].

In order to play copyrighted music, a webradio or podcast needs to acquire permission from each rights holder.¹⁶⁶ For small endeavors, this requirement may result in prohibitively high costs or effort. Thus, many non-commercial podcasts and web radios only play CC-licensed music. Two artists stress how such media help them to gain popularity. *“It’s very hard to get air play on the radio unless you’re famous already, but (...) there are probably million of listeners who are listening to podcasts and Internet radio (...). CC again comes in handy because people know that they can play your music on their podcasts and you’re not going to sue them.” “I passed out my songs (...) to about a thousand podcasts back in 2005. (...) The exposure of those, giving it out for free, and people listening to those podcasts had a lot of [commercial] licenses come up from that over the years” [Artists].¹⁶⁷*

The Internet has created a lot of channels to reach a wider audience; however, exploiting these opportunities is difficult, particularly for independent artists. *“In former times, marketing was simple, mainly relying on radio and TV (...). Today, there is YouTube, MySpace, all the other communities, web sites, blogs. (...) You have to serve so many channels. (...) For an independent artist or a small record label, this is impossible to handle” [Retailer].* CC licenses can support artists in this task. By permitting fans to share their music, musicians can leverage their connections and enthusiasm. For example, some fans may upload their music on YouTube, others may submit it to radio stations – all without having to ask for permission.

Using CC licenses clearly contradicts the established policy of protecting content using full copyright and DRM. This fact, combined with the novelty of CC, attracts significant attention in the media. Artists and record labels, in particular the early adopters, benefit from this interest. *“I found [that] if I do something really crazy, (...) then I can get press” [Record label]. “I even was aware that CC was kind of a buzz word, a cool, hip thing to do, and I definitely thought it might generate some publicity, and in fact it has.” “It’s gotten me enormous amounts of attention” [Artists].*

¹⁶⁶ In the context of music, podcasts are audio broadcasts that contain a series of songs and can be downloaded for free.

¹⁶⁷ One survey participant, being not only an artist, but also a podcaster, explains his use of CC-licensed music: *“I am also a podcaster with over 2000 subscribers. I love to help expose artists to the world. I have gotten e-mails from people on the other side of the Earth telling me that they just bought a band’s CD that they heard on my podcast. They probably would have never heard the band without listening to the podcast (...). Without the CC licenses, things like that would not happen.”*

Reputation. Major record labels received a lot of negative publicity for using DRM and suing individual users of P2P networks. For example, a lawsuit initiated by RIAA against a twelve year old girl having practiced file sharing caused considerable indignation in the public (Graham 2003; CNN 2004).¹⁶⁸ By using CC licenses, artists and record labels can disassociate themselves from such actions and position themselves as “good players.” *“The music industry antagonized its client base to the point that many people that used to buy music stopped buying music because they’re angry at the labels. We don’t want to suffer for the mistakes that the music industry has made over the last decade. So for us as a label, it was very important to distance ourselves from those mistakes”* [Record label]. *“CC is one more way that you can sort of make your brand seem more like you’re independent, you’re rebelling, you’re not a part of the system – that’s Rock’n’Roll”* [Artist].¹⁶⁹

CC licenses grant users additional rights and make them feel trusted. Thus, using CC licenses can not only help artists to avoid a negative image, but also to gain recognition and respect. *“I’ve always gotten a lot of praise for putting my music under CC and letting people freely access it how they want, and pay for it how they want”* [Artist]. *“If a user, a listener sees that a release is published under CC, it immediately makes the user think that the artist is treating him well. The artist trusts the listener (...) and I think this is really important to the fans”* [Record label]. The positive atmosphere created by using CC licenses may increase the likelihood that customers enter an economic relationship with an artist or a record label, as John Buckman, CEO of Magnatune, notes: *“People like patronizing businesses who are good citizens, who are helping a cause they believe in. Magnatune’s incorporation of CC helps our visitors feel good about us”* (Brown 2005).

While major labels continue to fight piracy intensely, various artists believe that this war cannot be won. These musicians are convinced that file sharing is here to stay and that the lawsuits brought forward against individuals will only affect the technology used for sharing music, but not reduce the amount. *“People being interested in illegal downloads (...) will always find ways to obtain music for free”* [Artist]. *“Everyone who claims that file sharing does not exist does not understand the reality”* [Expert]. Thus,

¹⁶⁸ A second factor contributing to the negative image of the music business is the relatively low share of profits that musicians receive (e.g., Madden & Henhard 2003).

¹⁶⁹ Similar to the users of CC licenses, a lot of independent labels attempted to increase their distance from the actions taken by major labels by not suing file sharers and waiving the use of DRM (see Section 5.3.1). However, they only tolerated sharing, but did not actively promote or permit it.

they recommend accepting the new realities that fans frequently pass on music. “*Artists have to get used to the idea that people will copy your stuff, they will share it with friends (...) The question is: are you gonna treat those people as fans, or as thieves? Do you think people who like your music will appreciate being called thieves? (...) At my level, I can’t afford to alienate a single potential fan*” (Scott Andrew LePera, US artist [Haughey 2005]).

Community building. A loyal fan base is an important success factor for artists (Clement et al. 2003; Kusek & Leonhard 2005). Among other benefits, it reduces the need for extensive marketing and promotion. “*The ability of a band to start to swell is its fan base. (...) The best marketing tool that any artist has are their fans, the fans that go out and talk about them, and tell their friends about them*” [Retailer].

Several artists regard CC licenses as a tool to foster good relationships with fans and increase the number of followers. By using CC licenses, they signal trust and respect to their fans. This leap of faith may strengthen the ties to their fans and increase fans’ willingness to give something back, by making financial contributions or by promoting an artist’s music (Fehr & Gächter 2000; Borchering & Filson 2002; Sethi & Somana- than 2003). For example, fans may request that radio stations play an artist’s music or recommend it to blogs, podcasts or other users. “*Gifts ask for reciprocation, and in the back and forth that ensues relationships form*” (Sal Randolph, US artist [Paharia 2005b]).

In case a CC license that allows transformative uses is chosen for a song, fans may remix it or create a video based on the music. Some artists even explicitly encourage users to create derivative works (Sucks 2009). Drawing on their experiences with opening up their music, various interviewees confirm that the connection to fans who create new works from existing music becomes closer. “*We have a very intense contact to fans who create own works based on our music and send us their works*” [Artist]. “*By releasing remixable music you can take advantage of the energy that fans have (...) and they become more intense fans that way.*” “*It’s sort of a dialogue that could never happen before*” [Retailers].

Moreover, the user-generated content may itself prove valuable for an artist, if it attracts additional visitors to his web site, for example. The potential of such content is commonly recognized, as a statement of Edgar Bronfman, CEO of WMG, illustrates: “*With regard to user generated content, we identified this area well more than a year ago as being an area of enormous opportunity. (...) We hope [that] eventually (...)*

consumers can take our content and interact with it in their own unique creative ways and we can share in the benefits of that creativity” (FD Wire 2006). By using CC licenses, artists achieve the goal set by Bronfman: Their fans can interact with their content as they want. Letting users engage with one’s music may even solidify a sense of community amongst fans, as one artist notes: “There are a lot of people now, who are talking to each other, because they are all creating videos from my music. There are people who have created a number of videos who have become famous within the circle of my fans, and in the community of people that come to the website. So it’s a very powerful way of building the community” [Artist].

Customer demand. Most consumers care and know little about copyright. They usually expect certain uses such as transferring music to different devices or sharing it with their family to be allowed, but do not pay strong attention to the details of copyright (e.g., Dufft et al. 2005). Consequently, their awareness towards CC licenses, as well as the explicit demand for CC-licensed music, are limited (Winkler 2009). *“It’s not that we don’t want to offer CC, it’s just that we’ve honestly never been asked by our artists or by our members” [Retailer]. “The common man still has no idea there’s an alternative to ‘full’ copyright” (Bram de Jong, Spanish researcher [Linksvayer 2005]).*

While mainstream consumers may not (yet) care about CC, a certain clientele does. *“There are some people who look for CC music, because they feel like in some way they’re rebelling against the establishment” [Artist].¹⁷⁰ Indeed, several artists experienced recognition from some of their fans for the decision to release music under a CC license. “Our listeners greatly appreciate the idea. We receive on our homepage, on other web sites or per e-mail a lot of support for this decision” [Artist]. “We definitely noticed appreciation, fan mail, mail orders and increased sales on tour. The support (...) for the CC licenses was very ubiquitous. We could feel it for sure, and we saw it in the increase of sales” [Record label].*

More opportunities. The previous paragraphs showed that CC licenses may lead to a wider distribution of music, a better reputation and a closer connection to fans. Eventually, these benefits may yield new opportunities such as concerts or licensing deals. *“It’s about creating opportunities. If you limit how your music can be experienced, you’re just greatly limiting exceptional opportunities.” “CC is like a flag outside your*

¹⁷⁰ The foundation as well as the recent success in elections of so-called “pirate parties” that advocate a thinner copyright with more extensive user rights proves the interest of some people in such matters (Piratenpartei 2009).

door saying I will try things and so they call where they normally wouldn't" [Retailers]. These opportunities can be monetized in various ways, as will be discussed in Section 6.3.6.

Apart from direct returns, using CC licenses may prove beneficial in the long run. For example, the potential increase in popularity due to CC may elevate artists' chances of getting signed by a record label or enable them to negotiate more favorable terms.¹⁷¹ *"I have gained lots and lots of fans on an international level [by using CC]. (...) That helped me a lot, in particular for later releases. The cooperation with the label was much easier since my name was already established internationally"* (Martin Juhls, German artist [Elektrischer Reporter 2008]). *"I know many artists that started releasing on netlabels, and then got in touch with some independent label (...). I think that it's all about (...) creating a fan base that follows your releases"* [Record label].

Stylized fact 6: *Artists use CC licenses to gain publicity and exposure, improve their reputation, build a community and please fans. These benefits may translate into financial returns or open up further opportunities.*

Collaboration-related reasons

Since music is usually created by a few individuals cooperating closely instead of a large crowd of people, one may doubt whether large-scale collaborations are viable in the field of music and whether they yield other benefits besides publicity. The three examples presented below, however, indicate that collaboration among artists and users can indeed produce valuable results. The value of CC licenses in this context is evident: By eliminating the need to ask for permission, CC licenses make it easier for others to engage with an artist's work.

Improvement of music. In order to enable other users or artists to remix or enhance their music, many artists upload their work to specialized platforms such as ccMixer or Jamglue. These sites enable artists to publish entire songs as well as individual tracks such as guitar or vocal tracks previously recorded. Afterwards, other musicians may round off incomplete songs by adding their own tracks or remix already finished ones by creatively combining them with elements of other recordings.

By opening up their music on such platforms, artists may profit in two ways. First, they may intensify their relationships with users and get more publicity. Second, they

¹⁷¹ Gordon (2005) emphasizes that record labels are looking for artists that have talent as well as proven success, like already generating real sales or having a large number of followers. *"Both major and independent labels sign artists based upon what they have already accomplished and what they have the potential to create"* (p. 169).

may profit from the availability of a broad range of creativity and talent in such communities. For example, users having special skills may manage to complement rudimentary songs, or modify completed ones which may result in a superior recording. *“If you get more people involved in a project, it really just improves the project exponentially. The quality of the music that I’ve been able to produce with [others] just far surpasses what I’ve been able to do solo, and largely it’s just because I have certain strengths, and I have also other weaknesses. (...) So when you get other people involved you blend the strengths (...) and everybody benefits more”* [Artist].

In addition to modifying the music itself, users may combine it with other media which may further increase its appeal. *“Somebody makes a lot of YouTube videos using my songs. (...) His videos are so popular, they want to start running ads on them”* [Artist]. *“CC licenses are perfectly suited for user-generated content like video contests (...), where you provide the raw material and let users engage with it”* [Expert].

Easier collaboration. Going one step beyond user-generated enhancements and modifications, some musicians integrate others into the production process right from the beginning. Since more talent is needed to make a meaningful contribution in an early stage, all people involved are usually artists. Besides, the contributions of third parties are more remarkable since they are involved early on. Thus, this case may be regarded as an enhancement of the one outlined above.

The example of UK singer and song-writer Tamara Barnett-Herrin illustrates the potential of such forms of collaboration. In 2006, Barnett-Herrin declared on ccMixter that she would upload one vocal track per month and welcome other musicians to remix her songs in order to jointly produce a complete album. Barnett-Herrin announced the venture as follows: *“This whole project is about ‘WE make a record’. I might be leading it and bossing everybody around, but essentially it is collaboration”* (Spinmeister 2008). The experiment generated over 300 remixes. In 2008, Barnett-Herrin commercially released a CD containing the twelve best remixes of her songs. For this project, CC licenses served as the legal infrastructure, yielding two benefits. First, they enabled any user to remix her works without having to ask for permission. Second, the use of an NC CC license ensured that Barnett-Herrin’s music could not be exploited commercially without her consent. Summarizing, this case illustrates how artists can profit by involving outside talent to complement their own weaknesses and strengths.¹⁷²

¹⁷² Opsound is another example of a website using CC licenses to facilitate cooperation among artists. The initiative characterizes itself as follows: *“Opsound invites musicians to contribute sounds to a*

Having extensively worked together with other artists in a distributed manner, one artist confirms that such forms of cooperation can produce worthwhile results. *“I never thought that you could actually make this level of quality in music amongst this many people just loosely collaborating over the Internet like this.”*

Inspiration. For some musicians, modifications of their music are a source of inspiration for future works. Believing in the value of exchanging artistic thoughts, they regard remixes or videos created by others as a potential source for new ideas or as a means to improve their musical skills. *“I grant everyone the right of modification since I find it very exciting what other people do with my music”* [Artist]. *“I find that the act of creating is like throwing a pebble into a still lake to watch the ripples. Being able to share my work via a CC license enables me to experience more ripples. Sometimes the ripples can inspire more work in me”* (Ottmar Liebert, German artist [Garlick 2005b]). *“We now derive a good deal of inspiration from the community of people who’ve listened to us and responded and shared their songs or their weblogs or their art. Artists who don’t share MP3s probably have a difficult time leveling the communication between fan and artist to a more rewarding interchange”* (Chris Wetherell, US artist [Haughey 2005]).

***Stylized fact 7:** Artists use CC licenses to improve the quality of their music, ease collaboration with other artists and get inspiration from creative modifications of their works.*

Idealism-related aspects

So far, this section covered various tangible benefits of adopting CC licenses such as gaining popularity and improving one’s music. In addition, many artists use CC licenses because of a strong idealistic or altruistic conviction. The following paragraphs discuss these motives.

Altruism and fairness. Many artists share the belief that consumers should enjoy their music freely. However, their understanding of “free” differs significantly: Some are convinced that charging a fee for (their) music is inappropriate; others do not want to restrict users in their behavior and criminalize sharing. One artist, for example, points to the negative consequences of charging a price: *“Cultural assets must be free for*

‘sound pool’ licensed under a CC Attribution Share-Alike license. Others can then take sounds from the pool, mix them or use them as-is, and publish the results however they like: online, or under a real-world micro-label; for profit, or not. The project is a great example of how CC licenses can promote new kinds of collaboration and help build a digital resource people can use freely – even for commerce” (Paharia 2005b).

everyone in a society which claims to be fair.” However, most creators using CC licenses do not have issues with demanding a fee for their works. *“If we give our lives to this work we have a right to be paid for our labor”* (Vicki Bennett, UK artist [Slater 2005]). For artists in the latter category, freedom means that users should not be restricted in their behavior. In particular, sharing of music and creating derivative works should not be punished. *“We do not want to criminalize anyone, just because he privately listens to or shares our music”* (Kai Richter, German artist [ComicRadioShow 2007]).

In many cases, artists’ use of CC licenses originates from a desire to treat fans fairly. *“I think CC can help bring about a fairer music industry – to the public, to the artists, and to those labels that recognize the present problems and are willing to work fairly with both”* (Neil Leyton, founder of Fading Ways [Paharia 2005c]). For others, the use of CC licenses has roots in a strong idealistic conviction as well as in their personal value system. *“I decided that I would embrace the whole world and just put it out for free. It’s more of an act of love really”* [Artist]. *“I decided to ONLY listen to free music a few years ago, so giving back to the community (and donating) are my ways to ‘pay’ for my music.”* *“I love to give an aspiring artist some music to write to and perform to get their career started”* [Survey participants].

Contribution to culture. In addition, several artists believe that transforming and reusing music are important elements of the creative process. By using CC licenses, they want to legitimize this art form and contribute to cultural progress. *“I was sort of inspired by the vision of creativity and art as being this ongoing process where once you create something and put it out into the world, it then becomes inspiration or even raw material for somebody else to create something new”* [Artist]. *“I am more interested in the music’s impact as an art form than I am about financial profit”* [Survey participant].

Political goals. By using CC licenses, artists are making a statement against the current copyright system. While most artists may do so unconsciously, some artists deliberately employ CC licenses to send a message. Two political motives for using CC licenses stand out: disassociation from the current behavior of the music business and support for the CC movement and its goals of a less strict copyright.

Artists criticize the music business or, more precisely, the record labels for two reasons. First, they believe that record labels do not really care about the sake of their artists, but mainly about maximizing their own financial success. *“This industry is the*

rudest money-making machine ever. They have no respect for the artists at all. All they care about is making money off you” [Survey participant]. Second, many artists do not agree with record labels’ behavior to employ copy protection and sue file sharers. By using CC licenses, they want to disassociate themselves from the music business and its practices. *“I find it important to step up against DRM and a more and more aggressively acting music industry”* (Kai Richter, German artist [Filzo 2006]). *“The RIAA will continue suing 12 year-old girls (along with hundreds and hundreds of other file sharers), effectively ensuring that the public pays through the nose for the musical mediocrity their bosses pump out year after year. That is NOT the music business WE are in”* (Neil Leyton, founder of Fading Ways [Leyton 2003]).

Additionally, artists may release music under a CC license to express their support for the goals of the CC movement. *“I also did this to support the cause of a thriving public domain and am glad that Eric Eldred and Larry Lessig do what they do, promoting works available for everyone, not just [for] those who can afford it”* (Vicki Bennett, UK artist [Slater 2005]). *“[I use CC licenses as a] political statement against IP”* [Survey participant].

***Stylized fact 8:** Artists use CC licenses to signal fans respect and fairness, contribute to cultural progress or express opposition against the current copyright system and business practices of record labels.*

Other reasons

Legal and business requirements. The previous paragraphs presented various reasons why artists deliberately adopt CC licenses. In some cases however, artists may not have any other option. When they build on CC-licensed music that comes with an SA condition for example, they are again required to release their work under a CC license. Although no interviewee mentioned this case, it remains possible. Requirements from business partners, such as record labels and distributors, may constitute another reason to adopt CC licenses. Indeed, various interviewees referred to such conditions as one of the reasons to adopt CC licenses. *“John Buckman is the reason that I ended up with CC”*¹⁷³ [Artist]. *“It is mandatory for the label I released on”* [Survey participant].

Effective protection. Artists using CC licenses waive some of the rights granted by full copyright. Thus, CC licenses offer *less* protection than copyright. Despite this, various artists have a different perception: they believe that CC licenses in fact offer *more* protection than full copyright.

¹⁷³ John Buckman is the CEO of Magnatune, a record label that releases all music under a CC license.

As copyright is a complex matter and can be difficult to understand, some artists believe that there is a general disrespect for copyright in the society. In this case, a copyright note is considered quite ineffective. “*I don’t mind sharing my music but I don’t want it to be misused. That was why I never put any of my works online before*” (Sudev Bangah, Malaysian artist [Nagu 2007]). Moreover, many artists are not sure how to use copyright correctly. “*We wanted to offer our music for free download, but it was also important for us that our rights were somehow protected. (...) I wasn’t sure whether putting a copyright note on our web site would have been sufficient*” [Artist]. In contrast, many artists appreciate how CC licenses clearly point out which rights users have and which ones they do not. Thus, they suppose that users pay more attention to these limitations. “*The license expresses limitations and bounds on how it’s supposed to be used, whereas before we never knew, so now there’s an opportunity for people to respect it*” [Retailer].

Stylized fact 9: Various artists consider CC licenses to be more effective than copyright for protecting their music.

6.3.5 Reasons against using CC licenses

Having presented various reasons for employing CC licenses above, this section turns to the drawbacks of using CC licenses. Table 6.3 summarizes the reasons against using CC licenses that emerged from the interviews.

Financial loss	<ul style="list-style-type: none"> • Have perception that selling music becomes impossible • Lose income • Suffer competition from free copies • Reduce perceived value of music • Reduce chances to get signed by a record label
Control loss	<ul style="list-style-type: none"> • Lose control over uses and changes • Do not provide more value than copyright • Violate artistic integrity
Others	<ul style="list-style-type: none"> • Fulfill legal and business requirements (obey conditions of record labels and PROs) • Be hard to enforce • Follow a too pragmatic approach

Table 6.3 Reasons against using CC licenses

Financial loss

Perceived impossibility to sell music. The CC initiative promotes the idea of “free content” – content that is free of restrictions and that users can share and modify as they like. In the public perception, however, licensing a work under a CC license is considered to be equivalent to giving it away for free. The belief that CC-licensed works *must* be made available *gratis* is common in the music business. For example, Emma Pike of

British Music Rights, an organization representing the UK music business, explains the consequences of using CC licenses as follows: “*In effect, by entering into a CC license, creators are signing away their rights irrevocably, in perpetuity, for the whole world, for free*” (Pike 2005). Sarah Faulder, CEO of Britain’s Music Publisher’s Association, shares a similar understanding of CC licenses: “*The licensor issues the license royalty free (...) and the licensee enjoys free use of the work*” (Faulder 2005).¹⁷⁴

Many artists do not agree with the idea of giving away their music for free. Some want to generate sales, others feel that not charging a price reduces the perceived value of their music. Due to the belief that it is impossible to sell CC-licensed music, a significant number of artists strongly opposes the use of CC licenses, as two comments from survey participants indicate: “*I disagree with those who think that music should be free – artists have the right to be paid for their art.*” “*I do not believe in making my music free or that others should be able to use it without my permission.*”

In contrast, other interviewees deny that CC licenses contain a clause that forbids charging a fee for CC-licensed music. “*[The licenses have] no issues with selling*” [Record label]. “*It’s confusing because this license makes it legal for [users] to distribute the music for free to other people. (...) [However,] I can still sell it. It’s a strange thing that I think is hard for people to understand*” [Artist]. While it remains unclear whether selling CC-licensed music is legally permitted or not, two facts are undisputed.¹⁷⁵ First, some artists believe that selling CC-licensed music is impossible. Second, other artists indeed charge for their CC-licensed music and – even more important to this work – generate actual sales.

Losing income. Apart from legal limitations, there is a widespread belief that by using CC licenses, artists forego most opportunities to profit financially. “*You won’t get paid. (...) It seems unlikely that any third party would be willing to pay if it knows that*

¹⁷⁴ The FAQ section of CC suggests as well that CC-licensed works are free. “*Question: So I don’t have to pay to use Creative Commons-licensed works if I comply with the license terms? Answer: As a general rule yes – CC licenses are made available under royalty-free licenses*” (Creative Commons 2009c).

¹⁷⁵ The researcher contacted two leading members of the CC initiative to discuss potential restrictions on selling CC-licensed music. None of them was able to give an unambiguous answer whether charging a fee for CC-licensed music was permitted by the license terms. A law professor specializing in copyright contacted by the researcher held the view that the CC licenses would clearly require that CC-licensed content *must* be made available for free, i.e., that it is illegal to charge a fee for CC-licensed content (apart from dual licensing). To support her claim, the researcher referred to the following clause which all current CC licenses contain: “*(...) Licensor hereby grants You a worldwide, royalty-free, non-exclusive, perpetual (for the duration of the applicable copyright) license (...)*” (Creative Commons 2010). This fact is particularly interesting since the related open source initiative explicitly allows selling OSS. (OSI 2001)

other parties have obtained the license for free” (ALAI 2006). *“Putting a CC license on your work will generally mean you won’t get paid for what you’ve created”* (Australian Copyright Council 2006).

Therefore, a lot of artists complain that CC favors users who may use creative works without paying, but deprives them of the earnings they would deserve. *“I love writing music and I love the finished result. I put a lot of soul and finances into my music. It is only fair that I get compensated for my hard work”* [Survey participant]. *“The use of an irrevocable Commons license, which effectively ends any hope of the artist being compensated by the creative industries, doesn’t seem fair or sensible”* (Orlowski 2005). Besides, some artists feel that corporations aggregating content to generate traffic and sell advertisements may profit without justification from the large amount of CC-licensed works. *“The Web 2.0 business models are predominantly based on the idea of lots of people placing their self-made content on shiny new Web 2.0 websites and licensing it entirely free of charge back to the corporations. (...) This is, let’s face it, the commercial exploitation of free culture and is as far away from the ideal of democratic sharing of knowledge and information as you can get”* (Berry 2006). *“Musicians provide the content, but others get rich at their expense”* [Artist].

It is beneficial for artists to be a member of a PRO, because this organization frequently takes care of negotiating commercial licenses.¹⁷⁶ In case artists using a CC license cannot be member of a PRO such as in Germany, they need to make individual agreements with parties who are interested in commercial use of their music. In particular, unknown artists may face a weak position in such negotiations and thus not be able to demand a decent price for their songs. *“By not being member of [a PRO], artists relinquish the right (...) to receive an adequate and non-negotiable compensation which is set by the PRO”* [Expert]. Besides, commercial radios may choose to either not broadcast CC-licensed music of artists who are not represented by a PRO or, if they do, not pay a fee for its use since it would be too tedious to negotiate individual licenses with artists. *“Radio will not broadcast unlicensed music.” “In Switzerland, I don’t receive money if a commercial radio transmits my music”* [Survey participants].

In summary, most critics do not deny that using CC licenses can be beneficial for amateur creators who are interested in spreading their works. *“[CC] is an ideal scheme*

¹⁷⁶ The tasks performed by the PRO on behalf of an artist depend on the arrangements made between the PRO and the artist. As one interviewee noted, it is, for example, common in Germany that the GEMA, the local PRO, negotiates commercial licenses for lesser known artists.

for the genuinely altruistic writer who never wants to make money out of his/her works” (Faulder 2005). However, they doubt that sufficient financial returns can be generated from CC-licensed works and that such licenses form a viable alternative for professional creators. *“I am a bit skeptic whether a musician may be able to continue to produce his music. (...) Eventually, someone needs to pay for his work”* [Record label].

Competition from free copies. When using an NC CC license, artists retain the exclusive right to make separate agreements for commercial uses of their music. However, various critics question whether artists can derive considerable income from such deals if free copies are readily available all over the place. *“Although the CC website talks about the possibility that a work under the ‘NC license option’ can still earn money from those who are using it for financial gain, in practice this possibility is minimal, almost non-existent. Why should anyone invest in works that are already widely available for free?”* (Toth 2006). *“Artists saying that they grant certain rights [for free], but want to be reimbursed for others – I believe that such a policy is very difficult to communicate to the general public”* [Record label].

The competition from free copies may also drastically reduce consumers’ willingness to pay for ones sold by artists. *“The moment you choose any CC license, you choose to give away your work. Any market built around content which is available for free must either rely on goodwill or ignorance”* (Möller 2007). *“Even sales of CDs may be affected, if someone else is able to undercut your price, or people are able to get free copies from the Internet”* (Australian Copyright Council 2006).

Interestingly, various interviewees doubt that permitting sharing has a negative effect on their potential to sell their music. They report that consumers do not usually share CC-licensed music on a large scale or make it available for free download on a public web site. Although they would be legally allowed to do so, many consumers do not consider such actions to be morally acceptable. *“People would find that a little mean spirited, because I’ve been very clear about the fact that I’m doing this to make a living”* [Artist]. Thus, most users share CC-licensed music in a responsible way that does not exploit artists. *“You will find on P2P networks our compilations [, but not the albums]. It’s really interesting because I didn’t push this. I didn’t say ‘Please share the compilations, but not the albums’. (...) It’s people thinking on their own”* [Record label].

Reducing perceived value of music. CC-licensed music is frequently released for free and can be shared by users without restrictions. However, not charging a price and

abolishing restrictions on its propagation may turn music into a commodity. *“If I release music in a way that people feel is free as in beer, and I perhaps ask for donations, nothing comes in. (...) It doesn’t have any value”* [Record label]. *“If CC licenses become widely adopted, it is likely that an expectation will arise that (...) creative people should give away their work for free”* (Australian Copyright Council 2006). Consequently, some creators oppose CC licenses since they perceive the licenses to be unfair and favor users. *“Copyleft promotes a political agenda for wide and vague exceptions to copyright and for limiting the rights of copyright owners. If they were to succeed, creators would face a further lack of security and rewards would reduce or avoid investments of creativity and capital in the development of copyright works, services and industries”* (Michael Fraser, CEO of Copyright Agency Limited [Fraser 2005]).

In addition, some musicians feel that music being released under a CC license is not taken seriously. *“We are going to give up the CC release and sell everything (...) to be considered as a serious band.” “The public doesn’t take free music seriously.” “Some people think that if something is free, it has poor qualities”* [Survey participants]. Furthermore, some artists personally consider CC-licensed works to be of poor quality. *“CC is for the untalented plagiarist.” “I see those artists as rather pathetic losers who give their music out for free”* [Survey participants]. Having this negative perception of CC, they do not want to be associated with this initiative. *“[Using CC] may potentially reduce my perceived artistic legitimacy”* [Survey participant].¹⁷⁷

Reducing chances to get signed. Apart from the effect of CC licenses on the present value of their music, some artists are particularly concerned about their potential future impact. Today, almost all professional artists are signed to a record label. In these deals, artists usually grant the record label the exclusive right to exploit their songs commercially (Passman 2006, pp. 189-196). However, releasing a song under a CC license makes it impossible to grant an exclusive license which may in turn reduce the interest of record labels.¹⁷⁸ *“The record labels want exclusive rights and if you do a deal [using CC licenses], then you can’t do an exclusive rights deal”* [Record label].

This fact is of particular concern for younger artists who still hope to be discovered by a record label. *“As long as music is a hobby and I do not receive professional support, I have no intentions of releasing my music to the public (...). I have so many high-*

¹⁷⁷ To some extent, artists using CC licenses encourage this perception as some of them only release their lower quality works under CC (see Section 6.3.2).

¹⁷⁸ CC licenses cannot be terminated and are valid for the full period of copyright (Faulder 2005).

quality songs. *If the right person came, he could make a fortune with me.*” [Artist] *“One artist (...) feared that it may hurt his chances of getting a major label publishing deal in the future.”* *“I have very few musicians under the age of thirty [using CC licenses]. I think that that is because at that age (...) they would like some company to just make it happen for them”* [Record labels].

Stylized fact 10: *Artists choose to not use CC licenses because they fear loss of income. More specifically, they believe that CC-licensed music cannot be sold due to legal regulations or the wide availability of free copies, that CC-licensed music is perceived to be less valuable and that using CC licenses reduces their chances of getting signed by a record label.*

Control loss

Losing control over uses and changes. By using CC licenses, artists can permit the creation of derivative works. In that case, they can no longer prevent unwanted modifications of their music or its combinations with other media such as user-created videos. Given the involved risks, a lot of artists cannot imagine giving up this control.¹⁷⁹ Instead, they want to know what users intend to do with their music and retain the right to forbid uses which they perceive as inappropriate. *“I put a lot of energy into my music (...). 80-90% of my songs are based on personal experiences and my past (...). The prospect that someone else would perform those songs – that threatens me.”* *“We wanted to know: Who does what with our music? (...) To say if necessary: No, we don’t want that.”* *“As an artist, you want to know how your works are used”* [Artists].

Artists’ fears on what may happen with their music are multifaceted. For example, some musicians are afraid that poor modifications would spoil the artistic value and intention of their music. *“[A remix may] ruin the original creation by modifying it without knowing the original intent and meaning of the song”* [Survey participant]. Others worry about their reputation. *“If I do a great job on a song, someone can butcher it in a remix or sample, and my name goes on that content, and my reputation could suffer as a result. I have allowed people to cover my work and I collaborate with other writers, but I still have a say in the finished product”* [Survey participant]. Besides, some artists want to prevent their music from being used in an inappropriate context,

¹⁷⁹ Of course, maintaining control and using CC licenses do not exclude each other as all CC licenses containing the ND condition require users to ask for permission before creating derivative works. However, a lot of artists do not recognize this difference. They believe that by using a CC license, they would lose control over their work. *“[CC] would enable others to change [my music]”* [Survey participant].

like supporting a political message they do not agree with. *“I prefer to know the uses to which my music is being applied”* [Survey participant].

Lack of need. Due to these fears, many artists prefer to release their music under full copyright which enables them to grant permission for modifications on an individual basis. *“If anyone wants to use my music, they can write to me.” “If someone wants to work on it, they come to me personally. It’s better that way”* [Survey participants]. Depending on the way rights owners respond to such requests, the uses allowed individually may resemble the ones allowed by CC licenses in general. *“Basically, I believe that we act in many cases in the spirit of CC (...). It is common practice to allow people to use our music free of charge for non-commercial purposes”* [Record label]. However, one difference remains: users have to ask for permission in advance.

Given the flexibility of copyright in making customized arrangements, several critics question the need for CC licenses in principle. *“Copyright is an eminently flexible tool for rights owners and used imaginatively it obviates the need for any parallel system which brings its own complexities and drawbacks”* (Faulder 2005). *“The truth is that the world has always ticked along just fine without [CC]. (...) Before CC I could always ask to reuse or mirror something. And that has not changed”* (Dvorak 2005). Most artists using CC prohibit commercial modifications of their works by using one of the NC variants. However, this restriction makes it impossible for professional artists intending to produce commercial works to build on their music. *“Offering your material under a CC license is unlikely to really help other serious creators”* (Australian Copyright Council 2006). Critics claim that this fact further corroborates the need for individual arrangements and shows the limited value of granting blank permissions via CC licenses. Moreover, they believe that *“the ‘fair use’ provisions of copyright law already provide for much (if not all) the benefits that CC intended, rendering the need for CC (...) moot”* (Heller 2008). *“I could always use excerpts for commercial or noncommercial purposes. It’s called fair use”* (Dvorak 2005).

Violation of artistic integrity. While many artists appreciate enhancements but want to keep the ultimate control to avoid poor modifications, some artists take a stronger position against modifications. They not only want to retain the possibility to veto uses they do not agree with, but also question the value of modifications in gen-

eral.¹⁸⁰ “*I spend several months getting each song I release to a level which I am happy with – why would I possibly want someone to ruin it?*” “*I have no desire for others to mess with my music in any way ever*” [Survey participants]. “[*CC*] *helps a ragtag bunch of gleaners who claim that copying is ‘creativity’ because they can’t create anything without directly reusing copyrighted material*” (Manes 2004).

Stylized fact 11: *A potential reason against using CC licenses is that artists do not want to give up control over their music. In particular, they are afraid that poor modifications may harm their reputation or the artistic integrity of their works.*

Other reasons

Legal and business requirements. While legal regulations may require the use of CC licenses, they may also prohibit their use. For example, artists modifying or covering songs whose copyright they do not own must not release the resulting works under a CC license. “*I don’t own the rights to my instrumentals, so [using CC licenses] is not up to me*” [Survey participant].

Moreover, artists’ business partners frequently discourage or forbid the use of CC licenses. None of the major labels and very few independent labels release music under a CC license. Consequently, artists signed to a record label are usually not permitted to use such a license. “[*It is*] *forbidden by record labels to release music under a CC license*” [Survey participant]. Additionally, PROs in several countries like Germany, do not allow their members “*to release music under a different license than the collecting society licenses, which [is] in most cases incompatible to CC licenses*” (Thinner 2007). PROs’ unwillingness to accept CC-licensed music may have several reasons, including the additional effort for treating CC-licensed music special or the unclear definition of non-commercial uses.¹⁸¹ Besides, PROs may oppose CC licenses, worrying that it will reduce their members’ revenues. “*There are people who would like to keep everything the way it is, because they can live well from their music. For them, everything that challenges the current situation is evil and has to be prevented*” [Expert]. Not being member of a PRO can have wide-ranging consequences for artists, e.g., cut them off from certain revenue streams such as commercial radio. Thus, the incompatibility be-

¹⁸⁰ People’s preference to build on their own achievements rather than to incorporate external contributions is well-known in literature. It is commonly referred to as the Not-Invented-Here (NIH) syndrome (e.g., Katz & Allen 1982; DiBona 2005).

¹⁸¹ Recently, the PRO in the Netherlands started to allow their members to release music under a CC license. For this purpose, the CC licenses were slightly adapted (Jamendo 2007a). A similar agreement was reached with the Danish collecting society (Ermert 2008).

tween the regulations of many PROs and CC deters a lot of artists from using the latter. “*The lack of GEMA compatibility represents from my point of view the biggest barrier for CC in Germany*” [Expert]. “*Since I opted for CC, I do not receive any funds [from GEMA]. This is somehow unfair (...). This incompatibility is a really big issue*” [Artist].

Stylized fact 12: *Conditions set by record labels and PROs make the use of CC licenses impossible for many artists.*

Enforceability. Since litigations involving CC licenses are rare, there is some concern that CC licenses are either not legally valid or respected by people. “*It’s no use. People do not respect any license*” [Survey participant]. “*So far, no one has ever tried to demand compensation in a trial for the violation of a CC license (...). I believe that it would be very difficult to demand such payments*” [Expert].

Approach. Section 3.5.4 discussed the academic critique on CC which focused on incompatibilities between licenses and a lack of vision and a too pragmatic approach of the CC organization (e.g., Hill 2005; Möller 2007). Interestingly, these issues are hardly mentioned by artists who seem to be more concerned with issues such as generating sufficient returns from their music or preventing inappropriate modifications. As an exception, one record label representative notes: “*[The CC initiative] chose not to deal face to face with the music industry to the degree that me and a few other folks would have liked to see happen.*”

6.3.6 Creating returns from CC-licensed music

On the one hand, using CC licenses may lead to a wider dissemination of music, enhance an artist’s reputation, provide support in establishing a closer connection to fans and improve the quality of music. On the other hand, using CC licenses may result in an uncompensated dissemination of music and turn economically rational customers into free riders (e.g., Buhse 2004, p. 63; Kromer 2008). Given these contrary effects, the question remains whether CC-licensed music can be translated into financial returns.

Given the lack of coverage in academic literature (see Section 3.5.5), this section presents four non-exclusive approaches to monetizing CC-licensed music: (1) selling CDs and downloads, (2) selling complementary products and services, (3) commercial

licensing and (4) reducing marketing and production costs. Figure 6.1 illustrates how the four approaches leverage the benefits of CC licenses.¹⁸²

✓ Benefit relevant for business model Approaches to monetize CC-licensed music		Benefits					
		Market-related				Collaboration-related	
		Publicity/marketing	Reputation	Community building	Customer demand	Improvement of music	Easier collaboration
Revenue	Selling CDs and downloads	✓	✓	✓	✓		
	Selling complementary goods and services	✓	✓	✓			
	Commercial licensing	✓					
Costs	Reducing marketing and production costs	✓		✓		✓	✓

Figure 6.1 Approaches to monetize CC-licensed music

Selling CDs and downloads. For most artists and record labels, selling CDs and downloads constitutes an important source of income. Despite the widely spread belief that CC-licensed music has to be given away for free, CC-licensed music is sold frequently, either in the form of physical CDs or non-physical downloads.

For example, Fading Ways, a Canada and UK based independent label, derives most of its profits from selling CDs while employing CC licenses. Since 2004, Fading Ways sells all of its music under a CC license for two reasons (Paharia 2004). First, it wants to signal its fans respect and trust, which eventually improves its public standing (Leyton 2003). Second, it manages to get more consumers in contact with its music, e.g., through its promotional “Share” sampler series, who may become buyers if they like the music (Paharia 2005c). Overall, Fading Ways believes that using CC licenses has a positive impact on its overall sales (Paharia 2005c).

Consumers’ willingness to pay for CDs – even when music is available for free – may be explained by the physical packaging which not only provides convenient handling, but is also a decorative item (Garlick 2005b; Haughey 2005).¹⁸³ *“The more free music we make available, the more people appreciate it, and the more people buy the music, and many of the people get the music for free and then (...) buy it as a CD so that*

¹⁸² This work defines a business model as the way an entity creates value for customers and appropriates rents. Thus, generating revenue is an important component of a business model (Amit & Zott 2001; Chesbrough & Rosenbloom 2002).

¹⁸³ The model of selling a physical product while offering a digital one for free can also be observed in the area of publishing (Paharia 2005a; Nagu 2007).

they have the art work and the physical souvenir.” “Although we offer our music for free in the Internet, selling CDs works well and yields a relatively high profit” [Artists].

Given the high costs of making and shipping CDs, some record labels like Magnatune, and independent artists like Jonathan Coulton focus on selling CC-licensed music online. In this model, customers pay for downloads of individual songs or whole albums. By using CC licenses, they expect, similar to Fading Ways, good marketing and an improved relationship with their fans. In contrast to the previous model in which the CD as a physical medium provided additional value, consumers solely purchase digital files which can often be legally obtained for free from other sources such as file-sharing networks, too. Despite this opportunity, a lot of customers still pay for the music. This behavior may be explained by the higher convenience and security of legal downloads¹⁸⁴ as well as a desire to support the career of an artist whose music one appreciates.¹⁸⁵ *“I feel that people are purchasing not only the music, but the connection to the artist” [Record label]. “It works because people recognize the honesty and authenticity” [Artist].* Besides, CC-licensed music is not always available for free in file-sharing networks since most users share CC-licensed music responsibly and do not exploit artists’ benevolence in an inappropriate way (e.g., Regner & Barria 2009).¹⁸⁶ This fact further explains why artists do not suffer as badly from the competition of free copies as one might assume.

Making music available in different forms for different prices (e.g., as free download from file-sharing networks, as paid download from iTunes, and – usually most expensive – as physical CDs) may be regarded as one form of price differentiation.¹⁸⁷ While customers who have a sufficient income but lack time may pay for downloads or CDs, those with time but little money usually download the music for free, e.g., from file-sharing networks. *“I feel safe with providing this route where people*

¹⁸⁴ One interviewee notes: *“I think people are willing to pay for that convenience a lot of times ” [Artist].*

¹⁸⁵ US artist Brad Sucks answers the question *“Why would I buy your music when you give it away for free?”* as follows in his FAQ section: *“Well I don’t know, but people have been doing it and I hope they continue. Maybe they like a CD to hold in their hand, maybe they just want to support artists, maybe it’s just flat-out pity” (Sucks 2009).*

¹⁸⁶ Customers voluntarily paying for music may have an ethical disposition against using others’ work for free. This would be in line with the findings of Bhattacharjee et al. (2003), Huang (2005) and Coyle et al. (2009) who detect that individuals who judge sharing music as morally correct pirate more frequently.

¹⁸⁷ Making payments voluntarily is not limited to CC-licensed music (Pfannenmüller 2007). For example, British band Radiohead released an album in 2007 for which it left it up to the fans to pay as much as they wanted (Tyranigel 2007). Comscore (2007) estimates that around 40% of downloaders were willing to pay for the album, yielding an average price per download (including non-paid ones) of USD 2.26.

can download for free, but I do want to leave it up to the user's hands, because they can download it (...) at the price they want" [Artist]. "[I have] been doing multiple pricing forever, because you could get it for free or you could pay full price (...). I put faith in the people" [Artist].¹⁸⁸ While paid downloads are obviously more desirable for an artist, free downloads may turn out to be valuable as well if they help to spread the word about the music or increase attendance at venues.

Stylized fact 13: Numerous record labels and artists manage to sell CC-licensed music in the form of CDs and downloads despite the availability of free copies.

Besides selling music, artists may also derive income from advertising or donations. For example, artists releasing their music on Jamendo receive half of all advertising revenue generated through their music (Jamendo 2007b; Creative Commons 2008). In addition, many artists who give away their music for free provide fans with the possibility to make donations. However, income from such sources seems to be marginal in most cases.¹⁸⁹ For example, Schiff (2007) found that the average artist on Jamendo received only around USD 2 per year in donations between 2006 and 2007.¹⁹⁰ Other interviewees confirm that customers do not like the idea of donating. "People are a little more comfortable with the store because they can buy music, as opposed to a bunch of music that you get for free and leave a tip for afterwards" [Artist].

Selling complementary goods and services. For artists relying primarily on complementary income sources such as concerts and merchandising, the benefits of using CC licenses are manifold. Since their music can be shared, more people may have contact with their songs which may, in turn, boost attendance at shows (Hartmann 2004; Krempl 2004; Stark 2006). "We're not worried about having free MP3s circulating through the networks, because they are going to come to the show where the band is on tour." "If I sell 1,000 copies and 10,000 are pirated, then at least I sold 1,000 and I have 10,000 fans now when I go play" [Record labels]. Moreover, spreading one's

¹⁸⁸ In contrast to this statement, various interviewees doubt, partially based on personal experiences, that consumers pay voluntarily for music if it is available for free. "We found that if people do have the option of downloading it [for free], they typically don't buy it" [Artist].

¹⁸⁹ Various studies, executives and artists question the model of funding music via advertisements, in particular for lesser-known artists (e.g., Heise 2000; Chaffing and Waters 2007; Enders Analysis 2007). For example, the German artist Smudo of the HipHop band "Die Fantastischen Vier" asks: "Who books banner advertisements at unknown bands without any page hits?" (Heise 2000).

¹⁹⁰ In a study analyzing donations at Jamendo, Schiff (2007) finds that over a period of 22 months, donations of around USD 21,000 were made. In October 2008, around 7,300 artists were registered on Jamendo (see Section 8.1). Given the growth of Jamendo, it seems reasonable to assume that around 5,000 artists were registered in 2007 when Schiff conducted his study. Thus, each artist received on average only USD 2 per year.

music can not only increase attendance at already scheduled concerts, but also stipulate demand for additional live performances. *“Every concert that I’m looking at right now is a direct consequence of our music being available either free or for sale. (...) People that have found us (...) contact us and then we coordinate and organize events in those locations”* [Artist]. While the model of giving away music for free to increase demand for concerts is not common in the music business, various artists, including a few established ones, pioneered it successfully. In 2007 for example, the American artist Prince gave away three million copies of his most recent CD to generate interest in a series of concerts played in London. Since all 21 concerts were sold out, this move was commonly considered a commercial success (Tyranziel 2007).¹⁹¹

For many artists, the revenue stream from concerts is on par or even exceeds that from record sales (Krueger 2005; Connolly & Krueger 2006; Perry 2007). This fact applies for various artists using CC licenses as well. *“We’ve reached a point in Canada certainly, where if we decided not to go anywhere else, we could just tour around, (...) and we could make a good living”* [Artist]. *“[We] derive compensation through other means such as live performance and merchandise”* (Chris Wetherell, US artist [Haughey 2005]). Apart from concerts, artists may profit from the additional publicity generated through CC by selling products such as merchandising (e.g., t-shirts) or sheet music or providing services such as teaching music lessons, creating customized music for a commission or doing remixes for other artists.¹⁹²

Stylized fact 14: *Artists relying on CC may profit from increased attendance at shows which compensates the lost sales due to increased sharing.*

Commercial licensing. Music is frequently utilized to increase the appeal of films, video games or advertisements. For these uses, a license needs to be acquired. While the commercial importance of licensing deals is hard to estimate, the demand for music is unwaning (WMG 2007). *“The interest for music is immense. Music is still one of the biggest ‘coolness-factors’. Fashion, movies and advertisements only score in combination with music”* [Record label].

¹⁹¹ Of course, it cannot be said for sure whether Prince’s profits would have been higher or lower if he had decided to sell his CDs instead of giving them away for free. German artist Smudo of the German HipHop band “Die Fantastischen Vier” questions the viability of this model for smaller bands: *“The opportunities of earning money with clothing or concerts are excessively overrated. A large and already known band can do this of course, but how does a band become known? The long and hard journey to reach that goal cannot be financed through merchandising or comparable sources. The expenses are higher than the earnings, since concerts are extremely expensive, in particular if too few people show up because they do not know the band yet. Shirts are not sold, but given away for free to generate attention”* (Heise 2000).

¹⁹² These examples were mentioned by artists in the survey discussed in Chapter 7.

Artists using the NC-versions of CC licenses retain the exclusive right to grant separate licenses for commercial uses. Indeed, various interviewees report considerable success in closing licensing deals. “*It’s almost an equal playing field on getting as much from my licenses, as I get from my digital download sales*” [Artist]. “*Today, [our revenue] is split 50/50 between selling downloads to consumers, and licensing music for commercial use*” (John Buckman, Magnatune [Brown 2005]). “*We are also closing an increasing number of partnership agreements and licensing deals*” (Laurent Kratz, Jamendo [Jamendo 2007b]).

CC licenses affect artists’ abilities to generate income from licensing both negatively and positively. On the one hand, they represent a major burden since they eliminate the possibility to grant exclusive licenses which some market participants seek. On the other hand, they bring forward additional licensing deals through two properties: First, the increased popularity of CC-licensed music may fuel demand for commercial licenses. “*The people that licensed [my music] heard me online*” [Artist]. Second, commercial projects may use CC-licensed music for free in their pre-production phase and only have to acquire a paid license when their product is released commercially. Thus, they can save costs in the development phase when budgets are usually tight. John Buckman of Magnatune considers this model to be the key success factor for his record label (Buckman 2004; Krempf 2006): “*We’re having a lot of success licensing our music to indie films. (...) The CC license lets filmmakers put Magnatune music into their film while it’s being made. Then, once the film is accepted for distribution and becomes in effect ‘commercial’ as people then start paying to see it, the filmmaker buys a commercial use license – at a price they could determine online at the very beginning*” (Brown 2005).

Stylized fact 15: *While CC licenses prevent exclusive licensing deals, they fuel demand for commercial uses and enable innovative licensing models.*

Reducing marketing or production costs. As outlined in Section 6.3.4, CC licenses may serve as a valuable marketing tool or enable artists to produce music of better quality. The three business models presented so far illustrate ways to turn these benefits into additional revenues. Furthermore, they can also be used to reduce costs.

Marketing music is one of the major expenses of record labels (Kretschmer et al. 1999a; Passman 2006, pp. 82-88). For example, creating music videos or booking advertisements is costly and requires a huge personal effort. Artists using CC licenses may be able to spare some of these costs if their fans, blogs or podcasts provide free promo-

tion. *“The more middle men you have, (...) the more money it takes to keep everybody happy”* [Artist]. Moreover, using CC may cause some media stir and generate additional attention for artists. *“In today’s world it’s too expensive to buy advertising and marketing for any new idea. It has been estimated to cost about USD 100 million to build a brand, and I don’t have that, so I needed to find another way. So what I found is if I do something really crazy that’s a good story that freelance writers will like, then I can get press”* [Record label]. Thus, CC licenses have the potential to render some of the required spending for marketing obsolete and lower the break even points for record labels and artists.

Recording high-quality music requires talent and sufficient financial resources. When artists lack skills or funds, involving external contributors may help to produce better music at significantly lower costs. The example of UK singer Barnett-Herrin (see Section 6.3.4) proves the potential of this model: By building on the contributions of other musicians, she managed to spare the costs of paying people to remix her work and to create a high-quality album at relatively low costs. Thus, using CC licenses may be one way for emerging artists to overcome certain liabilities of newness and smallness (Gruber & Henkel 2006).

Discussion. The previous paragraphs outlined four ways to appropriate value from CC-licensed music. Among the four business models, none clearly dominates. Instead, multiple approaches are usually combined in practice to generate sufficient returns.

While none of the artists referred to in this section are so-called “superstars” (Adler 1985), several of them manage to make a living from music. Of course, this analysis cannot determine whether adopting CC licenses actually increases or decreases profits. Nevertheless, some artists are convinced of the economic benefit of using CC licenses. *“Comparing our band with other ones which are on par with us except that we rely on a CC-based business model while they use a traditional GEMA-based business model, it becomes evident that we nevertheless earn more money than they do”* [Artist]. Others had less positive experiences. *“It doesn’t produce a whole lot of money, even though we are the most popular band on [Jamendo]”* [Artist].

While data is lacking, the cases studied suggest that artists focusing primarily on advertisements, donations and merchandising are usually not able to make a living from music. In contrast, those regularly managing to sell CDs or downloads, to grant commercial licenses and to play concerts seem to do much better. The importance of these “classical” income sources clearly shows that using CC licenses is not a business model.

It is a tool to generate publicity for one's music, create a closer connection to fans or improve the quality of one's music. These benefits need to be monetized by a combination of the approaches outlined above.¹⁹³

6.3.7 Suitability for different artists

While music sharing provides an effective way of discovering new music, it also replaces sales (see Section 3.4.1). Trading off these effects, Gopal et al. (2006) argue that piracy is beneficial for emerging artists whose music is not yet known and of uncertain quality, but harmful for established artists whose music is already popular since it is broadcasted on radio or TV. Thus, one may assume that CC licenses have a positive impact on emerging, but a negative impact on established, artists. Based on empirical evidence, this section reviews this proposition.

Emerging artists.¹⁹⁴ There are two main strategies for unknown artists to advance their careers: They can either work independently or selectively cooperate with partners (e.g., bookers, distributors) or they can attempt to get signed by a record label which then takes care of most business aspects. The impact of using CC licenses on both strategies is examined below.

The lack of popularity and fan base represents the most important challenge for emerging artists as the opportunities to sell their music or perform live are limited (Gordon 2005, p. 191). Since artists operating without support of a record label do not receive professional marketing and promotion support, they need to find other ways to become more well-known. By permitting sharing via CC licenses, artists may manage to spread their music wider and to gain more recognition. Since few people would probably buy the music of unknown artists, the gains in terms of publicity are likely to outweigh the lost sales due to sharing.

However, the benefits of using CC licenses do not usually materialize immediately. *“What the CC movement has shown me, is that it’s a lot like an organic garden. You can’t expect results over night, it takes a while to develop. (...) Now we’re actually really starting to see the benefits of the effort that we put in years ago”* [Artist]. Thus,

¹⁹³ The business models presented for CC-licensed music show various parallels to those being used for OSS which were discussed in detail in Section 2.3.4. This analogy may serve as another indicator for the potential viability of CC-based business models.

¹⁹⁴ This paragraph studies the impact of using CC licenses for lesser-known musicians who have ambitions of becoming professional artists. For pure hobbyist artists being primarily interested in spreading their music and not intending financial compensation, CC licenses seem to be a perfect fit (Kim 2007).

artists need tenacity. While it may take longer, some artists believe that building their career and developing a fan base slowly creates more sustainable success than relying on huge marketing spending. However, some experts doubt that it is feasible for an average band to acquire large following without the marketing and promotional support of a record label (Comscore 2007).

In order to accelerate their careers, a lot of emerging artists pursue the goal of getting signed by a record label in order to receive professional assistance and reach a wider audience. With regards to this goal, the effect of using CC licenses is ambiguous. On the one hand, CC licenses may potentially increase an artist's popularity. Since record labels are more likely to sign an already well-known artist, CC licenses may actually increase their chances of being discovered by a record label (Gordon 2005, p. 169). "A record company or a publishing firm (...) would only accept already known artists. So [CC] is very interesting, it's very good for unknowns" [Artist]. "A lot of the younger now-established artists – some of our own artists being among those – have made their first public steps with netlabel releases" (Steffen Bennemann, 1-Bit Wonder [Redenz 2008]). On the other hand, CC licenses deprive artists of the possibility of granting exclusive licenses. Thus, prior use of CC licenses rules out deals with many labels for those works that have been published under CC licenses. Moreover, CC licenses are not revocable, i.e., artists cannot forbid users to share their music at a later point in time. This fact may further reduce the commercial value of prior, CC-licensed works for record labels.¹⁹⁵

***Stylized fact 16:** Emerging artists working independently usually profit from using CC licenses. However, releasing music under such licenses may also reduce their chances of getting signed by a record label.*

Established artists. At first glance, CC licenses do not seem to be in favor of established artists. Being already well-known, these musicians may lose a fair amount of sales through sharing, and gain little through additional publicity (e.g., Gopal et al. 2006; Regner & Barria 2009). As this paragraph will show, this conclusion is however not accurate. In fact, established artists may either gain or lose by using CC licenses. To substantiate this proposition, the cases of two American artists are analyzed: Nine Inch Nails (NIN) and Britney Spears.

¹⁹⁵ One interviewee believes that previous CC usage causes less trouble than usually assumed: "[A French artist] released a small EP with her songs [under a CC license], and after six or seven months, someone from an independent French label (...) somehow discovered that talented girl, and wanted to sign a contract with her. (...) So she simply asked my friend if he could take it off the site and he said no problem. So it's really not that bad. (...) It's just a file on a computer" [Record label].

NIN is an American rock band founded in 1988 by Trent Reznor. Prior to 2007, NIN released five full albums with various record labels, some of which received gold and platinum status (Allmusic 2009; RIAA 2009). Trent Reznor is an outspoken critic of the business practices of record labels, criticizing in particular the too-high prices for records and the too-low profit shares of artists (Johnson 2007): *“One of the biggest wake-up calls of my career was when I saw a record contract. I said: Wait – you sell it for USD 18.98 and I make 80 cents? And I have to pay you back the money you lent me to make it and then you own it? Who the fuck made that rule?”* (Contactmusic 2009). His anger culminated in 2007 at a concert where he advised his fans not to pay any more for his music: *“Steal it away. Steal, steal and steal some more and give it to all your friends. Keep on stealing. One way or another these motherfuckers will get it through their heads that they’re ripping people off and that’s not right”* (YouTube 2007).

When NIN’s recording contract ended in 2007, the band decided to release their next album independently (van Buskirk 2007). In March 2008, NIN released “Ghosts I-IV”, a 36-track instrumental album via the band’s official website under a BY-NC-SA¹⁹⁶ CC-license. NIN’s negative perception of the business practices of record labels constituted a major driver for its adoption of CC licenses. Besides, the band had positive experiences with openness, e.g., by releasing the master recording files of a previous album on its web site in order to enable fans to remix their music, as Reznor explains: *“A lot of really fun stuff started to happen: communities developed, web sites were created, even traditional radio got in the game and began playing the fans’ mixes. (...) I felt the experiment, despite not having a specific purpose, was a success”* (Stereogum 2007). In addition, Reznor believes neither in the negative effect of piracy nor that he could stop it, even if he wanted to. *“I can give you free music and that may contribute to more people showing up to the show. (...) Pretty much every piece of music you want is free on the Internet anyway”* (Rose 2009a).

Different versions of the album were sold at five different prices: for free, users could get 9 tracks; for USD 5, they could download all 36 tracks including a PDF booklet; for USD 10, customers could obtain a two CD set; for USD 75, the band sold a “deluxe” edition consisting of two CDs and a DVD; and finally for USD 300, fans could purchase a limited “ultra deluxe” edition which contained two CDs, a DVD and four vinyl records, all with autographs of Trent Reznor (Heise 2008). The release of

¹⁹⁶ Attribution-Noncommercial-ShareAlike

“Ghosts I-IV” was a huge commercial success. Within one day, all 2,500 copies of the “ultra deluxe” edition were sold, yielding a revenue of USD 750,000 (Masnick 2008a). Within one week, the band grossed more than USD 1.6 million in orders and downloads (Kot 2008). On top of that, the album became the best selling album on the Amazon download store in 2008 (Amazon 2009).¹⁹⁷

NIN’s success selling CC-licensed music is puzzling. First, one would not expect an already established artist to gain much publicity from using a CC license. Second, one would expect a lot of users to become free riders as they may not see a need to support a band which has already made considerable profits in the past. In the case of NIN, both assumptions are wrong. As NIN was the first established artist to release music under a CC license, their decision generated a lot of attention and media stir. In particular, alternative media such as blogs frequently acclaimed the move.¹⁹⁸ Since NIN was not promoted by any record label, this marketing was particularly valuable.

Users’ decisions to purchase the album instead of downloading it for free seems to rest on two pillars: a superior product and loyalty to the artist.

- **Superior product:** First of all, downloading music from NIN’s web site or the Amazon MP3 store is more convenient and secure than obtaining copies from file-sharing networks. Moreover, the various versions of “Ghost I-IV”, in particular the “deluxe” and “ultra deluxe” ones, contained features one could not download. Thus, the “official”, paid versions outperformed the free ones in terms of quality and value which gave users a reason to buy it (Masnick 2009).
- **Loyalty:** NIN has a large, loyal fan base. Actions such as offering free downloads of photos, videos or raw files for remixing, hosting a film festival with user-generated films based on NIN’s music or creating an application for Apple’s iPhone to enable fans to connect with each other all created strong bonds between the band and their fans (Creative Commons 2009d; Masnick 2009; Rose 2009b). In addition, NIN sold their music directly without involving other intermediaries which increased users’ willingness to pay. “*Fans understood that purchasing MP3s would directly support*

¹⁹⁷ Since NIN did not involve any record label, the band obtained all revenues instead of 5-15% as defined in the terms of a classical recording contract (Hull 2004). Since NIN’s costs for marketing and distribution were quite small, the band’s decision to produce and sell its music independently instead of partnering with a record label most likely increased NIN’s profits.

¹⁹⁸ For example, one interviewee notes: “*I have to admit that I haven’t heard of NIN before. After this CC release, I consider buying the album at Amazon*” [Artist].

the music and career of a musician they liked” (Fred Beneson, Creative Commons [Anderson 2009]).

NIN’s success raises the question whether it can be repeated by other artists as well.¹⁹⁹ As outlined above, two factors seem crucial for a favorable result: a superior product and a large, loyal fan base. Creating a superior product which gives customers a “*reason to buy*” (Masnick 2009) should be manageable for artists. In contrast, not all superstars possess a similarly committed fan base as NIN. Since this asset is difficult to build, NIN’s model does not seem to be advisable for everyone (McLean 2007). “*I think that the CC approach is good for folks that have real fans (...) For artists that are pop artists, and all you’re getting is a sound bite, and a three minute jingle, it might not work so well, because I don’t think those fans are loyal to the artist to the same degree that a lot of independent music artists have found loyalty. The bigger artists like Robbie Williams and Britney Spears, they are brand names, so that if they have a new hit single, people watch it on TV, they dance to it at clubs, but I don’t think the same connection exists with a lot of those artists that we witness in the independent music world*” [Record label].²⁰⁰

Thus, there is wide agreement that most popular artists, like Britney Spears, signed to a major label would not benefit from releasing their music under a CC license.²⁰¹ First, they seem to lack the kind of committed fans that would still purchase music when it could also be obtained for free. “*You would think that the connection consumers have with the bands would keep them from stealing (...). I mean there’s a few of those bands out there (...), but for the great number of bands (...), people don’t care*” [Expert]. “*People think that she [Britney Spears] has enough money already, so I don’t need to pay USD 10 for her CD*” [Artist]. Besides, releasing music under a CC license might not be seen as credible for an artist like Britney Spears when her record label is at the same time filing suits against file sharers. “*Britney Spears is a bad guy, well she’s not*

¹⁹⁹ The case of American HipHop artist Saul Williams illustrates that repeating NIN’s success is difficult. Similar to NIN, Williams released an album in 2008 for which fans could either pay USD 5 or nothing. In contrast to NIN, his album was not released under a CC license. Trent Reznor, producer of the album, comments the fact that only 18 percent were willing to pay for the album as follows: “*I’m not sure what I was expecting, but that percentage (...) seems disheartening*” (Anderson 2008b).

²⁰⁰ An EMI executive gives a similar explanation for the success of Radiohead whose model of leaving it up to their fans how much to pay is somehow similar to NIN: “*Tremendously loyal fans that you’re able to reach through the Internet and who are able to reach each other. That’s huge. And guess what? That costs less*” (Jay Samit, EMI [Business Week 2001]).

²⁰¹ Two observations further corroborate the claim that superstars are likely to lose from using CC licenses. First, no major label and hardly any independent label have released music under a CC license so far. Second, plenty of academic studies have proven that file-sharing hurts record sales, in particular sales of established artists (see Section 3.4.1).

really a bad guy, but she's part of the establishment, and if she was still on a record label when she did this, people would see this as an opportunity to hurt the record label, which is something that people actually want to do because people hate record labels, and so I would not be surprised if somebody made specific attempts to distribute her music for free and compete with her directly. Not because they hate Britney Spears, but because Britney Spears represents the music industry" [Artist]. These statements further corroborate the proposition that credibility is absolutely crucial for artists using CC licenses. Additionally, record labels spend considerable sums on marketing in exchange for a large cut of the profits. Given these high spending levels, the additional promotion effect of using CC may be limited. *"To do CC requires a complete change of business model. I don't think it makes sense if you're going to use a traditional business model"* [Artist].²⁰²

Thus, major labels would likely be ill served by widely adopting CC licenses.²⁰³ *"I think it's bad and the reason is they have a monopoly power that is very good at making money for them and CC breaks that"* [Record label]. Furthermore, the publicity generated by releasing music under a CC license, one of the major benefits, would probably decline if CC licenses were widely adopted. *"If everyone would do this, it would become boring"* [Artist].

Stylized fact 17: *In order to benefit from CC, established artists need to provide customers with a superior product to give them a reason to buy and establish a connection to fans to build credibility and trust.*

However, there are various ways of selective use of CC licenses that may make sense for record labels. One idea could be to freely give away a few, probably old, songs to stimulate interest in a new album. Another approach, namely to allow users to remix certain songs in order to strengthen the bonds between artists and fans, is already

²⁰² Two interviewees challenge the assumption that using CC licenses would incur huge losses and generate little marketing. *"If people want to copy, they copy. When people want to buy a CD, they buy a CD"* [Expert]. *"If Britney Spears were to release music under a CC license, what would happen? Well, she would get some amount of free press, because I think people would be surprised by that. (...) For a large successful artist to do that would still mean attracting a lot of attention, so that's good for her. People would be able to send copies of her music around, it would be available on P2P sites, you could say that's a bad thing, but on the other hand, that's happening anyways"* [Artist].

²⁰³ In contrast, one interviewee believes that CC may actually make the music business larger. His argument rests on the experience that nearly all new technologies to facilitate copying were first fought by record labels, but eventually increased their profits. *"This clash of cultures lasts for about 40 or 50 years, starting with the introduction of copying machines. (...) However, every time, [the record labels] have profited, when you look at the sales figures"* [Expert]. Furthermore, record labels may improve their negative public image by using CC licenses. *"If labels can properly message what they do as something that helps artists and new talent (rather than exploiting them), then I think fans will act supportively"* (Fred Benenson, Creative Commons [Anderson 2009]).

employed. Various record labels regularly provide songs of famous artists such as R. Kelly or Public Enemy for remix contests. To legalize remixes but prevent their commercial distribution, the songs are sometimes published under a CC BY-NC-SA license (Jamglue 2009). With up to 1,500 user-submitted remixes, the contests may be regarded as successful for record labels. *“In a sense they have an army of marketers working for them for free in the people who are entering the remix contest, because first of all they spend hours listening to the original material as they build their mix, and as they modify their mix, and then once they are happy with their mix, they spend hours promoting it, so it’s like free marketing”* [Retailer].

6.3.8 Change in CC usage

Within this qualitative study, artists were studied who released all, some and none of their music under a CC license. Given the numerous benefits and drawbacks of using CC licenses (see Sections 6.3.4 and 6.3.5) as well as their varying impact at different points in artists’ careers (see Section 6.3.7), changes in artists’ use of CC licenses seem likely. This study reveals two observations: First, learning and positive experiences with CC licenses reinforce CC usage. Second, increasing professionalism and requirements of business partners are reasons to stop using CC licenses.

Learning and experiences. Using CC licenses constitutes a strong deviation from the established practices of maximum protection. Thus, it is fair to presume that the change from closed to open does not happen abruptly, but evolves over time (Käs 2008). Interestingly, none of the interviewed artists who are not using CC licenses in any fashion, or using them only selectively, has concrete plans to release more music under a CC license. The musicians are either worried about the potential drawbacks of using CC licenses or convinced of the benefits of selective CC use.²⁰⁴ Within the group of artists releasing all of their songs under a CC license, all of them plan to keep this policy going forward. *“We would definitely release the next album with our own songs under a CC license”* [Artist]. Most artists explain their decision to maintain the current model with positive experiences with using CC licenses made in the past.

²⁰⁴ Besides, they believe to have a lack of experience which hinders their abilities to make an educated decision how to change their use of CC licenses. This lack of knowledge usually stems from the relatively short experience with CC. Since most artists do not release music every year, making experiences with CC licenses takes some time.

Professionalism and external requirements. Using CC licenses is typically more beneficial for emerging than for established artists (see Section 6.3.7). Besides, most record labels do not permit releasing music under a CC license (see Section 6.3.5). Thus, it seems likely that artists decrease the frequency or stop their use of CC licenses as they become more professional and/or get signed by a record label. When asked under which conditions their use of CC licenses would be likely to decline, few artists referred to the latter case: an attractive deal with a business partner which would disallow the use of CC licenses. *“It would have to be some sort of small miracle, in the sense that I did partner up with a larger organization or label”* [Artist].

The case of the German netlabel Thinner illustrates the negative impact of increasing professionalism on CC usage. Like all netlabels, Thinner started by releasing free music under a CC license. Since it could not offer financial incentives, various artists left the label to join independent labels once they reached a certain level of popularity. Thus, the label felt that this model would hinder its further development. In order to retain such artists and reach a higher level of professionalism, Thinner consequently reduced the share of music released for free under a CC license (Köhler & Biedermann 2007).

6.3.9 Alternatives to CC licenses

Artists releasing music under a CC license grant users additional rights. This section introduces two alternative means to achieving a similar effect: making individual agreements and tolerating copyright infringement.

Making individual agreements. Section 6.3.7 illustrated how CC licenses can provide the legal infrastructure for remix contests. However, such competitions can also be realized in other ways. In 2004, Rock musician David Bowie held a remix contest in which he asked fans to mash two of his songs into a single track (Terdiman 2004). In similar ways, various artists have invited users to remaster their songs (e.g., Ganley 2004; Cheliotis 2009). In 2006, WMG closed deals with YouTube and Muvee, two video sharing sites, that allow users to create their own videos using music from WMG’s catalogue and weave personal video clips and photos into original music videos (Kremp 2006; WMG 2006). Thus, WMG permitted – to a limited degree – the creation of derivative works (Bockstedt et al. 2006).

These examples illustrate the potential of individual agreements to achieve similar effects as CC licenses. Custom solutions, however, have two main drawbacks. First, drawing such agreements may be expensive and time-consuming. Second, users may be reluctant to engage with artists' content if they do not recognize the additional rights or understand the terms.

Tolerating copyright infringement. Users sharing music or creating derivative works without explicit permission infringe copyright. While rights holders may take legal actions against such behavior, they may also decide to tolerate them. In fact, ignoring such copyright violations is common in the music business. For example, individual artists or independent labels hardly sue file sharers or people publishing personal videos that use their music as background. *"In 2001, I started using the Internet (blogs, MP3s, P2P) to spread my music and not worrying so much about copyright violation"* (Brad Sucks, US artist [Sucks 2009]). *"Generally, I don't care (...) if someone releases a small home video on YouTube and uses our music in the background"* [Record label].

While many artists and labels do not give explicit consent to sharing or remixing, they are very well aware that their music is going to end up in a lot of places and used in various contexts. *"[Artists] approve of what CC does already. So their mindset is already: I want my music out there in as many places as possible"* [Retailer]. Thus, CC legitimizes previously tolerated uses. However, this formalization is valuable since it creates legal security for users and motivates more people to engage with their music. *"By giving it a name, it empowers that experience"* [Retailer].

6.3.10 Intermediate conclusion

Emerging artists form the bulk of creators releasing music under a CC license. For most of them, making music is a leisure activity. Spreading their works usually ranks higher than generating financial returns, which motivates their use of CC licenses. However, some adopters of CC licenses are professional artists who make a living from their music. Artists' usage of CC licenses varies: While some musicians release all of their works under a CC license, others employ the licenses selectively, e.g., solely for promotional or outdated works. Overall, restrictive licenses are more popular. In particular, preventing commercial uses is important to artists in order to retain the option to make separate agreements for such uses as well as to make sure that other parties do not profit financially from their work. Besides the perceived benefits and drawbacks, various other factors influence CC adoption. The main inhibitors are a lack of awareness

towards copyright and its alternatives as well as conditions set by business partners such as PROs and record labels. Factors facilitating CC adoption include the flexibility of the licenses, their ease of use and clarity, and negative experiences with the traditional practice of relying on strong protection.

The reasons for adopting CC licenses may be grouped into three classes related to market, collaboration and idealism. With respect to the market class, artists expect to gain publicity, improve their reputation, build a community of fans and create new opportunities for their works. With regards to collaboration, artists hope that joint projects with other musicians and modifications of their works become easier which may enhance the quality of their music and provide a source of inspiration. Idealistic and altruistic motives matter as well: Artists either want to treat users fairly, give back to society, disassociate themselves from the music industry or support the idea of free music. Financial and control losses represent the two main reasons against using CC licenses. Financially, artists are usually concerned that using CC licenses makes it impossible to sell their music, induces income losses and reduces the current and future value of their works. With regards to control, artists either question the value of modifications in general or are afraid of losing control over future enhancements to their music which they rather permit on an individual basis.

Leveraging the benefits of using CC licenses, record labels and artists have come up with several profitable business models. Revenue is generated by selling music in the form of downloads and CDs, by selling complementary products and services such as concert tickets and merchandising, or by charging fees for commercial uses. In addition, marketing and production costs may fall as a consequence of using CC licenses. Consistent with the fact that most adopters of CC licenses are emerging artists, this group has been identified as most likely to profit from the benefits of such licenses. In order to capitalize on CC licenses as well, established artists need to provide a superior product and have a loyal fan base. Due to these preconditions, it does not seem advisable for most established artists to adopt CC licenses. While artists seem to change their use of CC licenses rarely, increases may be partially explained by learning, decreases by growing professionalism. Using CC licenses is one form of practicing openness. Other means include making individual agreements or tolerating copyright infringement; however, these less explicit forms do not yield the same advantages as CC licenses.

The qualitative study also found answers to two of the research questions outlined in Section 2.5, namely: What are the reasons to freely reveal innovations in the absence of

distributed, collaborative development? (*Research Question 1*) And: What are the characteristics of individuals who practice free revealing? (*Research Question 3*)

In all known cases of free revealing, the enablement of distributed, collaborative development constitutes one of the major benefits of sharing innovations. Its importance has been documented in various studies, particularly in the context of OSS (e.g., Henkel 2004, 2006; Bonaccorsi & Rossi 2006). However, music largely lacks the required characteristics for distributed and collaborative development. Thus, the question on artists' motivations to adopt CC licenses can be generalized to the question whether free revealing can be viable in the absence of distributed, collaborative invention and why. Based on the results of this chapter, two propositions may be put forward:

Proposition 1a: *In the absence of distributed, collaborative development, market-related reasons such as wider dissemination or better reputation may explain free revealing by professionals and firms.*

Proposition 1b: *In the absence of distributed, collaborative development, idealistic or altruistic motives may explain free revealing by hobbyists.*

Besides the reasons for using CC licenses, this chapter explored the characteristics of record labels and artists practicing use of CC licenses. Compared to artists relying on full copyright, the ones using CC licenses seem to have a lower degree of financial orientation, stronger altruistic motives and perceive their music to have less commercial appeal. This implies:

Proposition 2a: *Innovators pursuing altruistic motives and no financial interests are more likely to freely reveal their innovations.*

Proposition 2b: *Innovators perceiving the commercial value of their innovations to be low are more likely to freely reveal them.*

In addition to advancing the understanding of free revealing, this study has various implications for theory and practice. In the public perception, creators using CC licenses are hobbyists (e.g., Kim 2007) who create works of poor quality (e.g., Manes 2004) and/or possess a strong ideological conviction (e.g., Cheliotis et al. 2008). Due to their use of CC licenses, they can no longer generate any returns from their works (e.g., Dusollier 2006; Weatherall 2006). This study adjusts this oversimplified view in several dimensions by shedding light on professional artists' use of CC licenses, market- and collaboration-related reasons for using them and profitable business models leveraging their strengths.

Many emerging artists protect their works tightly in order to guard their reputation and keep all options open. This thesis showed that this strong emphasis on control is

often not economically rational. In fact, releasing some control may help musicians to gain more publicity and attract fans. In contrast, established artists and record labels regard CC licenses as detrimental for their business and dismiss their use (Elektrischer Reporter 2008). Since most established musicians would likely lose money from adopting CC licenses, and record labels, currently taking care of production, marketing and distribution would probably suffer even worse, their opposition against CC is by and large rational. However, given the positive experiences with selective openness, e.g., in the form of remix contests, they may want to consider additional areas for giving up control.

The potential advantages of openness for commercial firms are well understood (e.g., Harhoff et al. 2003; Bonaccorsi & Rossi 2006; Henkel 2007). In order to harness such benefits, firms may need to adapt their business models, e.g., by focusing more strongly on complementary income sources, and fulfill certain preconditions like having a good reputation to receive external development support (e.g., Chesbrough 2003a, 2003b; Dahlander 2005; Dahlander & Magnussen 2005; Goldman & Gabriel 2005, p. 181). By discussing various CC-based business models and the suitability of CC licenses for artists at different points in their career, this study gives rich evidence for what it takes to profit from openness. In particular, it shows that firms are likely to lose from openness whose business models and capabilities are not aligned to its requirements.

The CC initiative has frequently been criticized for having taken an overly pragmatic approach which eventually reinforces rather than changes copyright (Hill 2005; Stallman 2005; Möller 2007). By focusing on such aspects, the discussion has paid less attention to the fact that a lot of artists and record labels make a business out of CC-licensed music. By providing an overview of the tangible benefits of using CC licenses as well as CC-based business models, this work fills a gap in the literature.²⁰⁵ As the empirical data is novel, the results are interesting on their own. Generally speaking, this study advances our understanding of value appropriation in weak appropriability regimes and open innovation processes.

²⁰⁵ In particular, this study finds various complementary assets and capabilities such as a large fan base, a high credibility, a superior packaging, the ability to play concerts or full copyright-protected songs to play an important role in appropriating returns from CC-licensed music. This finding is in line with Fosfuri et al. (2008) and Dahlander (2005) who find complementary assets to be an important mechanism for OSS firms to improve the conditions for value appropriation. Complementary assets relevant in the context of OSS may include brand name (Feller & Fitzgerald 2001; Weber 2004, p. 200), specific proprietary software (Hecker 1999; Weber 2004, p. 108), tailored hardware (Henkel 2004), IPRs (Fosfuri et al. 2008) and firm-specific knowledge (Grand et al. 2004).

The findings of this chapter may be summarized as follows: Giving up some level of control may yield better commercial results than sticking to a model of maximal protection – or in the words of an interviewee: “*Either I can control it, in which case I know exactly what I get, or I release control and something better might happen. But if I don’t release control, I know something better won’t happen*” [Record label].

7 Explaining artists' adoption of Creative Commons licenses

The qualitative research presented in Chapter 6 showed that artists use CC licenses for a variety of reasons. To gain a deeper and more quantitative understanding of the main drivers and inhibitors of choosing CC licenses, a large-scale survey was conducted. This study serves as an additional source of triangulation and tests a set of formal hypotheses which are based on earlier findings (Jick 1979; Greene et al. 1989, p. 268f.; Snow & Thomas 1994).²⁰⁶

Section 7.1 outlines the design of the survey and the key steps that were taken to conduct it; the descriptive results are presented in Section 7.2. In addition, an exploratory cluster analysis illustrates the existence of different groups of CC users (7.3). Finally, several multivariate analyses are conducted to identify the main factors influencing CC adoption and license choice (7.4). In particular, formal hypotheses derived from literature and the qualitative empirical study are tested.

7.1 Survey design and methodology

7.1.1 Data source and sample selection

The survey studied artists' use of and views on CC licenses. Thus, the target population included artists who had used CC licenses before or had at least considered their use.²⁰⁷ Since there is no complete directory of creators of CC-licensed content, several steps were taken to identify the relevant sample.

Since CC licenses are primarily intended for content published on the Internet, nearly all relevant artists can be found online (Creative Commons 2009c). In order to reach a wide audience, most musicians make their works available on special platforms dedicated to music. Artists using CC licenses usually prefer web sites with integrated CC licensing functionality. The CC organization maintains a directory of such web sites (Creative Commons 2009e). In order to address a large and diverse set of artists, this

²⁰⁶ Triangulation is meant to improve the value and accuracy of conclusions (Jick 1979; Eisenhardt 1989; Uzzi 1997).

²⁰⁷ The target population defines the entities about which a conclusion is to be drawn (Schnell et al. 2005).

survey targeted the four largest English-speaking communities specializing in CC-licensed music.²⁰⁸ Two of them let the artist decide whether to use a CC license or not (ArtistServer, Soundclick), and the other two make the use of CC licenses mandatory (Jamendo, Magnatune).

Contact data and basic information like country, genre, number of released songs, date of last release and use of CC licenses were retrieved for all 386,525 artists on the four websites from their public profiles and stored in a database. By publishing ones music on one of these platforms, each of these artists made a deliberate decision to use or not to use a CC license. In order to omit inactive artists, 337,489 musicians, who have not release at least 10 songs, or who did not release a song in 2007 or 2008, were sorted out. The resulting frame population consisted of 49,036 artists.²⁰⁹ The sample drawn for this survey consisted of 33,800 artists from 143 countries, comprising all CC users and 50% of the full copyright users (the non-CC users) from Soundclick.²¹⁰ By using such a large and diverse sample, it was possible to account for platform specifics and regional differences. In addition, potential sampling errors could be minimized.²¹¹

7.1.2 Survey design

The development of the questionnaire was based on the results of the qualitative empirical study and an extensive literature review.²¹² This ensured that the use of CC licenses was measured correctly and no important driver for its adoption was missed. Since artists were contacted electronically to participate in the survey, a web-based design seemed most appropriate. In order to enable statistical analyses and reduce the effort to respond, predominantly closed questions were asked. Participants were asked questions about the way they create and market their music, and about their personal

²⁰⁸ This survey intended to understand why artists release music under a CC license. Thus, web sites focusing on sound snippets (e.g., CC Mixer) or joint creation of music (e.g., Jamglue) were excluded.

²⁰⁹ The frame population comprises the actual entities from the target population that are included in the study (Stier 1999, p. 114).

²¹⁰ By assigning a CC license to a work, creators do not give up their copyright. Thus, CC is rather a complement than an alternative to copyright. For reasons of simplicity and readability, this chapter will refer to artists using CC licenses as “CC users”, and to others as “copyright users”.

²¹¹ When observations are obtained from a subset rather than from the entire population, sampling errors may occur (Silk 1990).

²¹² A broad range of publications was considered, covering topics such as the motivation of creators to use CC (e.g., Kim 2007; Cheliotis et al. 2008), motivations of OS developers (e.g., Hertel et al. 2003; Lakhani & Wolf 2005), reasons for firms to engage in OSS (e.g., Henkel 2006; Käs 2008), technology acceptance (Davis 1989), innovation diffusion (Rogers 2003) and peer influence (e.g., Cialdini & Trost 1998, Henkel & Block 2008).

views on and experiences with a broad range of CC-related topics. For the latter type, importance or agreement was usually measured on a 5-point ordinal scale. Mostly, “I don’t know” or “Not applicable” were given as options to prevent meaningless or random answers (Schnell et al. 2005, p. 337). Wherever possible, survey items were adapted from prior studies. In total, participants had to answer at most 43 questions. Conditional questions were used to adapt the questionnaire to respondents’ answers and prevent irrelevant questions. Most questions were marked as mandatory to receive a larger set of answers for statistical, in particular multivariate, analyses. On average, completing the questionnaire took about 12 to 15 minutes.

A pretest was conducted to guarantee clarity of questions and answers as well as a high level of user-friendliness (Bortz & Döring 2006, pp. 252-259.; Schnell et al. 2005, pp. 347-353). To obtain a broad range of feedback, the survey was reviewed by artists, academics and students. Feedback from seven artists ensured relevance, accuracy and comprehensiveness. Six researchers reviewed the survey, checking question types, phrasing and ordering. Involving five students with little knowledge on CC assured ease of use and understandability for non-experts. The feedback was overwhelmingly positive. The overall structure and the questions remained unchanged. A couple of changes in the wording and ordering of questions were made to make the questionnaire easier to answer and avoid misunderstandings. The complete questionnaire can be found in Figure A.3 in Appendix A.3.1. The questionnaire consisted of four sections, each grouping questions of similar subject. Questions covering artists’ use of and experiences with CC, which seemed most relevant to the participants, were presented first; the least relevant ones covering aspects such as demographic information were asked last (Kreutz & Titscher 1974; Dilman 1978, pp. 123-128).

7.1.3 Conducting the survey

The survey was launched in October 2008 and remained available until May 2009. Several measures were taken to maximize the response rate (Dilman 1978, p. 12; Schnell et al. 2005, p. 382; Bortz & Döring 2006, p. 257). A personalized invitation was sent to each artist in the sample which contained a link to the questionnaire to minimize the effort to respond.²¹³ Given the different backgrounds of CC and full copyright users,

²¹³ Another potential problem is measurement error. It can occur if the wrong persons answer the survey. Since artists were contacted directly, measurement error is unlikely to be a major issue (Silk 1990).

two different versions of the cover letter were used (see Figure A.1 in Appendix A.3.1). To signal the value of their participation, artists could order a report summarizing the survey results and take part in a lottery of book gift certificates. To establish trust, the cover letter outlined the purpose and scope of the survey and assured non-commercial use and confidentiality of answers. Further credibility was built by leveraging the reputation of the Technische Universität München. In addition, Lawrence Lessig, Professor at Standard Law School and founder of the CC foundation, kindly acted as sponsor of this research.

Artists on the platforms ArtistServer, Jamendo and Magnatune were contacted directly by e-mail or by the messaging functions of the websites. The remaining artists on Soundclick could neither be reached by e-mail nor easily via the messaging function available on the platform since it strongly limited the number of conveyable messages per day. Thus, a software program had to be written to bypass this restriction. It composed personalized messages based on the information stored earlier in a database and sent them via the proprietary messaging function of the platform. Artists received this message as a regular e-mail. After removing duplicates and artists with missing contact data from the sample, personalized invitations were sent to 32,389 musicians and received by 28,762 artists.²¹⁴ Of the questionnaires returned, 1,857 were partially completed, and 1,547 were fully completed, yielding a response rate of 6.5% and 5.4%, respectively. Table 7.1 summarizes the survey statistics.

²¹⁴ Of course, it cannot be determined how many artists read the message. For example, artists may have linked specific e-mail addresses to their accounts on these platforms which they hardly check.

	Soundclick			Jamendo	Magnatune	ArtistServer	Total
	CC users	Full copy-right users	Total				
Population*	15,478	30,472	45,950	2,779	254	48	49,036
Sample	15,478	15,236**	30,714	2,779	254	48	33,800
Duplicates/Overlap/ Missing contact data	0	1	1	1,367	38	5	1,435
Surveys sent	15,478	15,235	30,713	1,412	216	43	32,389
Sending failed	1,475	722	2,197	52	16	3	2,267
Surveys received	14,003	14,513	28,516	1,360	200	41	28,762
Surveys returned	857	604	2,460	327	51	15	1,857
All	857	604	2,460	327	51	15	1,857
Fully completed	725	485	1,209	278	45	12	1,547
Response rate	6.1	4.2	5.1	24.0	25.5	36.6	6.5
All	6.1	4.2	5.1	24.0	25.5	36.6	6.5
Fully completed	5.2	3.3	4.2	20.4	22.5	29.3	5.4

* All artists with at least 10 released songs and at least 1 released song after January 1st, 2007
 ** 50% of full-copyright users selected

Table 7.1 Survey statistics²¹⁵

Tokens were used to control access to the survey and improve data quality. First, combining survey responses with already stored information on country and genre increased data reliability and shortened the questionnaire. Second, it could be ensured that no participant answered several times and that no person participated who did not belong to the sample. Third, targeted reminder messages could be sent.

Discrepancies between artists who had and those who had not answered the survey could systematically bias the obtained results. To check for differences between the two groups, three tests were performed: an analysis of the communicated reasons for non-participation, a late-response- and a non-response-analysis.

Communicated reasons for non-participation. 41 artists who decided not to participate in the survey shared their reasons for this choice in a brief e-mail (see Figure A.4 in Appendix A.3.2). The reasons not frequently mentioned were *lack of interest* (13), *insufficient knowledge* (7) and *lack of time* (4). They indicate that survey respondents may differ from the population by assigning a higher importance to CC licenses and copyright. The lower participation level of Soundclick users is in line with this assumption. Since CC is less visible on that website, it seems reasonable that those users care and know less about CC. Two artists explained their non-participation with

²¹⁵ There is a large difference in the response quote between Soundclick and the other three platforms. Two reasons may be responsible for this difference: First, CC is less visible on Soundclick, i.e., a lot of Soundclick users may care less about or have less experience with CC. Thus, many are likely either not interested or able to answer the questionnaire. Second, Soundclick users, mostly coming from North America, may be less willing to participate in a survey conducted by a European university.

an *aversion against CC* (2) which suggests that musicians strongly believing in copyright and not seeing any value in CC may not have participated. *An aversion against commercialization of music* (1), as one may expect it from amateur creators possessing a strong ideological conviction, was only expressed by one out of 41 artists. Other reasons such as *language barriers* (12) and *technical problems* (1) do not seem to be sources of potential bias. In general, survey respondents seem to care and know more about CC compared to non-participants. Mostly, they have a certain sympathy for the licenses.

Late-response-analysis. A late-response-analysis rests on the assumption that people answering a survey with a large time lag are somehow similar to the ones not responding at all (Armstrong & Overton 1977). To distinguish between early and late responses, the date of the reminder message is used. Given the subject of the survey, a potential bias may originate from the fact that respondents tend to be CC enthusiasts with three key characteristics: strong use of CC licenses, very positive view of the licenses and low degree of professionalism. If these hypotheses were true, the survey would overestimate CC adoption, give a too positive picture of CC licenses and neglect opinions of professional artists. Interestingly, none of these assumptions hold. In reality, late respondents use CC more intensely ($p = 0.000$), exhibit more characteristics of hobbyists like having a lower financial orientation ($p = 0.000$) and a lower perception of the commercial value of their music ($p = 0.002$), and evaluate the benefits of CC licenses such as easier collaboration ($p = 0.000$) and good marketing ($p = 0.048$) in a more positive light. The detailed comparison between early and late respondents can be found in Table A.8 in Appendix A.3.2. Thus, the suspected bias could not be confirmed. The identified differences can be explained by the fact that survey participants seem to be more serious artists who know more about CC licenses. Consequently, they employ CC licenses more selectively and evaluate their benefits more differentiatedly.

Non-response-analysis. For the artists contacted via Soundclick who formed the largest subgroup and exhibited the lowest response rate, demographic characteristics of survey respondents and frame population were matched (see Figure A.5 in Appendix A.3.2). Compared to the frame population, the survey respondents were more likely to belong to the genre Rock and Pop and less likely to make HipHop, Electronic or Classical music (chi-square test, $p = 0.000$). Assuming that making HipHop, Electronic or Classical music involves fewer musicians than Rock and Pop music, the deviation in the

genre split supports the presumption of a bias towards more professional artists.²¹⁶ Survey respondents were more frequently located in Europe, and less often in America compared to the frame population (chi-square Test, $p = 0.000$). This difference may be explained by the fact that the artists were contacted by an institution (Technische Universität München) which is better known in Europe.

Despite the rather low response rate, no bias could be identified that invalidates the survey results. However, the tendency of the survey to be more appealing to serious artists with a good understanding of and a certain sympathy for CC should be kept in mind when interpreting the results. In order to make analyses comparable, only complete questionnaires were considered further. In addition, 180 questionnaires were ignored due to major inconsistencies or unrealistic values. As an example for major inconsistencies, questionnaires were dropped in which the number of CC-licensed songs exceed the total number of released songs. As an example for unrealistic values, responses were ignored from artists who reported to have released more than 400 songs since 2004, i.e. more than one song per week. Based on expert judgments, it is not possible to release serious music in this frequency.²¹⁷ After removing this data, 1,361 observations remained for further analyses. As will be discussed in Section 7.2.2, only 1,184 of these 1,361 artists were actually familiar with CC licenses. Thus, all CC-specific analyses presented in Sections 7.2, 7.3, and 7.4 are based on 1,184 observations.

7.2 Descriptive analysis

This section provides descriptive data on artists' use of and views on CC licenses. After an overview of the demographic characteristics of the survey participants (7.2.1), their CC usage and license choices (7.2.2) are discussed. Following that, artists' goals and general beliefs (7.2.3) are presented. Evidence is provided on the perceived ease of use of CC licenses (7.2.4) and on the benefits and drawbacks of using CC licenses (7.2.5). In addition, legal or business requirements influencing CC adoption are analyzed (7.2.6). Taking up the previous discussion of CC-based business models, artists'

²¹⁶ This work does not claim that HipHop, Electronic or Classical music is less valuable or sophisticated than Rock or Pop music. However, Rock and Pop music usually requires the collaboration of several people while the other kinds of music are often made alone. Thus, artists making Rock and Pop music may put more effort into their music which indicates a higher level of professionalism.

²¹⁷ Some survey participants indeed released more than 400 songs since 2004. In most cases however, these releases should be more accurately labeled as "sound snippets" rather than songs. Thus, it seemed fair to drop these observations.

main income sources are examined (7.2.7). Lastly, changes in CC usage over time are discussed and an outlook on their future plans with regards to CC usage is given (7.2.8).

7.2.1 Demographic characteristics

The survey participants represent a diverse group of musicians, as indicated by their demographic characteristics listed in Table 7.2. In a nutshell, the average respondent is 35 years old, male, well-educated and has made solo music for approximately eight years.

Variable (N = 1,361)	Mean	Median	St. Dev.	Minimum	Maximum
Age	35.224	34	12.384	13	71
Gender = Male	0.948	1	0.222	0	1
Education (Years)	n/a*	15	n/a*	0	>30
Release year of first song	2001.080	2004	7.741	1960	2008
Band members	n/a*	1	n/a*	1	>50

* Not available since maximal values survey participants could choose for education/band members were ">25/>50"

Table 7.2 Demographic characteristics of artists

Survey respondents live in 69 different countries. Most of them come from the USA (44.4%), followed by the United Kingdom (9.3%), France (7.2%), Canada (5.9%) and Germany (4.9%). The Americas (52.6%) and Europe (40.1%) dominate as regions. Figure 7.1 illustrates the regional distribution.

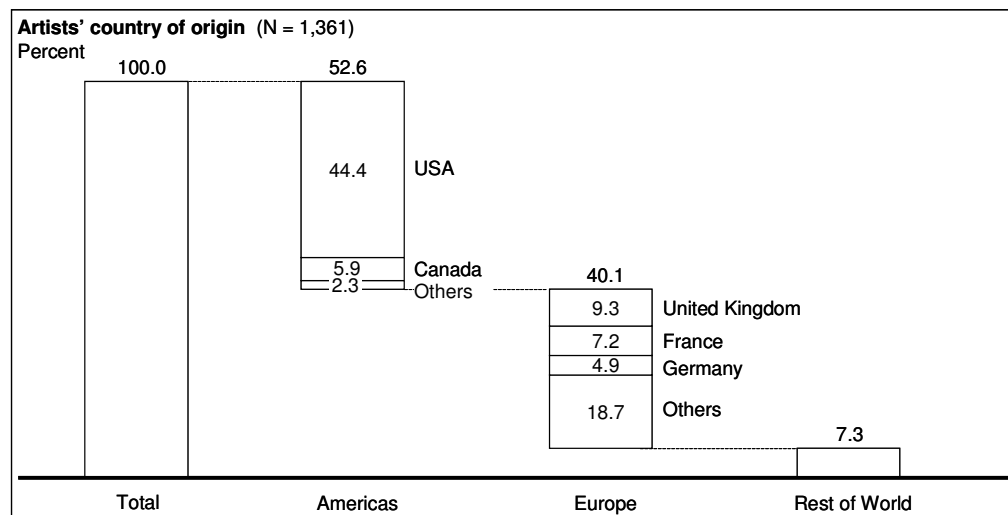


Figure 7.1 Artists split by regions

Participants also cover a broad range of genres. Traditional styles, such as Rock and Pop music (43.5%), were represented roughly as much as newer styles like HipHop and Electronica (34.7%).²¹⁸ Figure 7.2 shows the breakdown by genres.

²¹⁸ This work uses the genre classification of the Soundclick platform (Soundclick 2009). For further analyses, the individual styles were grouped together as shown in Figure 7.2.

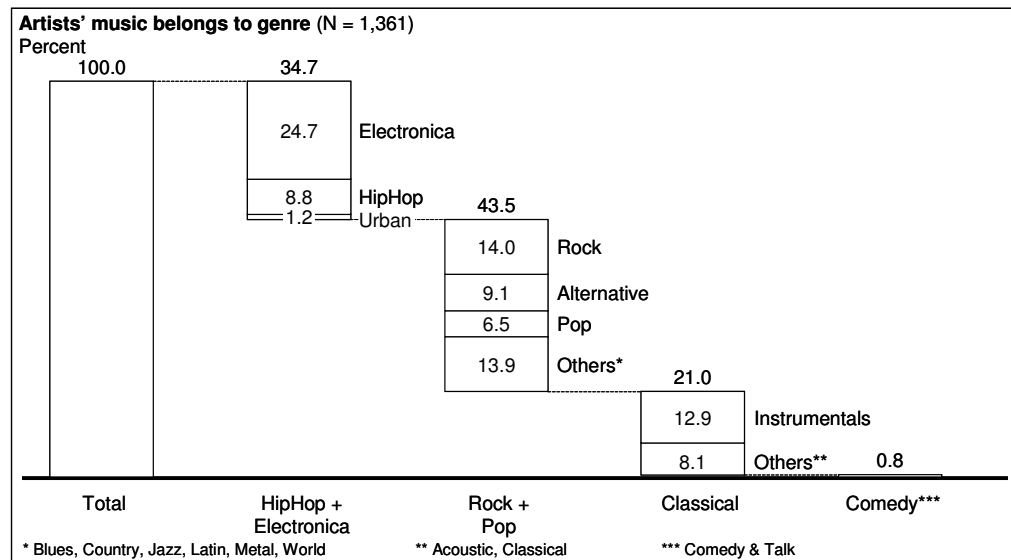


Figure 7.2 Artists split by genres

7.2.2 CC usage, license mix and free revealing

The share of CC-licensed songs is an appropriate measure for the strength of artists' adoption of CC licenses and, more general, their openness. Since most artists do not release music regularly, collecting data on a yearly basis does not seem reasonable. Instead, a longer time period needs to be considered. This survey asked artists for the total number of songs, as well as the number of CC-licensed songs, released since January 1st, 2004. This date was chosen because CC licensing became a standard option in Soundclick at that time.²¹⁹ Out of these numbers, the share of CC-licensed music was calculated.²²⁰ Table 7.3 summarizes artists' musical activities and CC usage since 2004.

Variable (N = 1,361)	Mean	Median	St. Dev.	Minimum	Maximum
Songs (since 2004)	44.849	28	52.170	1	400*
CC songs (since 2004)	19.630	10	36.011	0	380*
Free songs (since 2004)	27.295	16	38.889	0	350*
Start year CC	2005.769	2006	1.567	2001	2008

* Artists with more than 400 songs dropped

Table 7.3 Artists' musical activities and CC usage since 2004

On average, artists have released 45 songs since 2004, which equals 9 songs per year, of which they made 27 available for free and 20 available under a CC license. Most musicians adopted CC licenses around 2005/06. As expected, a strong correlation exists between the number of CC-licensed and free songs (Pearson's correlation coeffi-

²¹⁹ On the one hand, estimates of released songs become more reliable if a longer period is considered. On the other hand, estimates of CC-licensed songs become less informative because the popularity of CC licenses is still growing.

²²⁰ It does not make sense to ask artists directly for the share of songs released under CC. First, artists usually do not know this number. Second, it may involve complicated and error-prone calculations.

cient = 0.6532, $p = 0.000$). However, 24.4% of CC users have not released all their CC-licensed songs for free. This number shows that the common perception that CC-licensed works are always given away for free is clearly wrong.

Within the sample, approximately one third of the respondents (36.4%) relies entirely on full copyright, about one third (31.2%) releases all of their songs under CC and the rest (32.4%) uses a mix of full copyright and CC licenses (see Figure 7.3).²²¹

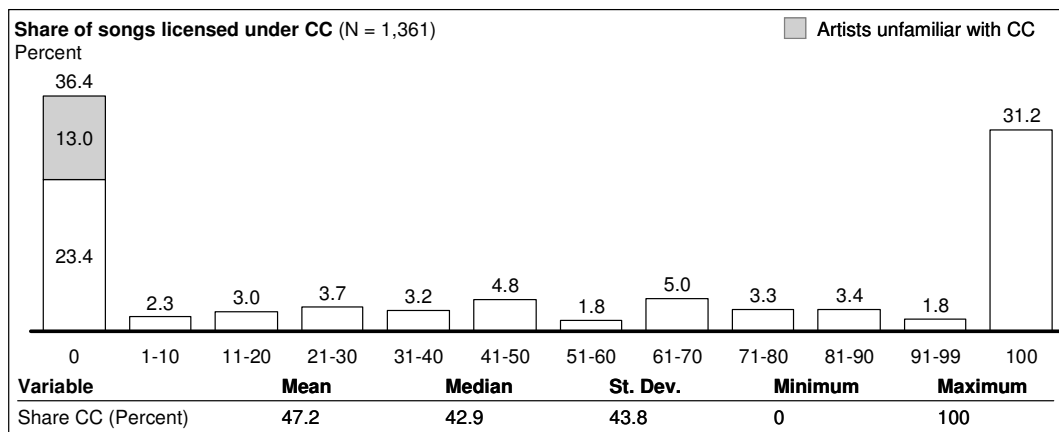


Figure 7.3 Artists' use of CC licenses

The large group of artists selectively using CC licenses clearly contradicts the common perception of an antagonism between copyright and CC. Besides, it provides further evidence for the phenomenon of “selective revealing”: the case that individuals or firms only reveal some of their innovations such as ones of lower competitive importance (Henkel 2006; Henkel 2007, pp. 128, 145; Käs 2008, p. 120).

The percentage of songs licensed under CC enables the measurement and comparison of artists' willingness to relinquish some control over their music. Furthermore, artists may express openness by choosing a more or less restrictive CC license. For example, choosing a BY license which hardly limits any uses is a far stronger deviation from full copyright than the choice of BY-NC-ND license through which a creator retains important rights. Figure 7.4 illustrates the license choices of artists. The six main licenses are ordered by the commercial and creative freedoms they grant as suggested by Cheliotis et al. (2008).²²²

²²¹ Within the group of copyright users, 15.2% considered the use of a CC license, but decided against it. 8.2% were familiar with CC licenses, but have never really considered using them. 13.0% of the participants admitted to have no knowledge on CC. These people probably took part in the survey out of curiosity and were not asked any questions on CC licenses.

²²² The human-readable summaries of the various CC licenses can be found in Table A.1 in Appendix A.1.

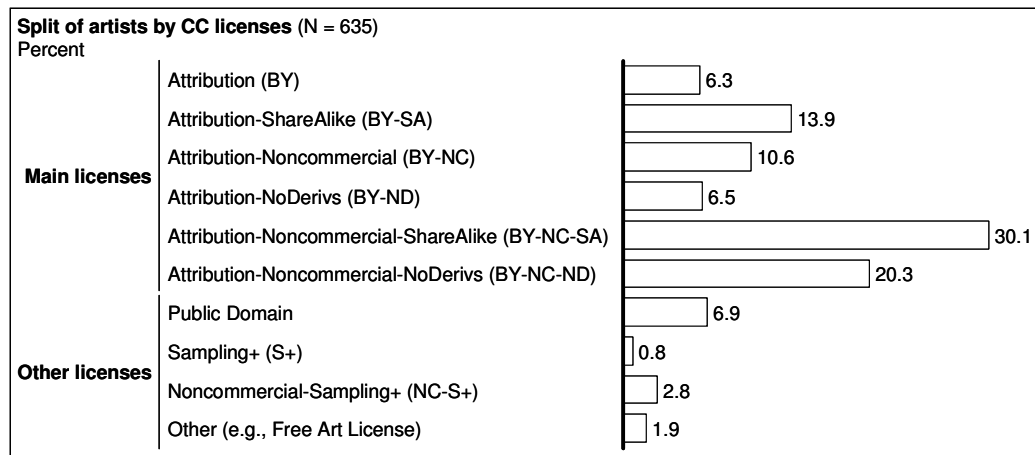


Figure 7.4 Split of artists by CC licenses

Three interesting conclusions emerge from the graphic: First, artists prefer more restrictive licenses. Despite their wish to give consumers more freedoms, they are not willing to waive all rights. This is consistent with the common practice of using CC licenses selectively. Second, the participants of this survey feature by and large the same license mix as the overall population of all creators (see Figure 3.3).²²³ This fact suggests that some of the conclusions drawn from this study may also hold true for non-musicians using CC licenses. Third, a high number of respondents (N = 237) were not able to state which license they chose. This lack of knowledge suggests that the decision to adopt a CC license is more important for artists than deciding which license to use.

7.2.3 Goals and beliefs

The qualitative study indicated that the main motivation for artists in making music lies in the enjoyment of it. Financial goals seem to play a subordinate role. To substantiate this assumption, this survey asked whether earning money was a key motivation for artists. Interestingly, artists' relationship to money is split. While half of all musicians who have a clear opinion on this matter consider earning money to be crucial, the other half regards it to be of little importance. As expected, CC users are significantly less driven by monetary rewards than full-copyright users (t-test, $p = 0.000$).²²⁴ In contrast to the mixed opinions on financial aspects, most musicians strongly believe in the com-

²²³ In both groups, BY-NC-SA is the most popular license, followed by BY-NC-ND and BY-SA.

²²⁴ Unless otherwise specified, all paired t-tests use undirected hypotheses. When comparing CC and copyright users, the group of copyright users is limited to those copyright users who have either considered CC licenses or are at least familiar with those licenses. For reasons of readability, the simplified term "copyright users" is used.

mercial potential of their works.²²⁵ Again, CC users consider the commercial potential of their music as lower (t-test, $p = 0.000$). Thus, this analysis provides support for the presumption that artists' choice of CC licenses could be motivated by a low financial orientation and a low commercial potential of their music. Figure 7.5 shows artists' self-assessment regarding these two matters.

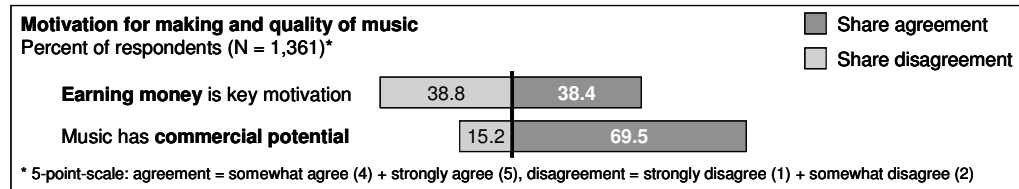


Figure 7.5 Motivation for making and quality of music

Almost all artists are pleased if their music is passed on to friends. This appreciation of sharing may be driven by the perceived effectiveness of personal recommendations in becoming more popular and growing one's fan base. While musicians also welcome when users share their songs with strangers, such as via file-sharing networks, they see the former activity significantly more positive than the latter (t-test, $p = 0.000$). Interestingly, a clear majority of full copyright users has a positive view on sharing as well. Artists' opinions towards transformative uses are less clear. While few artists mind seeing their music combined with other media, a considerable number do not like seeing its music sampled or remixed. While CC does not distinguish between different kinds of derivative works, artists value combinations of their work with other types of media (e.g., videos) significantly higher than remixing/sampling (t-test, $p = 0.000$). Figure 7.6 illustrates artists' attitudes towards the above discussed uses. As expected, CC users view sharing and transformative uses more positively than full copyright users (t-test, $p = 0.000$). Within the group of CC users, users of a license permitting derivative works see a greater value in transformative uses (t-test, $p = 0.000$).

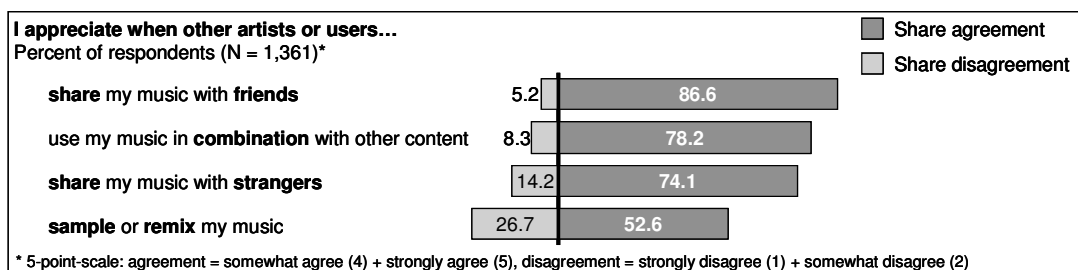


Figure 7.6 Attitude towards sharing and derivative works

²²⁵ However, the value of the music as perceived by artists themselves far exceeds the income derived from it (see Section 7.2.7). Two reasons may explain this deviation: First, artists may tend to overrate the quality of their music. Second, the oversupply of creative works and lack of complementary assets such as a fan base or marketing support may constrain their commercial success.

The different mindsets of CC and full copyright users are also reflected in their perception of the current copyright law. While the majority of full copyright users demand a longer and more extensive copyright, the majority of CC users propose a shorter and narrower copyright. The differences in the opinions of both groups are highly significant (t-test, $p = 0.000$). Figure 7.7 presents artists' perception of copyright. A caveat to these results is the high number of missing answers (505 for duration, 375 for scope). It may be seen as an indicator for the fact that many artists do not understand copyright well. It may also explain why some full copyright users advocate an extended copyright, but also appreciate when consumers share or modify their works.

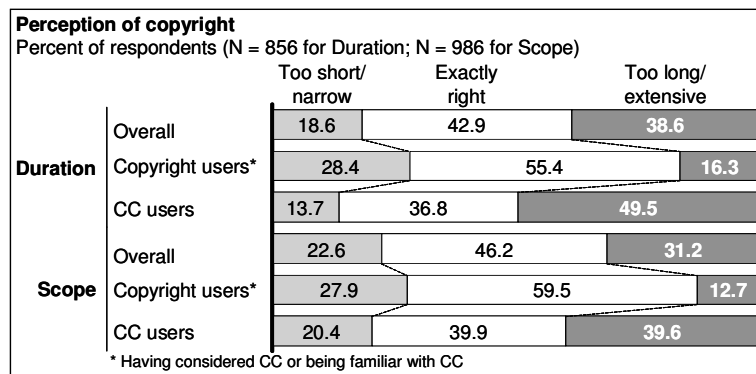


Figure 7.7 Perception of duration and scope of copyright

7.2.4 Perceived ease of use of adopting CC licenses

The Technology Acceptance Model (TAM) (Davis 1989; Davis et al. 1989) considers perceived usefulness and ease of use as the two main factors influencing individuals' adoption of a new technology. While the next section covers the perceived usefulness of CC licenses, i.e., artists' evaluation of their benefits and drawbacks, this section focuses on ease of use. In detail, this survey asked participants how easy, flexible and clear they believed CC licenses to be. Their answers are given in Figure 7.8.

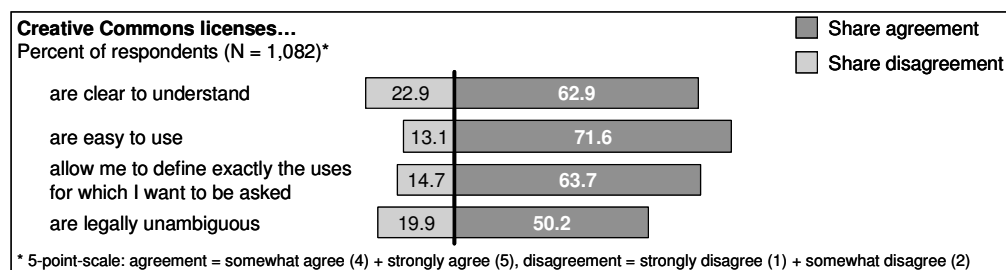


Figure 7.8 Perceived ease of use and clarity of CC licenses

Overall, artists regard CC licenses as clear to understand, easy to use, flexible and legally unambiguous. Most doubts exist with regards to their unambiguity – both in terms of the human-readable and the legal version. Thus, artists seem to share some of

the concerns discussed in literature with regards to imprecise definitions of the terms “non-commercial” and “non-derivative” (e.g., Australian Copyright Council 2006; McDonald 2006). In all four dimensions, CC users perceive the licenses more positively than full copyright users (t-test, $p = 0.000$).

7.2.5 Perceived benefits and drawbacks of CC licenses

Out of the qualitative empirical study, 15 potential reasons emerged for releasing music under a CC license. In the quantitative study, artists were asked to indicate their agreement or disagreement with these reasons.²²⁶ Figure 7.9 presents the results.

Statements related to altruistic or ideological motives received, on average, a very high level of agreement. For example, treating users fairly was the top-ranked item (78.1% agreement). Further motivations related to altruism include reciprocity (62.5%, rank 5) and respect for user rights (61.6%, rank 6). Closely connected to altruistic considerations are ideological motives. By using a CC license, artists can make a political statement, e.g., support the CC movement (69.4%, rank 2) or disassociate themselves from the music industry (54.8%, rank 9).

Marketing-related reasons feature predominantly as well. By using CC, artists expect to receive more publicity (66.1%, rank 3), build a community of supporters (65.8%, rank 4), improve their reputation (55.6%, rank 8) and receive more contributions from their fans (52.0%, rank 11). In general, they see CC as good marketing (54.3%, rank 10). Despite the strong agreement to market-related benefits of CC, artists seem to doubt whether they can turn these benefits into financial profits. Less than half of all artists anticipate a higher demand for their music by using CC licenses (48.7%, rank 12), less than one quarter expect to earn more money (23.6%, rank 15).

Last, artists perceive CC as a facilitator of artistic exchange and collaboration with other musicians. Specifically, they expect that working with other artists becomes easier (61.5%, rank 7) and that others will develop their music further (44.1%, rank 13) which may result in new inspirations for future works (42.3%, rank 14).

²²⁶ CC users were asked for their level of agreement to the statement “I release music under a Creative Commons license because...[reason x]”. This statement was slightly adapted for copyright users to “I could think of releasing music under a Creative Commons license because... [reason x]”. For the reasons against using CC, a similar approach was taken.

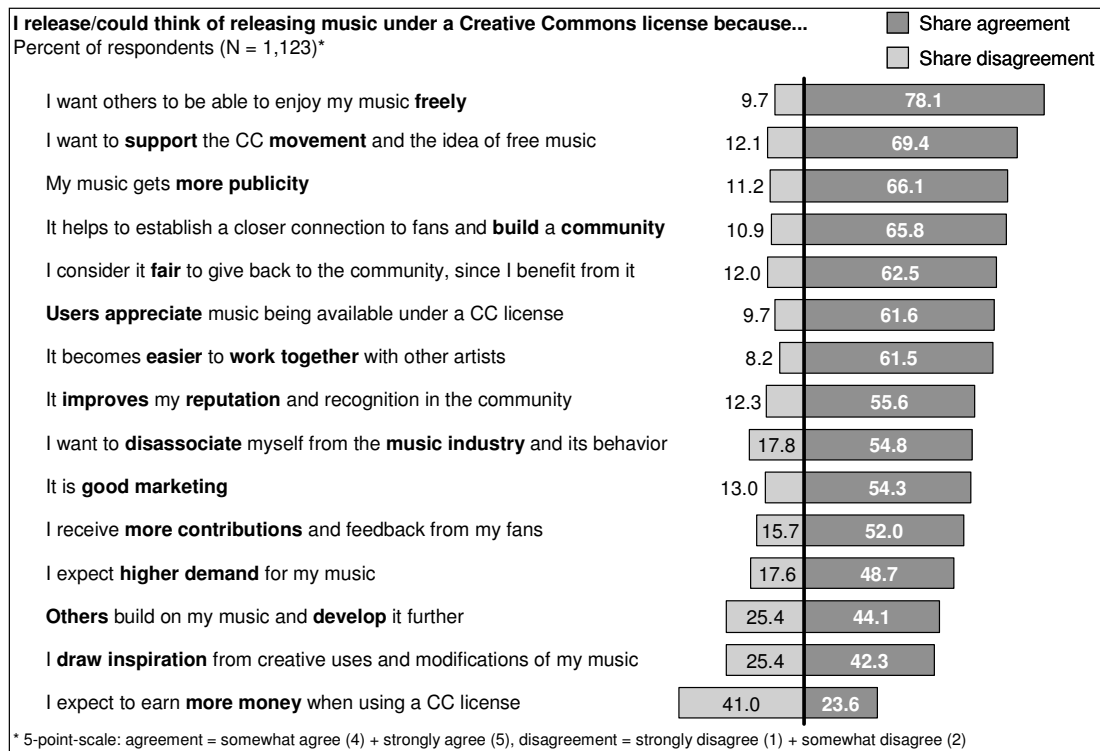


Figure 7.9 Reasons for releasing music under a CC license

With the exception of monetary benefits, agreement prevails for all statements. Idealistic reasons attain the highest ranks, closely followed by marketing related benefits. The value of easier collaboration is considered less important, most likely because few artists actually work together with external parties. In addition, many musicians do not appreciate modifications to their music. Thus, the data provides strong support for the findings of the qualitative study that identify idealistic and marketing aspects as the major reasons for adopting CC licenses.

Comparing the views of professional and amateur artists (artists who make a reasonable income from music and those who do not), as well as those of artists employing CC licenses to different degrees reveals some interesting differences, as Figure 7.10 shows.

Agreement to reason to use a CC license by income and CC usage Percent of respondents (N = 1,123)	Income from music		CC usage		
	① No	② Yes	③ No	④ Partial	⑤ Full
			Key differences		
I want others to be able to enjoy my music freely	86.8	67.5	52.9	83.9	90.6
I want to support the CC movement and the idea of free music	76.4	60.9	40.8	76.3	82.2
My music gets more publicity	64.1	68.3	57.0	67.3	71.0
It helps to establish a closer connection to fans and build a community	65.9	65.5	52.8	67.3	73.3
I consider it fair to give back to the community, since I benefit from it	65.7	58.7	41.3	69.5	70.3
Users appreciate music being available under a CC license	63.5	59.3	39.8	65.7	72.2
It becomes easier to work together with other artists	64.0	58.5	50.2	64.9	65.7
It improves my reputation and recognition in the community	53.8	57.7	46.4	58.2	59.1
I want to disassociate myself from the music industry and its behavior	60.1	48.2	34.7	55.8	68.2
It is good marketing	50.3	59.3	52.2	58.0	52.3
I receive more contributions and feedback from my fans	54.0	49.5	42.5	53.6	56.6
I expect higher demand for my music	45.9	52.2	44.8	49.0	51.4
Others build on my music and develop it further	46.4	41.3	29.0	48.4	50.4
I draw inspiration from creative uses and modifications of my music	42.1	42.5	34.5	45.3	44.5
I expect to earn more money when using a CC license	16.9	31.7	34.9	20.5	18.9

Figure 7.10 Reasons for CC by income and degree of usage

Professional artists (column 2) and hobbyists (column 1) release music under CC licenses for different reasons. Professionals use CC licenses stronger due to marketing-related benefits such as more publicity, better reputation, higher demand and a desire for more money. For hobby musicians, ideological and altruistic motives consistently play a more important role. For example, hobbyists use CC licenses in order to support the idea of free music and disassociate themselves from the music industry.

In general, CC users (columns 4 and 5) agree more strongly to the various reasons for using a CC license than full copyright users (column 3). However, the differences between their agreements to the individual items varies greatly. Similar to musicians who generate an income from their creations, full copyright users could think of releasing music under a CC licenses for the tangible, marketing-related benefits of using CC licenses. For example, more publicity, community building and good marketing are among their top-ranked items. Their views deviate most strongly from the ones of CC users with respect to ideological and altruistic motives. While only 40% of full copyright users, on average, declare that these reasons could motivate them to use a CC license, around 70% of CC users do so. Full copyright users also consider collaboration-related reasons to be less important than CC users. The assessment of partial (column 4) and full CC users (column 5) deviates strongest with regards to ideological aspects as well. Thus, partial CC users show certain parallels to the group of full copyright users.

Using CC licenses can involve significant drawbacks. As outlined in the qualitative empirical study, artists are concerned about losing income from and control over their works. Figure 7.11 illustrates artists' perceptions of the drawbacks of releasing music under a CC license.²²⁷

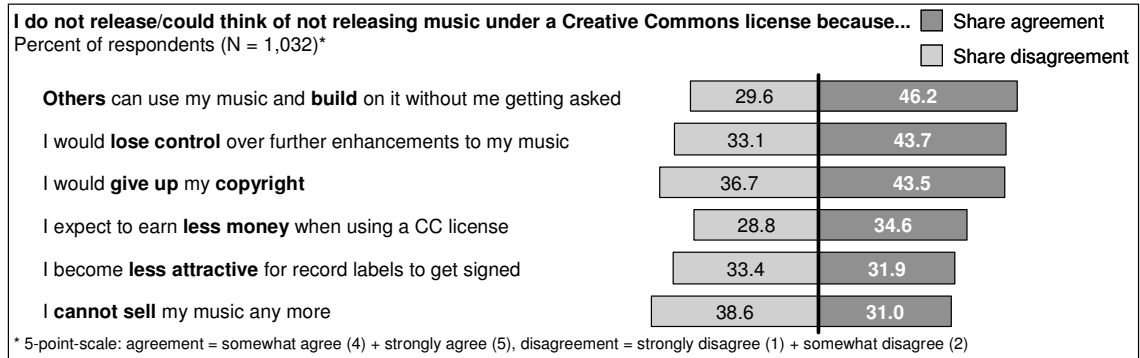


Figure 7.11 Reasons for not releasing music under a CC license

Losing control is artists' biggest fear. Nearly half of the respondents are afraid of unauthorized use and modifications of their music (46.2% agreement, rank 1), loss of control over further developments (43.7%, rank 2) and loss of copyright (43.5%, rank 3). Losing money represents a second concern. About one third of respondents do not release music under a CC license because they expect to earn less money (34.6%, rank 4), become less attractive for record labels (31.9%, rank 5) and lose the opportunity to sell their music (31.0%, rank 6). The statements related to drawbacks receive significantly lower agreements than the ones related to benefits which likely stems from the fact that most survey participants are CC users. Moreover, the high share of amateur musicians (see Section 7.2.7) may explain why losing control is, for most artists, a bigger issue than losing money.

A comparison of artists' responses by income and degree of CC usage (see Figure 7.12) partially supports this hypothesis. Artists generating returns from their music (column 2) care more about financial losses than hobbyists (column 1). Interestingly, professional artists' average agreement to statements connected to loss of control is higher as well. This fact may be explained by a higher perception of the artistic value of their music which is reflected in greater concerns about its integrity. Additionally, professional musicians may consider maintaining control over their music as crucial for profiting financially from it. Given the frequent practice of exclusive licenses in the music business (ALAI 2006), this seems plausible. As expected, full copyright users

²²⁷ By using a CC license, a creator neither gives up copyright nor the right to sell his music. As the large share of agreement to these statements proves, a lot of artists nevertheless have this perception which is in line with the findings of the qualitative study.

(column 3) consider the potential drawbacks of using CC licenses more critical than CC users (columns 4 and 5).

Agreement to reason not to use a CC license by income and CC usage					
Percent of respondents (N = 1,032)					
	Income from music		CC usage		
	No	Yes	No	Partial	Full
Others can use my music and build on it without me getting asked	42.2	50.8	69.8	38.9	35.8
I would lose control over further enhancements to my music	40.0	48.0	68.4	37.2	32.0
I would give up my copyright	51.6	45.5	59.7	40.1	34.4
I expect to earn less money when using a CC license	28.4	41.4	48.5	30.5	28.2
I become less attractive for record labels to get signed	30.3	33.7	37.0	29.7	30.3
I cannot sell my music any more	27.6	34.8	39.7	30.9	24.3

Figure 7.12 Reasons against CC by income and degree of usage

In order to identify patterns and underlying constructs in respondents' evaluations of CC licenses, two factor analyses were performed: one on the benefits, and one on the drawbacks.²²⁸ These factors reduce the set of variables based on the interdependencies between them (Backhaus et al. 2006, p. 259).²²⁹ The Kaiser-Meyer-Olkin (KMO) criterion is a common indicator in measuring sampling adequacy. For the data covering the benefits, the KMO value is 0.9220, which can be considered an excellent value.²³⁰ Next, an appropriate number of factors had to be chosen. One of the most frequently used rules for this purpose is to select all factors with an eigenvalue greater than one (Backhaus et al. 2006, pp. 295-296). Applying this criterion, a rotated factor matrix emerges as shown in Figure 7.13.²³¹

The factor analysis identified three factors relating to the reasons to use CC licenses which may be labeled *Marketing*, *Idealism* and *Collaboration*. Factor 1 (*Marketing*) relates to the seven market-related benefits of CC licenses. Factor 2 (*Idealism*) summarizes the five variables covering ideological and altruistic motivations for using CC licenses. Factor 3 (*Collaboration*) comprises three variables related to working together

²²⁸ 1,184 observations were used for the factor analyses. For some artists, responses to items with respect to the reasons for or against using CC licenses were missing. As there were no systematic gaps in the data, missing values were imputed using the corresponding STATA command.

²²⁹ The correlation between the variables covering the benefits of using CC licenses serves as base for deciding whether the data qualify for a factor analysis. The correlation matrix is shown in Table A.9 in Appendix A.3.3.

²³⁰ A factor analysis is usually considered inappropriate for KMO values below 0.5. Values of 0.9 and higher are usually referred to as "marvelous" (Backhaus et al. 2006, p. 276). The significance of the test of sphericity (Bartlett test) is a second indicator for the suitability of the data for a factor analysis. It checks whether the variables in the population are not correlated (Litfin 2000, p. 150; Backhaus et al. 2006, p. 274f.). The test showed that this hypothesis can be rejected with $p < 0.001$.

²³¹ For an overview on the eigenvalues of the factors, see Table A.10 in Appendix A.3.3.

with other artists and users. Since no variable loads on multiple factors and each of the three factors contains variables which are very similar in content, the quality and explanatory power of the factor analysis seems excellent. Cronbach's alpha²³² for the resulting factors are good (Bortz & Döring 2006, p.198): *Marketing* attains 0.88, *Idealism* 0.83 and *Collaboration* 0.79.

Variable	Factor 1 (Marketing)	Factor 2 (Idealism)	Factor 3 (Collaboration)
Improve reputation	0.6648		
Good marketing	0.7782		
More contributions	0.6688		
More money	0.6350		
Higher demand	0.8006		
Build community	0.7043		
More publicity	0.7911		
Support movement		0.7645	
Disassociate industry		0.6529	
Give back		0.6160	
Enjoy freely		0.7891	
Users appreciate		0.5921	
Others develop			0.8383
Draw inspiration			0.8472
Easier collaboration			0.5097

Extraction: principal component analysis; Rotation: varimax; N = 1,184
64.6% of total variance explained; KMO: 0.9220, Bartlett test: p = 0.000. Factor loadings < 0.5 omitted

Figure 7.13 Rotated factor loadings of variables related to reasons for CC

Similar to the reasons for using CC licenses, a factor analysis was conducted to identify patterns in the reasons against using CC licenses.²³³ Given a “*meritorious*” (Backhaus et al. 2006, p. 276) KMO value of 0.8319, the data is suitable for a factor analysis, too. Since only one factor had an eigenvalue above one, choosing the number of factors based on this criterion was not reasonable (see Table A.12 in Appendix A.3.3). Instead, two factors were chosen. Figure 7.14 displays the rotated factor matrix.

While the Factor 1 covers all variables relating to *Financial loss*, Factor 2 mainly deals with the aspect of *Control loss*. However, two variables load on both factors which limits the discriminatory power of both factors. An explanation for the overlap may be that many artists perceive maintaining control, in particular over their copyright, as a precondition for generating financial returns. Thus, they do not clearly distinguish between the aspects of losing control and losing money.²³⁴

²³² Cronbach's alpha measures how well a set of variables (or items) represents a latent construct. In particular, it tracks the reliability of the construct. If Cronbach's alpha exceeds 0.5, the factor can be considered reliable (Churchill Jr. 1979; Homburg & Baumgartner 1995).

²³³ The correlation matrix is shown in Table A.11 in Appendix A.3.3.

²³⁴ The Cronbach alpha scores are good for both factors (0.78 for *Financial loss*, 0.81 for *Control loss*).

Variable	Factor 1 (Financial loss)	Factor 2 (Control loss)
Cannot sell	0.8311	
Less attractive	0.8039	
Less money	0.6026	0.5321
Give up copyright	0.5780	0.5522
Lose control		0.7907
Others build		0.9050

Extraction: principal component analysis; Rotation: varimax; N = 1,184
 72.3% of total variance explained; KMO: 0.8327, Bartlett test: p = 0.000
 Factor loadings < 0.5 omitted

Figure 7.14 Rotated factor loadings of variables related to reasons against CC

In summary, the two factor analyses confirm the hypotheses of a few well-defined reasons for and against using CC licenses. Good marketing, idealism and easier collaboration are three main motivations for using CC; financial and control losses are two main inhibitors against adopting CC. Thus, the factor analysis corroborates the results of the exploratory qualitative analysis.

7.2.6 External reasons for/against adopting CC licenses

Artists' use of CC licenses may also be induced by various external factors. The most obvious ones are legal requirements. For example, if an artist modifies a BY-NC-SA-licensed song, he must release his remix under the same terms; if he records a song whose copyright he does not own, he is not allowed to release that song under a CC license. In the survey, 12.6% of the participants engage in modifying CC-licensed music which may in turn require use of a CC license; 11.2% build on music whose copyright they do not own which may rule out use of a CC license. Figure 7.15 summarizes the legal requirements that artists encounter.

Variable	Yes	No
Percent of respondents (N = 1,184)		
Remixing or sampling CC music	12.58	87.42
Remixing or sampling music without copyright ownership	11.15	88.85

Variable (N = 1,184)	Mean	Median	St. Dev.	Minimum	Maximum
Number of released songs for which CC was required	1.103	0	6.931	0	270
Number of released songs for which CC was forbidden	0.910	0	6.284	0	150

Figure 7.15 Legal requirements for/against using CC

Moreover, artists' business partners may impose restrictions on their utilization of CC licenses. For example, a PRO or record label may either prohibit, as in the case of GEMA, or require, as in the case of Magnatune, artists to use CC licenses. As Figure 7.16 shows, 20.8% of respondents report that their business partners have a rather negative attitude towards CC, and 36.3% report a rather positive attitude. However, 43.0% of those artists having answered this question (N = 344) as well as those artists not having

answered this question (N = 840) are not aware of any preferences of their business partners.

The qualitative study identified policies set by record labels and PROs as a major hurdle for the broader adoption of CC licenses. However, the relatively small number of artists indicating that business partners have issues with CC licenses does not conflict with this finding. First, most survey participants are amateur musicians and thus not (yet) signed to a record label. Second, many of them live in countries like the USA where it is possible to be member of a PRO and use CC licenses at the same time.

Business partners... Percent of respondents (N = 344)	Do not allow me to use CC licenses	Discourage me to use CC licenses	Do not care about CC	Encourage me to use CC licenses	Require me to use CC licenses
	6.40	14.24	43.02	23.84	12.50

Figure 7.16 Business requirements for/against using CC

Artists' social system may influence whether they are favorably or unfavorably disposed to CC (Merton & Rossi 1949; Ebadi & Utterback 1984; Granovetter 1985; Rogers 2003). For example, 11.7% of artists reported that testimonials of their peers on the benefits of CC licenses influenced their decisions to adopt CC licenses. Similarly, 23.0% of musicians experienced positive word of mouth, i.e., heard favorable information on CC from other people; only 1.1% heard or read negative comments. In addition, 48.7% of survey participants have experiences as a consumer of CC-licensed works which may motivate the adoption of the licenses for one's own creations. Figure 7.17 summarizes these aspects.

Variable Percent of respondents (N = 1,184)	Yes	No		
Consuming CC-licensed content	48.65	51.35		
Influence from peers	11.66	88.34		
	None	Negative	Mixed	Positive
Word of mouth	51.69	1.10	24.24	22.97

Figure 7.17 Influence of artists' environment on CC adoption

7.2.7 Business models and income

As shown in Section 7.2.3, most musicians perceive their music to be of commercial value and are, to some degree, financially motivated to create. However, only a fraction actually manage to translate this potential into considerable income. As Figure 7.18 illustrates, only 11.5% of artists make a living from music alone; for 32.5%, music is at least a supplementary income source, and 56.0% are pure hobbyists who do not generate any income from their music. Given artists' general difficulties in making a living

from music (see Section 4.1.1), the rather low share of professionals is not surprising. On average, full copyright users derive a higher income from music. While 60.6% of users of full copyright make at least some money with their music, only 38.8% of CC users do (t-test, $p = 0.000$).

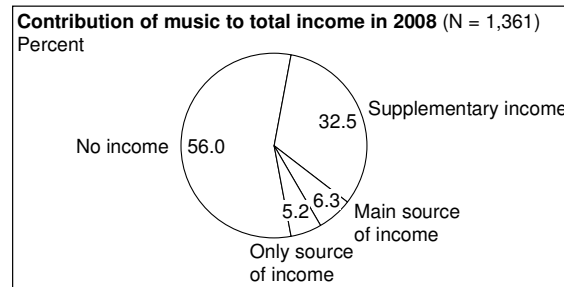


Figure 7.18 Artists' income

There are various ways to generate returns from music. On average, artists rank selling CDs or DVDs most important (high importance attributed by 60.6%), followed by playing concerts (58.5%), selling downloads and subscriptions (57.1%), and commercial licensing (54.0%). With lower importance, merchandising (41.3%), advertisements (40.7%) and donations (29.9%) follow. Figure 7.19 shows this ranking and compares the different perceptions of full copyright and CC users.

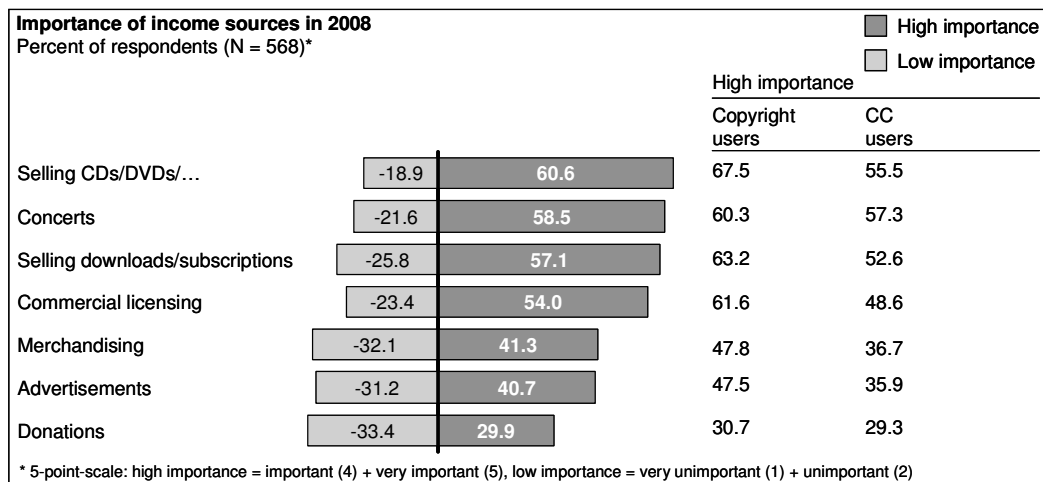


Figure 7.19 Artists' business models

The data indicates that artists' business models are usually based on several income streams.²³⁵ From the artists' perception, the importance of traditional income sources like selling and licensing music and playing concerts by far outweighs that of recently hyped sources like merchandising, advertisements and donations.

²³⁵ The large share of artists assigning a high importance to other sources (30.1%) such as teaching music lessons, composing customized music, or producing other bands supports this conclusion.

This fact supports the existing doubts on the viability of advertisement- and donation-based business models (e.g., Enders Analysis 2007; Schiff 2007). For each income source listed above, the share of CC users considering it as (very) important is below the share of full copyright users doing so. This fact is in line with the CC users' claim to care less about money and to produce music of lower commercial value.

In addition, Figure 7.19 suggests that CC and full copyright users have slightly different business models. The latter ones rely far more on traditional income sources like selling and licensing music compared to CC users who consider, relatively speaking, complementary sources like concerts and donations more important. These differences are easy to explain: Since CC legalizes sharing, it may reduce the demand for CDs and downloads. Moreover, its use makes exclusive licensing deals impossible (e.g., ALAI 2006). However, CC licenses may increase the diffusion of music and improve artists' reputation. These benefits may be monetized by playing more concerts and receiving more donations from supporters.

7.2.8 Change in CC usage over time

So far, this chapter has taken a static perspective, focusing on artists' current CC usage. This section intends to describe changes over time and artists' future plans with regards to using CC licenses. With respect to past changes, Figure 7.20 confirms a trend towards stronger use of CC licenses. While 31.1% of artists reported an increase in their use of CC licenses over time, only 12.2% claimed to use them less frequently.

Variable	Stopped CC use	Less CC use	No change in CC use	More CC use
Percent of respondents (N = 715)				
Change in share of CC	3.2	9.0	56.8	31.1

Figure 7.20 Change in past CC usage

Furthermore, the survey asked participants to estimate the future share of songs they intended to release under a CC license. To identify changes, artists' forecasts are compared to their current CC usage. Overall, Figure 7.21 indicates a clear trend towards increased use of CC licenses. On the one hand, the share of artists not using CC at all declines from 22.5% to 14.6%, and the share releasing less than half of their songs under CC falls from 17.0% to 15.6%. On the other hand, the share of artists releasing all of their songs under CC increases from 40.7% to 44.2%, and the share releasing more

than half of their songs under CC grows from 19.9% to 25.6%. This trend towards stronger use of CC licenses is highly significant (paired t-test, $p = 0.000$).²³⁶

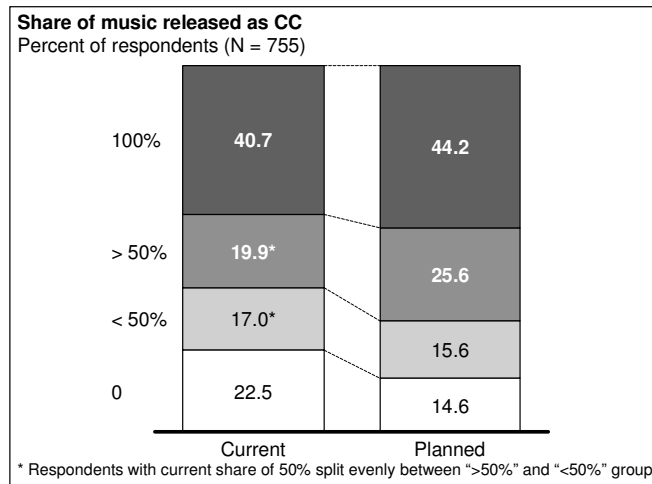


Figure 7.21 Comparison of current and future CC usage

7.3 Exploratory cluster analysis

As shown in Section 7.2.5, artists' perception of the benefits and drawbacks of CC licenses correlates with their income and CC usage. This fact suggests the existence of well-defined groups who view and use CC licenses differently. In order to verify this assumption, an exploratory cluster analysis was conducted. The observations were clustered based on the five factors summarizing the identified benefits (*Marketing, Idealism, Collaboration*) and drawbacks (*Financial loss, Control loss*). In addition to these aspects, the resulting clusters were analyzed with respect to their members' share of CC-licensed songs, income, financial orientation and perceived commercial potential of their music.

Given the positive evaluation of Ward's method in the literature, it was used for clustering (Calinski & Harabasz 1974; Bergs 1981; Milligan & Cooper 1985; Ketchen & Shook 1996). Stopping rules by Duda and Hart (1973) and Calinski and Harabasz (1974) indicated six clusters. Table 7.4 summarizes the results of the cluster analysis. For the five factors characterizing the perceived benefits and drawbacks, the average values of the associated variables are reported. The groups are ordered by the share of songs released under a CC license. To make interpretation easier, each cluster is given a name summarizing its attitude towards CC.

²³⁶ Artists' strong intentions to use CC licenses in the future (see also Table A.17 in Appendix A.3.4) may also be driven by positive experiences with these licenses (see Table A.16 in Appendix A.3.4).

		Clusters					
		Idealists	Enthusiasts	Marketing pragmatists	Collaboration pragmatists	Skeptics	Decliners
Clustering criteria	Marketing*	3.16	3.96	3.99	3.78	3.60	2.02
	Idealism*	4.26	4.10	3.62	3.75	3.51	2.05
	Collaboration*	3.59	3.69	2.49	3.81	3.13	2.05
	Financial loss*	2.78	1.55	3.52	3.39	2.82	4.04
	Control loss*	2.81	1.53	3.46	3.41	4.09	4.50
Resulting cluster characteristics	Share CC	71%	62%	57%	48%	30%	15%
	Income**	29%	51%	50%	49%	56%	71%
	Financial orientation*	2.12	2.89	3.13	3.12	3.17	3.80
	Commercial value*	3.35	4.12	4.17	4.05	3.98	4.35
N = 1,184		148	412	75	158	117	274

* 5-point-scale: 1 (lowest value), 5 (highest value) ** Income: supplementary, main or only source of income

Table 7.4 Cluster summary

The cluster analysis illustrates various differences between the six groups. The key characteristics of each cluster are outlined below.

Idealists exhibit the strongest agreement with ideological or altruistic reasons for using CC licenses. Market- or collaboration-related aspects and potential drawbacks matter less to them. This makes sense as most idealists do not derive any income from their music, have a low financial orientation and see their music as having little commercial potential. Given their strong idealistic conviction and the fact that they have little to lose from CC, they release most of their songs under a CC license.

Enthusiasts appreciate all benefits of CC licenses, but rank the tangible benefits higher than idealists. Potential drawbacks are of least importance to them. This positive view of CC in all dimensions may explain their relatively strong CC adoption. Higher values for income, financial orientation and commercial potential are in line with their stronger focus on the concrete benefits of CC compared to idealists.

For *marketing pragmatists*, the market-related benefits of CC dominate. Idealism matters as well; collaboration is less important. Compared to the previously described groups, they are more afraid about losing money and losing control. Their stronger financial orientation and the perceived higher commercial potential of their music may partially explain these concerns, as well as their greater focus on marketing aspects.

Collaboration pragmatists exhibit many parallels to marketing pragmatists. As a key difference, this group assigns the highest importance to collaboration-related issues while the other group cares most about marketing.

Skeptics are mostly neutral towards CC, assigning by and large average values to all benefits and drawbacks of CC licenses. Thus, CC licenses seem to lack a clear value proposition for them which may explain their rather low use of these licenses.

Decliners perceive CC licenses negatively. They hardly appreciate any of the potential benefits of using CC licenses. Instead, they worry most about the associated risks. A comparatively high income generation from music, a strong financial orientation and a high commercial potential for their music may partially explain their negative evaluation of CC in all dimensions. Thus, it is not surprising that their usage of CC licenses is very low.

In summary, the cluster analysis identified various groups who evaluate and consequently employ CC licenses differently. In simplified terms, some musicians value all aspects (*enthusiasts*), some value a few (*idealists, marketing pragmatists, collaboration pragmatists*), and some value none (*skeptics, decliners*). Furthermore, the strength of CC usage seems to be influenced by artists' characteristics (income, financial orientation, commercial potential of music) as well as their perception of CC licenses. Since this assumption merits closer discussion, it is examined in greater detail in the next section.

7.4 Multivariate analysis of revealing behavior

This section attempts to explain artists' degree of openness, measured by their use of CC licenses and license choice. First, a set of formal hypotheses is derived that can be tested using the survey data (7.4.1). Then, the dependent, explanatory and control variables (7.4.2), as well as the statistical method (7.4.3), are introduced. Section 7.4.4 discusses the results, with particular regards given to the posed hypotheses.

7.4.1 Hypotheses

Based on the findings from literature and the propositions derived from the qualitative study, a set of formal hypotheses on artists' openness were formulated that cover four areas: (1) benefits and drawbacks of CC, (2) personal characteristics, (3) time and learning, and (4) business models. All hypotheses relate to artists' openness as the

underlying construct of their adoption of CC licenses. The hypotheses are further operationalized in the next section.

Benefits and drawbacks of CC. The exploratory qualitative study identified marketing, idealism and collaboration as the main promoters for CC licenses; financial loss and control loss were identified as the main reasons against using CC licenses. The factor analysis confirmed these five items, which are in line with the academic literature on free revealing. For example, Henkel (2006) and Käs (2008, p. 183) also find marketing as an important reason for free revealing. Collaboration can be regarded as the equivalent to development support, the most well-known benefit of free revealing (e.g., Hecker 1999; von Krogh et al. 2003; Bonaccorsi & Rossi 2006). Idealism or altruism are common motives of software developers for contributing source code to OSS projects (e.g., Lakhani & Wolf 2005). Thus, three hypotheses can be brought forward with regards to the benefits of openness.

H1: Artists are more open, the more important are benefits
...related to marketing (H1a)
...related to idealism (H1b)
...related to collaboration (H1c)

As drawbacks, both the qualitative study and literature suggest testing two effects, namely financial loss and control loss. These disadvantages of free revealing are documented in literature as “losing earnings” and “losing competitive advantage” (e.g., Henkel 2007, p. 86). Since the factor analysis in Section 7.2.5 revealed that both effects are closely linked and can hardly be separated, a joint hypothesis representing both aspects is more appropriate.

H1d: Artists are less open, the more important are drawbacks related to financial or control loss.

Personal characteristics. Section 2.4 demonstrated that many individuals, including inventors, software developers and artists, create innovations. These people frequently tend to give away their innovations (e.g., Baldwin et al. 2006; Franke & Shah 2003; Hertel et al. 2003; Raymond 2001). They are especially likely to do so if they perceive the commercial potential of their innovation to be low and are not financially motivated (e.g., Baldwin et al. 2006; Jeppesen & Frederiksen 2006; Kim 2007). This implies:

H2: Artists are more open,
...the lower their financial orientation is (H2a)
...the lower the perceived commercial potential of their music is (H2b)

Time and learning. Free revealing constitutes a significant change from the established practice of protecting knowledge – for both firms and individuals. For firms, Bettis and Prahalad (1995) argue that the longer a firm has followed certain routines, the more challenging it is to change its behavior. For individuals, a similar argument may be made. Individuals are often critical of new knowledge, in particular if new routines do not have a proven record (Goodman et al. 1980; Nelson & Winter 1982; Rogers 1983), come from untrusted sources (Katz & Allen 1982; Hayes & Clark 1985) or conflict with previous experiences and values (Cox et al. 1991; Earley 1993; Venkatesh 2000; Kirkman & Shapiro 2001). Hence, it seems likely that artists with more experience in the music business and exposure to the traditional ways of handling one's IP are more reluctant to adopt CC licenses.²³⁷

H3a: Artists are less open, the longer their experience in the music business.

The previous paragraph outlined various inhibitors of change such as lack of trust and proven success. Learning mitigates such reservations (Nelson & Winter 1982; Levitt & March 1988). As artists make their own – potentially positive – experiences with CC licenses and realize that the drawbacks of CC were initially overrated and its benefits were underrated, their use of the licenses is likely to increase over time.

H3b: Artists are more open, the longer their experience with CC licenses.

Business models. Rich empirical evidence on the consequences of file sharing suggests that the availability of a free alternative reduces the demand for music in the form of paid downloads and CDs, but increases the demand for complementary goods such as concerts and merchandising (Liebowitz 2006, 2008; Rob & Waldfogel 2006; Zentner 2006, 2008).²³⁸ Applying these findings to CC, one would expect that permitting sharing causes a decline in the sales of paid downloads and CDs/DVDs together with an increase in the demand for concerts and merchandising. In addition, the wider diffusion of CC-licensed music should have a positive impact on the income from advertising, and a better relationship with fans may trigger an increase in donations. The consequences of CC on licensing is less obvious: For example, the record label Magnatune regards CC licenses as an enabler for commercial licensing (see Section 6.3.6). How-

²³⁷ Artists with a longer experience in the music business are also more likely to have signed contractual agreements which may prohibit the use of CC licenses. However, this aspect is covered by a separate variable in the multivariate analysis.

²³⁸ In the context of OSS, a similar pattern can be found. First, business models centered around selling complementary goods and services clearly dominate the literature on appropriating value from OSS (Behlendorf 1999; Hecker 1999; Dahlander 2005). Second, Fosfuri et al. (2008) conclude that OSS is more desirable for hardware manufacturers than for software producers.

ever, Magnatune's business model seems to be an exception in the music business. Most artists and record labels still rely on exclusive deals that CC licenses render obsolete (ALAI 2006). Thus, the overall influence of CC licenses on the income generated from licensing is expected to be negative.

Artists with business models that are aligned to the properties of CC licenses may show a greater support for CC than those relying on income sources that are negatively affected by CC usage. These two ideas motivate the following two hypotheses:

H4a: *Artists are less open, the more important they consider selling downloads and CDs as well as licensing music.*

H4b: *Artists are more open, the more important they consider concerts, merchandising, advertisements and donations.*

Table 7.5 summarizes all hypotheses to be tested later in the multivariate analysis.

1	Benefits/drawbacks of CC
H1: Artists are more open, the more important are benefits ...related to marketing (H1a) ...related to idealism (H1b) ...related to collaboration (H1c) H1d: Artists are less open, the more important are drawbacks related to financial or control loss.	
2	Personal characteristics
H2: Artists are more open, ...the lower their financial orientation is (H2a) ...the lower the perceived commercial potential of their music is (H2b)	
3	Time/Learning
H3a: Artists are less open, the longer their experience in the music business. H3b: Artists are more open, the longer their experience with CC licenses.	
4	Business models
H4a: Artists are less open, the more important they consider selling downloads and CDs as well as licensing music. H4b: Artists are more open, the more important they consider concerts, merchandising, advertisements and donations.	

Table 7.5 Overview of hypotheses tested in multivariate analysis

7.4.2 Variables

Dependent variables. The previous section proposed various hypotheses to explain artists' openness. Applied to CC, this construct has two dimensions, namely the strength of CC adoption and the chosen license. For the first dimension, the share of music released under a CC license (*CurrentShareCC*) is an appropriate measure; its values range from 0 to 100%.²³⁹ Artists' use of CC licenses may likely change in the future as they gain more experiences or become more professional (see Sections 6.3.8). Thus, understanding the drivers for the future use of CC licenses remains an interesting question. For this purpose, the future intended use of CC is also tracked. As described in

²³⁹ As shown in Section 7.2.2, using CC licenses or not is not a binary decision, but rather a continuum. The large share of selective CC users confirms that this understanding of artists' decision-making process is correct. Thus, it is appropriate to consider the share of CC-licensed music as dependent variable.

Section 7.2.8, this survey asked artists to state whether they intended to release no, less than half, more than half or all songs under a CC license in the future. The variable *FutureShareCC* represents these four different intensities of CC usage.²⁴⁰

The license choice defines the rights granted to users. Thus, it operationalizes the second dimension of openness. In order to compare the freedoms of CC licenses, this work applies the ranking proposed by Cheliotis et al. (2008) which is shown in Figure 3.3. The variable *LicenseRanked* groups the various licenses in four classes based on their restrictiveness: (1) copyright, (2) BY-NC-ND and BY-NC-SA, (3) BY-NC, BY-ND, BY-SA and NC-S+, and (4) BY, S+ and PD.²⁴¹

The three dependent variables operationalize the abstract concept of openness. Thus, the general hypotheses in the form of “*Artists are more/less open...*” which were introduced in the previous section can be specified further to “*Artists release more/less music under a CC license...*” (for *CurrentShareCC*), “*Artists intend to release more/less music under a CC license in the future...*” (for *FutureShareCC*) and “*Artists grant users more/less rights...*” (for *LicenseRanked*). Going forward, these specific hypotheses are referred to as H1-4' (*CurrentShareCC*), H1-4" (*FutureShareCC*) and H1-4''' (*LicenseRanked*).

Explanatory variables. As mentioned, the exploratory factor analysis on the benefits of using CC licenses identified three factors; the one on the drawbacks of using CC licenses yielded two factors. However, artists' evaluation of these advantages and disadvantages was not independent at all, but highly correlated.²⁴² To avoid multicollinearity with regards to these variables, an exploratory factor analysis on all reasons for and against using CC licenses was therefore conducted. It revealed four factors (*Marketing* (H1a), *Idealism* (H1b), *Collaboration* (H1c) and *Financial/control loss* (*Fin./con. loss*,

²⁴⁰ Moreover, *CurrentShareCC* measures artists' CC usage over a period of time (2004-08) and is thus not suitable for studying the impact of time on artists' behavior. Measuring artists' CC usage at a well-defined point in time, *FutureShareCC* is more appropriate for that purpose.

²⁴¹ The various CC licenses are assigned to three groups based on their restrictiveness. The first group consists of the most restrictive ones BY-NC-ND and BY-NC-SA; the second one comprises BY-NC, BY-ND, BY-SA and NC-S+; the third group consists of the most liberal ones BY, S+ and Public Domain (PD). While PD is not a CC license, the CC initiative offers artists a convenient way to clearly assign a work to the PD. Thus, several artists regard PD as one of the licensing options of CC. Cheliotis' et al.'s (2008) ranking does not comprise the NC-S+ and S+ licenses. These licenses were assigned manually to an appropriate class based on the restrictions they impose. The human-readable summaries of the six main CC licenses, as well as the two sampling licenses, can be found in Table A.1 in Appendix A.1.

²⁴² The correlation matrix for the variables with respect to the benefits and drawbacks of using CC licenses can be found Table A.13 in Appendix A.4.

H1d)) whose scores are used to test H1.²⁴³ To test for personal characteristics, the variables *Financial orientation* (*Fin. orient.*, H3a) and *Commercial value* (*Comm. value*, H3b) are included which measure artists' self-assessment on a Likert scale. Two variables capture the effects of time and learning. *Experience in the music business* (*Exper. music*, H4a) indicates the amount of experience artists have in the music business, i.e., how familiar they are with the traditional way of protecting music. *Experience with CC* (*Exper. CC*, H4b) quantifies the time span (in years) between the first CC usage and today; it relates to the aspect of learning. Finally, two variables are used to test the effect of business models on CC usage. *Selling and licensing music* (*Selling/licens.*, H5a) represents the average importance of the activities of selling downloads, selling CDs, and commercial licensing – income streams that may decrease by using CC licenses.²⁴⁴ *Complementary income sources* (*Compl. income*, H5b) denotes the average importance assigned to concerts, merchandise, advertisements and donations – business models that seem well-aligned with the properties of CC licenses.²⁴⁵

Control variables. To ensure that the effect of the exploratory variables is measured, other parameters that may influence CC adoption are being controlled. CC licenses were developed as a reaction to a copyright law that was perceived to be overly restrictive in terms of scope and duration (Lessig 2004a). Thus, it seems likely that artists who do not agree with current copyright laws are more likely to use CC licenses. *Perception of copyright scope* (*Copy. scope*) and *perception of copyright duration* (*Copy. dur*) cover artists' views on that matter (see Section 7.2.3). Since a higher value indicates a desire to shorten or narrow copyright, a positive impact for both variables is expected. According to the TAM (Davis 1989), technology is more likely to be used if its use is perceived to be easy. The variables *Easy* and *Precise* summarize how clear and understandable artists perceive CC licenses to be (see Section 7.2.4).²⁴⁶ For both vari-

²⁴³ The results of this factor analysis widely matches the ones of the two factor analyses presented in Section 7.2.5. All details can be found in Table A.13, Table A.14 and Table A.15 in Appendix A.3.3.

²⁴⁴ As discussed in Chapter 6, CC licenses affect artists' ability to generate income from licensing both positively and negatively. On the one hand, CC licenses may bring forward additional licensing deals (see Section 6.3.6). On the other hand, artists using CC licenses can no longer grant exclusive licenses for their music. Since exclusive licenses are still prevalent in the music business (ALAI 2006), this work expects that the more important artists rate licensing, the lower their willingness to use CC licenses.

²⁴⁵ Artists were asked how important they considered each source of income in 2008. The values used for the multivariate analyses are exactly those shown in Section 7.2.7.

²⁴⁶ *Easy* represents the average agreement to the statements “are clear to understand” and “are easy to use”, *Precise* represents the average agreement to the statements “allow me to define exactly the uses for which I want to be asked” and “are legally unambiguous”.

ables, a positive impact is expected.²⁴⁷ Legal and business requirements may force or prevent artists' use of CC licenses. If artists remix or sample CC-licensed songs, they may have to use these licenses again; if they modify songs whose copyright they do not own, they must not assign a CC license to them. Consequently, the share of songs for which CC usage is required (*Share CC req.*) as well as the share of songs for which CC usage is forbidden (*Share CC forb.*) is included in the multivariate analysis. Obviously, a positive effect for the first and a negative one for the second variable are expected. Business partners such as record labels and distributors may influence artists' CC usage. The dummy variable *Business partners positive (Bus. part. pos.)* tracks whether business partners require or encourage CC usage, while the dummy *Business partners negative (Bus. part. neg.)* measures if business partners disallow or discourage CC usage. Again, a positive influence for the first and a negative one for the second variable are expected. Three kinds of previous exposure to CC may positively influence artists' likelihood of using such licenses: experiences as a consumer of CC-licensed works, positive testimonials of friends and colleagues on CC, and active persuasion attempts by others to use such licenses. They are covered through the dummies *Consume CC*, *Word of Mouth* and *Peer influence*. The participants of this study were identified via four platforms, two of which require CC usage. To some degree, a policy making CC usage mandatory (*CCPolicy*) limits artists' choice and probably increases their degree of CC usage. Furthermore, a community with strong support for CC may serve as a frame of reference and influence artists' actions, e.g., to release more music under a CC license (e.g., Merton & Rossi 1949; Granovetter 1985).

A set of variables is used to control for artists' characteristics. Artists' *Age* may have an effect on the degree of CC usage. On the one hand, younger artists, having grown up with file sharing, may be more open minded to CC because it permits activities they are used to. On the other hand, this group may still hope to get signed by a record label and thus avoid the use of CC licenses. While making music available under CC licenses is quite easy, it constitutes a deviation from the normal case of copyright protection and requires a deliberate decision. Thus, artists' *Education*, potentially influencing their awareness towards and understanding of copyright, may have a positive influence on

²⁴⁷ While this research does not consider all aspects of the TAM (Davis 1989; Davis et al.1989), it complies with its main dimensions by considering perceived usefulness and ease of use. The first aspect is covered by the four factors *Marketing*, *Idealism*, *Collaboration* and *Fin./contr. loss*; the latter by the variables *Easy* and *Precise*.

CC adoption.²⁴⁸ Decision-making processes are generally easier in small groups than they are in large ones (e.g., Eisenhardt & Bourgeois 1988; Wally & Baum 1994). Thus, one may expect that bands with few *Members* are more likely to use CC licenses compared to ones with many participants. Additionally, resource considerations suggest that small groups profit more from the positive effect of CC (Aldrich & Auster 1986; Gruber & Henkel 2006). Since the kind of music artists make may influence their mindset, musical genres are included as well. With Rock/Pop as reference group, dummies for *Classic*, HipHop and Electronic music (*HipHop/Elec.*) and *Comedy* are included (see Figure 7.2). Attitudes towards IP and piracy vary strongly between countries (Chow et al. 2000; Business Software Alliance 2006). Thus, dummies for *Europe* and *Rest of World* are included; the Americas represent the base case.²⁴⁹ Given the fact that CC originated in the USA and that it is relatively popular in some European countries (Cheliotis et al. 2008), one may expect the highest CC usage in the Americas, followed by Europe and the rest of the world. The descriptive statistics for all variables are shown in Table 7.6, the correlation table for the independent variables in Table A.18 in Appendix A.3.5.

²⁴⁸ For example, Agarwal and Prasad (1999) found that education is a factor in the acceptance of new information technologies.

²⁴⁹ The Americas include North American (USA, Canada) and Latin/South American (e.g., Brazil, Argentina, Mexico) countries. Given the cultural differences between these countries, one could argue that a joint variable representing all of these countries would be inappropriate. However, the results of the statistical models presented later hardly change if all Latin/South American countries are moved from the *Americas* to the *Rest of World*. In particular, the same hypotheses find support.

Variable (N = 1,184)	Explanation	Mean	Median	St. Dev.	Min	Max
CurrentShareCC	Percentage of music released under CC between 2004 and 2008	54.27	62.25	42.70	0	100
FutureShareCC*	Intensity of future CC use (1 (0% CC) - 4 (100% CC))	2.99	3	1.09	1	4
LicenseRanked**	Freedoms granted to users (1 (low) - 4 (high))	2.09	2	0.97	1	4
Marketing	Factor bundling market-related reasons for use of CC	0.00	0.55	1.00	-3.47	2.69
Idealism	Factor bundling idealism-related reasons for use of CC	0.00	0.10	1.00	-3.47	2.53
Collaboration	Factor bundling collaboration-related reasons for use of CC	0.00	0.10	1.00	-3.08	2.87
Fin./contr. loss	Factor bundling reasons against use of CC	0.00	0.03	1.00	-2.78	2.38
Fin. orient.	Financial orientation (1 (low) - 5 (high))	2.80	3	1.37	1	5
Comm. value	Perception of commercial value of music (1 (low) - 5 (high))	3.83	4	1.11	1	5
Exper. music	Years of experience in the music business	7.82	5	7.65	1	49
Exper. CC*	Years of experience with releasing music under CC	2.38	2	1.96	0	8
Selling/licens.***	Importance of selling downloads/CDs and licensing (1 (low) - 5 (high))	3.44	3.67	1.13	1	5
Comp. income***	Importance of concerts, merchandise, advertisements and donations (1 (low) - 5 (high))	3.07	3.25	0.99	1	5
Copy. scope	Perception of scope of copyright (1 (too narrow) - 3 (too extensive))	2.10	2	0.65	1	3
Copy. dur.	Perception of duration of copyright (1 (too short) - 3 (too long))	2.20	2.06	0.62	1	3
Easy	Perception of understandability and ease of use of CC (1 (low) - 5 (high))	3.71	4	1.02	1	5
Precise	Perception of flexibility and unambiguity of CC (1 (low) - 5 (high))	3.54	3.50	0.89	1	5
Share CC req.	Percentage of music for which use of CC is required	2.98	0	12.66	0	100
Share CC forb.	Percentage of music for which use of CC is forbidden	1.61	0	8.22	0	100
Age	Age in years	35.06	33	12.19	13	71
Education	Years of education (school and university)	14.75	15	4.74	0	31
Members	Number of other musicians artist closely cooperates with	2.81	1	4.37	1	51
Dummy variables (N = 1,184)		0	1			
Bus. part. pos.	Business partners require or encourage use of CC	89.4%		10.6%		
Bus. part. neg.	Business partners disallow or discourage use of CC	94.0%		6.0%		
Consume CC	Artist is also a consumer of CC-licensed works	49.6%		51.4%		
Word of Mouth	Friends/colleagues gave positive testimonials on CC	77.0%		23.0%		
Peer influence	Other musicians tried to persuade artist to use CC	88.3%		11.7%		
CC Policy	Music is released on platform which requires use of CC	78.0%		22.0%		
Classic	Music belongs to genre "Classic"	79.0%		21.0%		
HipHop/Elec.	Music belongs to genre "HipHop/Electronic"	64.9%		35.1%		
Comedy	Music belongs to genre "Comedy"	99.3%		0.7%		
Europe	Artist is located in "Europe"	59.8%		40.2%		
Rest of World	Artist is located in "Rest of World"	93.6%		7.4%		

* N = 755 ** N = 936 *** N = 345

Table 7.6 Descriptive statistics for variables in multivariate analysis

7.4.3 Statistical method

The dependent variable *CurrentShareCC* measures the percentage of songs released under a CC license. Its values range between 0 and 100. Due to the censored nature of the data, ordinary least squares (OLS) regression would generate inconsistent estimates (Dougherty 2002, p. 293). Instead, a Tobit analysis was applied (Greene 2003, p. 764). By combining standard regression and Probit analysis, the censored nature of the data is accounted for. In order to check the robustness of the results, an Ordered Probit model was used. Since this method is suitable for dependent variables measured on an ordinal ranking scale, a new variable was created with value "1" if no music was released under a CC license, "2" if the share was between 1 and 99% and "3" if CC licenses were used for all songs.²⁵⁰ *FutureShareCC* is an ordinal variable with four values, depending on the future intensity of CC usage. Consequently, an Ordered Probit model was used as well. As a robustness check, a Probit model was calculated for which the four categories

²⁵⁰ The main reason for the choice of three categories was to create three similarly sized categories in the number of observations (see Figure 7.3).

were merged into two: less than 50% and more than 50% of future CC usage.²⁵¹ As a second dimension of openness, the rights granted to users were analyzed; the variable *LicenseRanked* operationalizes this construct. Four dimensions were used to distinguish the different levels of rights granted to users. Thus, an Ordered Probit analysis is applied as well.

As an indicator for the goodness of fit, STATA provides an index called “pseudo R²” (McFadden’s R²) for Tobit, Probit and Ordered Probit analyses. It measures the share to which the log-likelihood of the model is smaller than the log-likelihood that would have been obtained with only the intercept in the regression (Dougherty 2002, p. 309). A likelihood ratio test (Tobit: chi-square test; (Ordered) Probit: Wald test) compares the difference between the full model and the constants only. The model can be considered as statistically significant if a p-value below 0.1 is obtained.

For all three types of models, the direction and significance of the effect of an independent variable can be interpreted as for standard regression models. To quantify the impact of the variables, marginal effects need to be calculated. Since their informational value is limited however, this work mainly concentrates on the direction and significance of variables.²⁵² In total, 14 models were tested for the three dependent variables. The seven full models are shown in Table 7.7.

Model	Dependent variable	Statistical method	Differences in set of independent variables compared to model...
1	CurrentShareCC	Tobit	
3	CurrentShareCC*	Ordered Probit	
5	FutureShareCC	Ordered Probit	1/3: consideration of artists' experience with CC
7	FutureShareCC**	Probit	1/3: consideration of artists' experience with CC
9	FutureShareCC	Ordered Probit	5/7: consideration of artists' business models
11	FutureShareCC**	Probit	5/7: consideration of artists' business models
13	LicenseRanked	Ordered Probit	1/3: consideration of artists' experience with CC

* Variable recoded for Ordered Probit model ** Variable recoded for Probit model

Table 7.7 Overview of statistical models

All models with even numbers are reduced models and were obtained by successive elimination of insignificant variables. By using likelihood ratio tests, it was ensured that no significant variable was omitted and that the omitted variables were jointly insignificant.

²⁵¹ The Probit model requires that four categories are merged into two categories. This merging may change the results in an inappropriate way. Thus, a Generalized Ordered Probit model has been calculated as a second robustness check. Its results can be found in Table A.19 in the appendix.

²⁵² For example, marginal effects for Tobit can only be calculated for uncensored observations. Since approximately two thirds of the data are censored, the value of this computation is limited.

7.4.4 Results

Models 1-4. The results of the Tobit and Ordered Probit models for *CurrentShareCC* are listed in Table 7.8.

	1 Tobit		2 Tobit (red.)		3 Ord. Probit		4 Ord. Probit (red.)	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
Marketing	3.77	2.76			0.05	0.04		
Idealism	25.74***	3.18	27.01***	3.07	0.34***	0.04	0.36***	0.04
Collaboration	9.42***	2.67	9.68***	2.56	0.12***	0.04	0.13***	0.04
Fin./contr. loss	-9.67***	2.76	-10.67***	2.69	-0.15***	0.04	-0.16***	0.04
Fin. orien.	-10.75***	2.22	-10.56***	2.08	-0.14***	0.03	-0.13***	0.03
Comm. value	-1.72	2.55			-0.02	0.04		
Exper. music	-2.60***	0.38	-2.77***	0.37	-0.03***	0.01	-0.04***	0.01
Copy. scope	-6.38	5.25			-0.10	0.07		
Copy. dur	9.07	5.64			0.12	0.08		
Easy	8.68***	3.21	8.86***	2.64	0.10**	0.04	0.11***	0.04
Precise	-0.60	3.64			0.00	0.05		
Share CC req.	71.95***	20.65	71.15***	20.54	0.97***	0.30	0.96***	0.28
Share CC forb.	-194.19***	35.93	-189.83***	35.71	-2.49***	0.50	-2.43***	0.52
Bus. part. pos.	-2.88	8.55			-0.04	0.12		
Bus. part. neg.	-18.05	11.19			-0.23	0.15		
Consume CC	19.76***	5.63	19.97***	5.52	0.28***	0.08	0.28***	0.08
Word of Mouth	4.67	6.66			0.10	0.09		
Peer influence	-5.51	8.19			-0.06	0.11		
CC Policy	45.45***	7.13	48.22***	6.68	0.54***	0.10	0.57***	0.09
Age	0.89***	0.24	0.87***	0.23	0.01***	0.00	0.01***	0.00
Education	2.15***	0.55	2.22***	0.55	0.03***	0.01	0.03***	0.01
Members	-1.84***	0.63	-1.88***	0.63	-0.03***	0.01	-0.03***	0.01
Classic	4.53	6.86			0.07	0.10		
HipHop/Elec.	0.68	6.02			0.02	0.08		
Comedy	-26.65	28.53			-0.32	0.29		
Europe	3.26	5.75			0.03	0.08		
Rest of World	7.80	9.73			0.12	0.14		
Constant	1.91	22.29	1.10	15.90				
Observations	1,184		1,184		1,184		1,184	
Pseudo R ²	0.0854		0.0837		0.2013		0.1971	
Likelihood ratio (Tobit)/Wald test (OProbit)	$\chi^2(27)=566.20,$ p=0.000		$\chi^2(13)=554.90,$ p=0.000		$\chi^2(27)=431.16,$ p=0.000		$\chi^2(13)=409.89,$ p=0.000	
σ (Tobit)/cuts (OProbit)	74.316		74.777		-0.08, 1.23		0.07, 1.23	

* p < 0.1, ** p < 0.05, *** p < 0.01

Table 7.8 Multivariate analysis of current share of CC-licensed music (*CurrentShareCC*)

Direction of coefficients and significance levels are consistent across the four specifications with few exceptions.²⁵³ All models are statistically significant (p < 0.001). The pseudo R² value of the full Tobit is 0.09, that of the full Ordered Probit is 0.20. The R² value of the corresponding OLS regression is 0.38. Variance Inflation Factors (VIF)

²⁵³ The variables *Easy* and *Precise* form the only minor exception. *Easy* is significant on 1% level for all models except the full Ordered Probit model where it is only significant on a 5% level; *Precise* has a negative coefficient in Model 1 and a positive one in Model 3.

were determined for the independent variables to rule out multicollinearity. Since none of the values exceeded two, multicollinearity was not a concern.²⁵⁴

The results confirm several hypotheses. Of the perceived benefits, idealism ($p = 0.000$) and collaboration ($p = 0.000$) have a significant positive impact on CC usage; the positive influence of marketing ($p = 0.172$) is not significant.²⁵⁵ Thus, H1b' and H1c' can be accepted, H1a' cannot. Given the significant negative effect of perceived financial and control loss ($p = 0.000$), H1d' can be confirmed as well. Thus, artists consider the identified benefits and drawbacks in their decisions to adopt CC licenses. Surprisingly, marketing aspects play only a subordinate role in artists' considerations.

As expected, a strong financial orientation impacts CC usage significantly negative ($p = 0.000$). Thus, H2a' can be accepted. H2b' is not supported as no significant effect for commercial value ($p = 0.501$) was found. There are two plausible explanations for the lack of this effect: First, CC-licensed music may indeed have the same commercial potential as non-CC-licensed music. Second, artists' self-assessments of the quality of their music may be partially inaccurate and thus hardly comparable. For example, while around 70% of participants believe that their music has commercial potential, only 12% of the survey participants make a living from music. Artists' experience in the music business has a significant negative effect on the amount of CC-licensed music ($p = 0.000$) so that H3a' can be accepted. Thus, a long history in the music business and familiarity with its traditional practices reduces artists' willingness to adopt CC licenses.

The dependent variable used in models 1-4, *CurrentShareCC*, measures artists' CC usage between 2004 and 2008, i.e., over a stated period of time. Obviously, artists having adopted CC licenses earlier have cumulatively released more music under a CC license. Thus, the specification of models 1-4 is not suitable to determine the effect of prior experience with CC licenses (H3b'). *Selling/licens.* (H4a') and *Compl. income* (H4b') relate to artists' actual income in 2008. Since *CurrentShare* measures CC usage between 2004 and 2008, models 1-4 cannot test the effect of business models on CC usage.

²⁵⁴ The VIF is the reciprocal of the percentage of the variance for an independent variable that cannot be explained by the other interdependent variables in the model. The closer to 1, the less collinearity exists among the independent variables. Baum (2006, p. 85) proposes as rule of thumb that there is evidence of collinearity if the largest VIF is greater than 10.

²⁵⁵ All reported p-values originate from Model 1 (full Tobit model). For an overview of all hypotheses, see Table 7.5.

Section 7.4.2 outlined the expected influence of the 20 control variables contained in the model. Most of them, in particular those having a significant effect, exhibit the anticipated sign. Thus, it remains to discuss significant variables as well as ones with deviating signs. The positive significant effect of *Easy* ($p = 0.007$) proves the high importance of ease of use for the adoption of CC licenses. Legal requirements matter as well. The share of songs for which CC licenses are required (*Share CC req.*) significantly influences CC usage in a positive manner ($p = 0.001$), the share of songs for which CC licenses are forbidden (*Share CC forb.*) causes the opposite ($p = 0.000$). Musicians being consumers of CC-licensed content (*ConsumeCC*) exhibit a significantly higher level of CC usage ($p = 0.000$) as well as the ones on platforms requiring CC usage (*CC Policy*, $p = 0.000$).²⁵⁶

Lastly, the demographic characteristics *Age* ($p = 0.000$), *Education* ($p = 0.000$) and *Members* ($p = 0.004$) have a significant influence on CC adoption. Older artists show stronger use of CC, potentially due to a more realistic perception of the quality of their music or lower commercial ambitions.²⁵⁷ People with higher education use CC more frequently, possibly due to a greater awareness for copyright-related issues. The negative impact of the number of members might be explained by difficulties in aligning the interests of all participants and reaching an agreement to use CC licenses. The signs of the following variables contradict the expectation: *CopyrightScope*, *Precise*, *Bus. part. pos.* and *Peer influence* have a negative influence where a positive one seemed more reasonable; in contrast, *Rest of World* increases rather than diminishes CC adoption. However, as their p-values consistently exceed 0.20, the identified differences to the anticipated behavior do not seem critical.

Models 5-8. In order to verify the robustness of the obtained results and examine whether the factors driving artists' current and future CC use differ, a set of models was calculated using *FutureShareCC* as dependent variable. Table 7.9 shows the results from models 5-8.

²⁵⁶ Despite such a policy, artists can use CC licenses selectively by only releasing some of their songs on a website requiring CC usage, while releasing other songs under copyright using other means. In fact, several artists were identified in the qualitative study that practiced selective CC usage this way.

²⁵⁷ As outlined in Section 7.4.2, a positive as well as a negative effect for age seemed reasonable.

	5 Ord. Probit		6 Ord. Probit (red.)		7 Probit		8 Probit (red.)	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
Marketing	0.16***	0.05	0.16***	0.04	0.11*	0.07	0.11*	0.07
Idealism	0.50***	0.06	0.52***	0.06	0.55***	0.08	0.57***	0.08
Collaboration	0.27***	0.05	0.27***	0.05	0.30***	0.07	0.31***	0.07
Fin./contr. loss	-0.35***	0.05	-0.37***	0.05	-0.38***	0.08	-0.39***	0.07
Fin. orien.	-0.10**	0.04	-0.10**	0.04	-0.11**	0.06	-0.13**	0.05
Comm. value	-0.12***	0.05	-0.12**	0.05	-0.07	0.07		
Exper. music	-0.03***	0.01	-0.03***	0.01	-0.02***	0.01	-0.03***	0.01
Exper. CC	0.13***	0.02	0.15***	0.02	0.13***	0.03	0.14***	0.03
Copy. scope	0.13	0.09	0.17**	0.07	0.20*	0.12	0.24**	0.10
Copy. dur	0.08	0.09			0.07	0.13		
Easy	0.02	0.06			0.04	0.08		
Precise	0.04	0.07			-0.02	0.09		
Share CC req.	-0.17	0.30			-0.09	0.43		
Share CC forb.	-0.87	0.59			-1.52*	0.84	-1.39*	0.80
Bus. part. pos.	-0.07	0.14			0.29	0.23		
Bus. part. neg.	-0.31	0.20			-0.45*	0.27	-0.49*	0.26
Consume CC	0.11	0.10			0.08	0.14		
Word of Mouth	0.17	0.11	0.21**	0.10	0.30*	0.18	0.35**	0.17
Peer influence	0.13	0.14			0.27	0.22	0.37*	0.22
CC Policy	0.77***	0.13	0.80***	0.13	0.79***	0.19	0.82***	0.20
Age	0.01**	0.00	0.01**	0.00	0.01**	0.01	0.01**	0.01
Education	-0.01	0.01			-0.01	0.01		
Members	-0.01	0.01			-0.01	0.01		
Classic	0.18	0.12			0.10	0.17		
HipHop/Elec.	0.05	0.11			-0.16	0.16		
Comedy	0.05	0.71			-0.38	0.92		
Europe	0.30***	0.10	0.30***	0.10	0.42***	0.15	0.42***	0.14
Rest of World	0.45**	0.20	0.39**	0.19	0.57**	0.27	0.61**	0.28
Constant					-0.39	0.57	-0.60*	0.33
Observations	755		755		755		755	
Pseudo R ²	0.3155		0.3086		0.4783		0.4711	
Wald test	$\chi^2(28)=438.75,$ p = 0.000		$\chi^2(14)=410.60,$ p = 0.000		$\chi^2(28)=277.14,$ p = 0.000		$\chi^2(16)=254.92,$ p = 0.000	
Cuts (OProbit)	-0.92, 0.17, 1.27		-1.18, -0.09, 0.98					

* p < 0.1, ** p < 0.05, *** p < 0.01

Table 7.9 Multivariate analysis of future share of CC-licensed music (*FutureShareCC*)

To enable meaningful comparisons, all independent variables are retained. Since *FutureShareCC* measures the use of CC licenses at a point in time instead of over a period, artists' previous experience with CC licenses (*Exper. CC*) can also be considered. This experience may encourage stronger adoption as it mitigates initial reservations. All four models are highly significant ($p < 0.001$). Model 5 has a pseudo R² of 0.32, and model 7 a pseudo R² of 0.48. Since all VIFs are below 3, multicollinearity does not seem to be a major issue.

In line with models 1-4, *Idealism* ($p = 0.000$) and *Collaboration* ($p = 0.000$) have a significantly positive impact, while *Fin./contr. loss* ($p = 0.000$) has a significantly negative impact on future CC use.²⁵⁸ Thus, H1b", H1c" and H1d" can be accepted. In con-

²⁵⁸ All reported p-values come from Model 5 (full Ordered Probit model).

trast to the previous case, *Marketing* ($p = 0.001$) has the expected significant positive effect so that H1a" can be accepted. As *Fin. orien.* ($p = 0.031$) carries a negative significant coefficient across all models, H2a" finds support as well. Since *Comm. value* is only significant in two of the four models ($p = 0.030$), H2b" finds partial support.²⁵⁹

With regards to time and learning, *Exper. music* ($p = 0.000$) again has a significant negative influence. Thus, H3a" is confirmed. In contrast to models 1-4, this specification checks for the impact of artists' experience with CC licenses. The model supports the hypothesis H3b" that the longer artists' record with CC licenses, the greater the share of music they release under a CC license. Thus, adopting CC licenses seems to be a learning process. In most cases, signs and significance levels for the control variables are consistent with the values in models 1-4. There are no cases where a control variable has a significant positive or negative effect that cannot be reasonably explained.

Given the similarities between the dependent variables used in models 1-4 (*CurrentShareCC*) and models 5-8 (*FutureShareCC*), the wide congruencies of signs and significance levels make sense and prove robustness.²⁶⁰ The most striking difference between both specifications lies in the higher significance of *Marketing* for future CC use. This seems puzzling at first glance. However, when recalculating models 1-4 using the same sample as in models 5-8 ($N = 755$ instead of 1,184), *Marketing* becomes significant, too ($p = 0.009$). This effect may be explained as follows: Artists who are able to state their future CC use probably use CC licenses more consciously. Thus, *Marketing* matters more for them.

Models 9-12. Up to this point, the impact of artists' business models has not been examined. For this purpose, the computations for models 5-8 are redone including two variables representing artists' income sources. *Sell/licens.* refers to the traditional core

²⁵⁹ In order to understand the differences between the results of the Ordered Probit and Probit models better, especially with regards to the variables *Marketing* and *Comm. value*, a Generalized Ordered Probit model has been calculated. Its results can be found in Table A.19 in the appendix. The model shows that *Marketing* is only significant when comparing the categories of 0% and > 0% CC usage. Thus, *Marketing* is highly relevant for the decision to use CC, but not so much for the level of CC usage. The variable *Comm. value* is only significant when comparing the categories of < 100% and 100% CC usage. Thus, the perceived commercial value of one's music is highly relevant for the decision to use CC for all songs, but not so much for the general adoption.

²⁶⁰ As further checks of robustness, the set of independent variables and the dependent variable were modified to be consistent with Models 1-4. First, the same set of independent variables as in models 1-4 was used, i.e., the variable *Exper. CC* was left out. In the resulting full Ordered Probit and Probit models, all hypotheses except H2b" found support. Second, the same three – instead of four – classes to measure future CC use were used as dependent variable as in models 3-4. As before, the first category represents no CC use, the second one represents partial CC use and the third one represents full CC use. Except H2b", all hypotheses can again be confirmed.

income sources of selling and licensing music, *Compl. income* to all others like concerts and merchandising. As discussed, a negative effect is expected for the former, a positive one for the latter. Table 7.10 summarizes the results of the analysis on the drivers for future CC use for the subset of artists making at least some money from music (N = 345). Given a pseudo R² of approximately 0.37 for the full Ordered Probit and 0.55 for the full Probit, the quality of the models seems fine. Again, all specifications are highly significant (p < 0.001), and all VIFs are below 3.

	9 Ord. Probit		10 Ord. Probit (red.)		11 Probit		12 Probit (red.)	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	
Marketing	0.15**	0.07	0.18***	0.07	0.02	0.10		
Idealism	0.64***	0.09	0.62***	0.08	0.78***	0.15	0.80***	0.12
Collaboration	0.28***	0.07	0.29***	0.07	0.26**	0.10	0.27***	0.09
Fin./contr. loss	-0.42***	0.07	-0.45***	0.07	-0.49***	0.11	-0.52***	0.10
Fin. orien.	-0.02	0.08			-0.06	0.11		
Comm. value	-0.17**	0.09	-0.15*	0.08	0.03	0.12		
Exper. music	-0.03***	0.01	-0.03***	0.01	-0.03**	0.01	-0.02**	0.01
Exper. CC	0.17***	0.04	0.16***	0.04	0.20***	0.05	0.19***	0.05
Selling/licens.	-0.13	0.09			-0.34***	0.13	-0.28**	0.12
Compl. income	0.14	0.09			0.27**	0.13	0.23*	0.13
Copy. scope	0.26**	0.13	0.22**	0.10	0.28*	0.17		
Copy. dur	-0.15	0.13			-0.10	0.18		
Easy	-0.00	0.08			0.15	0.12		
Precise	0.05	0.10			-0.09	0.14		
Share CC req.	-0.68*	0.40			-0.04	0.67		
Share CC forb.	-0.43	0.78			-1.31	1.11		
Bus. part. pos.	0.11	0.18			0.57**	0.27		
Bus. part. neg.	-0.30	0.26			-0.54	0.37		
Consume CC	0.09	0.16			-0.11	0.21		
Word of Mouth	0.21	0.16			0.43	0.27	0.65**	0.26
Peer influence	0.07	0.19			0.34	0.32		
CC Policy	0.83***	0.20	0.81***	0.18	1.01***	0.29	0.98***	0.25
Age	0.01*	0.01			0.01	0.01		
Education	0.00	0.01			-0.01	0.02		
Members	0.03**	0.01			0.03	0.02		
Classic	0.39**	0.19			0.22	0.25		
HipHop/Elec.	0.24	0.16			0.19	0.25		
Comedy	-0.71	0.80			-1.96***	0.62	-1.89**	0.74
Europe	0.25*	0.15	0.24*	0.14	0.38*	0.22		
Rest of World	0.56	0.40			1.00**	0.49	0.83*	0.48
Constant					-1.06	0.96	-0.05	0.38
Observations	345		345		345		345	
Pseudo R ²	0.3712		0.3455		0.5519		0.5102	
Wald test	$\chi^2(30)=291.51,$ p = 0.000		$\chi^2(10)=229.20,$ p=0.000		$\chi^2(30)=148.84,$ p=0.000		$\chi^2(11)=133.44,$ P = 0.000	
Cuts (Probit)	-0.73, 0.53, 1.94		-1.19, 0.01, 1.34					

* p < 0.1, ** p < 0.05, *** p < 0.01

Table 7.10 Multivariate analysis of future share of CC-licensed music for artists generating income from music (*FutureShareCC*)

Considering all variants of models 9-12, H1a" (*Marketing*) finds partial, H1b" (*Idealism*), H1c" (*Collaboration*) and H1d" (*Fin./contr. loss*) find full support. Interestingly, financial orientation is for the first time not significant. Thus, H2a" cannot be con-

firmed. However, there is a meaningful explanation for this difference: artists who generate income from music have a significantly higher financial orientation (t-test, $p = 0.000$). The larger conformity on this matter may explain why this variable has no longer a significant effect. A similar argument could be made for commercial value, although H2b" finds partial support. Again, *Exper. music* has the expected significant negative impact, *Exper. CC* the expected significant positive impact. H3a" and H3b" are thus supported.

In all four models, the variables representing artists' business models carry the expected signs. In Model 9, they are not significant (*Sell/licens.*, $p = 0.126$; *Compl. income*, $p = 0.118$). In models 11 and 12, a highly significant effect is found for both variables (*Sell/licens.*, $p = 0.007$; *Compl. income*, $p = 0.036$). Thus, H4a" and H4b" are partially supported. This suggests that some business models are indeed more suitable for using CC licenses than others.²⁶¹

Models 13-14. Thus far, the drivers for the share of CC-licensed music have been examined. It remains to discuss what influences artists' license choice or, more specifically, what motivates musicians to grant users more rights. This aspect is measured by the variable *LicenseRanked* (see Section 7.4.2). The same set of independent variables was used as in models 5-8.²⁶² While experience with CC licenses was included, business models were deliberately excluded since few artists with considerable income – both from traditional and complementary sources – use liberal CC licenses. This is in line with the findings from the qualitative study in which none of the interviewed professional artists either used or recommended the use of licenses that do not include the NC condition. Table 7.11 shows the multivariate model to explain artists' license choice. The dependent variable denotes the level of freedoms artists grant to users; a higher level indicates more freedoms.

All hypotheses on the influence of benefits and drawbacks on license choice (H1a"', H1b"', H1c"', H1d"') can be accepted (*Marketing*, $p = 0.045$; *Idealism*, $p = 0.000$; *Col-*

²⁶¹ Most control variables behave as expected. The most surprising result is the significant negative effect of *Share CC Req.* in Model 9. However, as this anomaly does not appear in any other model, it is not a major concern.

²⁶² Compared to models 1-4, this includes the variable *Exper. CC* which measures the time for which artists have experience using CC licenses. Considering this variable makes sense since it seems likely that artists having used CC licenses for a longer period of time tend to grant users more rights, i.e., employ more liberal licenses (see hypothesis H3b"'). Since the survey asked artists under which CC license they released their *last* song, *Exper. CC* seems to be an appropriate approximation for their experience with CC licenses. Additionally, the model excluding *Exper. CC* produces similar results. Except H3b"', all hypotheses find support as well.

laboration, $p = 0.000$; *Fin./contr. loss*, $p = 0.056$). While financial orientation does not carry a negative significant coefficient ($p = 0.526$), commercial value does ($p = 0.009$). Thus, H2a''' cannot be confirmed, but H2b''' can. Finally, the two variables related to time have the expected impact: Experience in the music business has a significant negative ($p = 0.001$) influence, and experience with CC licenses has a significant positive ($p = 0.000$) influence on the level of rights granted to users. Consequently, H3a''' and H3b''' find support from the analysis. As previously explained, no hypotheses on business models were tested.

	13 Ord. Probit		14 Ord. Probit (red.)			13 Ord. Probit		14 Ord. Probit (red.)	
	Coeff.	Std. Err.	Coeff.	Std. Err.		Coeff.	Std. Err.	Coeff.	Std. Err.
Marketing	0.09**	0.04	0.09**	0.04	Bus. part. pos.	-0.03	0.12		
Idealism	0.29***	0.05	0.29***	0.04	Bus. part. neg.	-0.08	0.19		
Collaboration	0.24***	0.04	0.22***	0.04	Consume CC	-0.02	0.09		
Fin./contr. loss	-0.08*	0.04	-0.09**	0.04	Word of Mouth	-0.28***	0.10	-0.30***	0.09
Fin. orien.	-0.02	0.03			Peer influence	0.10	0.13		
Comm. value	-0.10***	0.04	-0.11***	0.04	CC Policy	0.08	0.10		
Exper. music	-0.02***	0.01	-0.02***	0.01	Age	0.01	0.00		
Exper. CC	0.40***	0.03	0.40***	0.03	Education	0.01	0.01		
Copy. scope	-0.07	0.08			Members	-0.02	0.01	-0.02*	0.01
Copy. dur	0.02	0.09			Classic	0.09	0.11		
Easy	0.06	0.05			HipHop/Elec.	0.05	0.09		
Precise	-0.07	0.06			Comedy	-0.62	0.40	-0.72*	0.38
Share CC req.	0.54*	0.29	0.51*	0.29	Europe	-0.03	0.09		
Share CC forb.	-1.18***	0.45	-1.31***	0.46	Rest of World	-0.09	0.17		
Observations	935		935						
Pseudo R ²	0.2524		0.2488						
Wald test	$\chi^2(28)=552.84$, $p = 0.000$		$\chi^2(12)=531.17$, $p = 0.000$						
Cuts	-0.24, 1.19, 2.21		-0.43, 0.99, 2.00						

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7.11 Multivariate analysis on rights granted to users (*LicenseRanked*)

Among the control variables, most carry the expected sign. The most important deviation is found for the variable *Word of Mouth* which has a significantly negative influence ($p = 0.004$) on musicians' intentions to grant users more rights. An explanation for this effect could be that those artists adopting CC licenses due to positive word of mouth tend to choose more restrictive licenses while those adopting the licenses driven by their own conviction adopt more liberal ones.

The similarities between the results obtained from models 1-12, measuring the share of CC-licensed music, and the ones obtained from models 13-14, measuring the license choice, are striking. While the dependent variables were quite different, the influence of the exploratory variables was roughly similar. This corroborates the chosen approach to consider openness as a superordinate concept and to study its various dimensions.

7.5 Intermediate conclusion

The quantitative results strongly support the main findings of the qualitative study. To support this proposition, the key results of the descriptive, cluster and multivariate analyses are recapitulated. In addition, the conclusions of this work are compared to those of related studies.

Within the sample, about two thirds (63.6%) of artists release music under a CC license. Approximately half of them release all (31.2%), the other half (32.4%) only some of their music under a CC license. The large share of selective CC users indicates a desire to give users more freedom, but also to retain some rights. Their license choice supports this impression: With BY-NC-SA (30.1%) and BY-NC-ND (20.3%) as the most popular licenses, artists prefer CC licenses that allow them to keep some level of control over their works, in particular over commercial uses. The qualitative study pointed to various reasons for using CC licenses, which were summarized under the umbrella terms *marketing*, *idealism* and *collaboration*. A factor analysis proved this categorization. With regards to drawbacks, artists were found to be concerned about losing income or control over their music.

A cluster analysis based on the reasons for and against using CC licenses further supported the assumption of different types of CC users. Besides the enthusiasts who regard CC positively in all dimensions, three kinds of artists were found who choose CC licenses for well-defined reasons: Idealists use them to express their ideological or altruistic motives; marketing and collaboration pragmatists use CC licenses for market- and collaboration-related benefits. Since skepticists and decliners do not appreciate any aspect of CC, their use of the licenses is marginal. In contrast to the common perception that all artists using CC licenses are hobbyists, some of them indeed manage to make a living from music. The survey shows that these people have partially aligned their business models to the properties of CC licenses. Relative to full copyright users, they are more focused on concerts and donations, and less on selling and licensing music. The quantitative study also revealed a trend towards releasing more music under CC licenses. While 31.1% indicated an increase in their CC usage in the past, only 12.2% reported a decline. The same trend can be observed when comparing the current and future share of CC-licensed music. While 60.6% release most or all of their songs under a CC license today, 69.8% intend to do so in the future.

Besides the descriptive analysis, this thesis attempts to explain artists' CC adoption using multivariate analyses. It was measured in two dimensions: through the share of music released under a CC license, and through the license choice specifying the freedoms granted to users. For the first dimension, both the current and the future share were examined. Tobit, Ordered Probit and Probit analyses were applied to explain artists' decisions. Based on literature and the qualitative study with respects to factors influencing artists' openness, four kinds of hypotheses were derived and formally tested: hypotheses covering the expected benefits and drawbacks of using CC licenses (H1), hypotheses on artists' personal characteristics (H2), hypotheses on their experience with music and CC (H3), and hypotheses on business models (H4). The models controlled for various factors, in particular other known drivers for/against CC use and demographic characteristics. Table 7.12 provides an overview of the effects of the explanatory variables in the 14 models.²⁶³

		Models 1-4	Models 5-12	Models 13-14
		Share of songs released as CC in the past	Share of songs to be released as CC in the future	Rights granted to users
1	Marketing Benefits/drawbacks of CC	Idealism	+	+
		Collaboration	+	+
		Financial & control loss	-	-
2	Personal characteristics	Financial orientation	---	
		Commercial value of music	---	-
3	Time/Learning	Experience in music business	-	-
		Experience with CC	+	+
4	Business models	Selling & licensing music	---	
		Complementary income sources	-:-	
N		1,184	755 (5-8), 345 (9-12)	935

Table 7.12 Effects of the explanatory variables in multivariate analysis

The wide consistency between the three groups of models, each using a different dependent variable, is striking. First, it supports the claim that the share of CC-licensed songs and the license choice are both manifestations of an overarching idea of openness. Second, it substantiates the robustness and quality of the drawn conclusions.

²⁶³ When comparing the results of the 14 models, one should keep in mind that the models are based on different samples. In particular, the different results between models 1-4 and 5-14 with regards to *Marketing* can be explained with the use of a different group of observations.

H1a, H1b and H1c predict that artists are more open, the more importance they place on benefits related to marketing, idealism and collaboration. H1d predicts that artists are less open, the more important they consider drawbacks related to financial and control loss. Across all models, H1b, H1c and H1d can be confirmed. In addition, evidence for H1a is found in two of three cases. In summary, artists' adoption of CC licenses strongly depends on their perception of the identified advantages and disadvantages of using CC licenses. H2 relates to artists' personal characteristics. It predicts that artists release more music under a CC license, the lower their financial orientation (H2a) and the lower the perceived commercial potential of their music (H2b). Both hypotheses are partially supported. Thus, artists' financial orientation and the value they assign to their music have an influence on their decisions in some settings, but not in all.

H3a and H3b consider the impact of time and learning on CC usage. H3a assumes that artists who are highly familiar with the traditional practices of monetizing and protecting music face more difficulties in overcoming their closed history and adopting CC licenses. H3b denotes the effect of learning: The longer artists use CC licenses, the more (positive) experiences they will make and learn how to use CC licenses best which will most likely result in a more extensive CC use. Both hypotheses find strong support across all models. Finally, two hypotheses related to artists' business models were tested. H4a predicts that artists release less music under a CC license, the more important they consider selling and licensing music. H4b predicts that artists release more music under a CC license, the more important they consider complementary income sources. The supporting evidence suggests considering them partially supported. Thus, the data indicate that some business models might work better with CC licenses than others, but are not sufficient for bold conclusions.

Having summarized the results of the descriptive and multivariate analysis, it remains to highlight major parallels and differences to similar studies. Apart from this study, two surveys among CC users exist (OpenBusiness 2006; Kim 2007). Kim (2007) characterizes CC users as hobby creators for whom financial interests are of little importance. As main reasons to use CC, she suggests a belief in sharing and an expectation to achieve more popularity and gain reputation. She also proposes that concerns about and negative experiences with current copyright play an important role. In general, OpenBusiness (2006) is in line with Kim (2007). The study stresses the importance of practical reasons for CC adoption as well as artists' issues with copyright. Confirming the results of the previous studies, this work significantly advances the understanding of

CC users and their decision-making processes. First, the survey shows that CC users tend to use the licenses for (a mix of) marketing-, collaboration- and idealism-related reasons. Second, it reveals that CC users are a diverse group which spans all geographies, genres, and levels of professionalism and quality. Third, the survey highlights the fact that a significant share of artists relies on both full copyright and CC licenses. Thus, the survey disproves the common myth that most CC users are idealistic hobbyists who use CC licenses because of a strong dislike of copyright.

In addition to examining artists' motives for and against using CC licenses using techniques like factor and cluster analysis, this thesis presents the first multivariate model on factors influencing artists' CC adoption. Thus, it reveals various drivers such as prior experiences or personal characteristics and qualifies the existing assumptions on copyright concerns as the main reason for CC adoption. Since neither OpenBusiness (2006) nor Kim (2007) propose any hypotheses on drivers or inhibitors for CC adoption, this thesis significantly advances the academic understanding of CC.

This study is closely related to the research on free revealing, in particular to the studies conducted by Henkel (2006) and Käs (2008). While the two studies focus on firms developing software, this study concentrates on individuals creating cultural works. Despite these differences, several parallels can be identified. First, all three studies find the existence of a phenomenon labeled by Henkel "selective revealing" which characterizes partial disclosure of innovations. Second, various reasons for free revealing, such as external support or better reputation, matter in both areas. Third, several drivers of openness found by Henkel (2006) and Käs (2008) apply in the case of artists as well, like perceived benefits of lowering control, time and learning, and ownership of complementary assets (suitable business models).

8 Quantifying the adoption of Creative Commons licenses for music

The previous chapter outlined the drivers and inhibitors for artists' adoption of CC licenses. In order to determine the relevance of this phenomenon, this chapter intends to quantify the worldwide usage of CC licenses for music. It also provides additional evidence for selected issues covered in the survey, relying on data from other sources. Thus, it improves the value and accuracy of the drawn conclusions (Jick 1979; Rossman & Wilson 1985).

After a brief description of the study design (8.1), several hypotheses are formulated (8.2) which re-examine some of the questions explored in Section 7.4. Afterwards, the results are presented (8.3), which include an estimate of the total amount of CC-licensed music and proliferation of the different CC licenses as well as a discussion of the quality and popularity of CC-licensed music. Then, the derived hypotheses are tested.

8.1 Study design and methodology

The CC initiative maintains a directory which lists the most popular sources of CC-licensed audio material including an estimate for the number of items for each source (see Section 7.1.1).²⁶⁴ This makes it fairly easy to give a rough estimate on the adoption of CC licenses in the music business. However, this information does not allow the examination of any of the other objectives stated above. For example, far more detailed information is needed to determine the quality and popularity of CC-licensed music. For this purpose, various publicly-available data was obtained from the four largest platforms for CC-licensed music (Soundclick, Jamendo, ArtistServer and Magnatune). Since these websites contain the bulk of CC-licensed music, the results are likely to be generalizable beyond the immediate context of the study.

²⁶⁴ Of course, it cannot be determined whether this list is exhaustive or not. However, since it is based on information from users, it seems unlikely that major sources of CC-licensed music are missing. When comparing the estimates of items given on the page with actual values for several sources, the author found that the estimates were partially outdated, but by and large accurate.

For each of the four platforms, all publicly-available data on songs and artists were retrieved.²⁶⁵ In total, the characteristics of more than 3.5 million songs were stored in a database. Several applications were written to automate information retrieval, which took place over a period of nine months, starting in September 2008. Where available, five types of information were stored for each song: the terms under which it is available (full copyright vs. one of the various CC licenses), the price, the popularity, the release date, and the performing artist.

When studying the adoption of CC licenses on platforms dedicated to CC-licensed music, two types of websites need to be distinguished. Some websites focus entirely on CC-licensed music and make the use of the licenses mandatory. Others let the artists decide whether a song or album is released under full copyright or a CC license. While Jamendo and Magnatune pursue the first approach, ArtistServer and Soundclick take the latter. Consequently, the share of CC-licensed content is 100% for Jamendo and Magnatune. For ArtistServer, this value is 77.6%; for Soundclick, it is 24.4%. Since ArtistServer and Soundclick give artists a choice whether to use CC licenses or not, they provide more information on certain topics regarding CC adoption. Moreover, Soundclick contains nearly 90% of all CC-licensed content found on the four platforms. As a result, most analyses outlined below are based on data from this site.

8.2 Hypotheses

Considering a larger and somewhat complementary set of data, this chapter intends to provide further support for the conclusions drawn from the survey. In particular, Section 7.4 studied hypotheses related to four areas: benefits and drawbacks of using CC licenses, artists' personal characteristics, previous experiences with CC and full copyright, and business models. While the available data does not allow conclusions to be drawn about artists' personal characteristics or their evaluation of the pros and cons associated with CC licenses, they are well suited to re-examine the effect of previous experiences and business models on the adoption of CC licenses. To guide the further investigations, four formal hypotheses are stated below.

One of the key benefits of CC licenses is the wider dissemination of content which may increase demand for complementary products or services (see Section 6.3.4). Re-

²⁶⁵ Not all public information was retrieved from Magnatune since this platform did not contain any information that could generate any valuable insights.

leasing content for free has a similar effect. Thus, it seems reasonable that artists who give their music away for free release it more frequently under a CC license than those who charge for their songs. By applying an NC-condition to their works, artists using CC licenses retain the exclusive right to sell their music. In contrast, music that is under a BY, BY-SA or BY-ND license can be marketed and distributed by anyone, including commercial entities. Thus, it seems likely that adopters of CC licenses intending to charge a fee for their music use a NC-condition more frequently. This implies:

H1a: Artists give away CC-licensed music for free more frequently than music protected by full copyright.

H1b: Artists using CC licenses give away non-NC-licensed music for free more frequently than NC-licensed music.

Chapter 7 revealed that previous experiences with CC licenses encourage CC adoption. In contrast, extensive experiences with the traditional practices of the music business were found to reduce the likelihood of CC adoption. By testing the following two hypotheses, this chapter intends to verify both effects:

H2a: Artists are more likely to release music under a CC license, the more experience they have with CC licenses.

*H2b: Artists are less likely to release music under a CC license, the more experience they have with full copyright.*²⁶⁶

8.3 Results

Starting with a description of the current adoption of CC licenses for music (8.3.1), the results of the data analysis are discussed. After that, the main characteristics of CC-licensed music are outlined (8.3.2). Lastly, changes in artists' use of CC licenses over time are examined (8.3.3).

8.3.1 Adoption of CC licenses for music

Based on search engine queries, the CC initiative estimates the pool of CC-licensed works to contain around 150 million items as of August 2009 (Creative Commons

²⁶⁶ The data available from the four platforms does not contain accurate information on artists' experiences in the music business. Thus, it is not possible to test the same hypothesis as in Chapter 7. However, they contain limited data on artists' experiences with copyright which can be regarded as an approximation of their experiences in the music business. Thus, the hypotheses tested in Chapters 7 and 8 are closely related.

2009b).²⁶⁷ To get an idea about the amount of CC-licensed music, one may refer to a directory of web sites containing CC-licensed audio material maintained by the CC initiative (Creative Commons 2009e). In total, these platforms contain 974,000 pieces.²⁶⁸ Thus, music accounts for around 0.65% of all CC-licensed content.²⁶⁹

As previously outlined, this study focuses on four platforms hosting CC-licensed music. These platforms contain 631,000²⁷⁰ CC-licensed songs, i.e., around two thirds of all CC-licensed music. If one assumes that the other third has similar characteristics, the conclusions drawn in this chapter may be considered valid for the entire population of musicians using CC licenses.²⁷¹

The pool of CC-licensed content is growing steadily (Creative Commons 2009b). While the exact pace is hard to determine, the numbers indicate an exponential growth (Hancock 2007). In line with this pattern, data from Soundclick and Jamendo – the two largest platforms for CC-licensed music – confirm that more music is continuing to become available under a CC license. As Figure 8.1 shows, more than half a million songs have been released under a CC license on the two websites since 2002. Additionally, the total amount of CC-licensed songs grows at an impressive pace. Between 2004 and 2008, it rose by approximately 75% per year.

²⁶⁷ Since the pool of CC-licensed content is steadily increasing, the accuracy of this figure is limited. However, it gives an idea about the order of magnitude of the number of CC-licensed items.

²⁶⁸ Besides music, this number also includes sounds and talking.

²⁶⁹ The relatively small share of music is easy to explain. First, recording music requires special talent and is significantly more difficult than taking pictures or writing blogs. Thus, a comparably low number of people are able to release music. Second, estimates of CC adoption only count CC-licensed items. In particular, each photo is counted as an individual item. Since the number of photos made available online far exceeds the amount of other media, the low share of music becomes evident.

²⁷⁰ Soundclick: 512, Jamendo: 104, Magnatune: 9, ArtistServer: 6. Since this data was retrieved at different points in time in 2008 and 2009, some data may be slightly outdated.

²⁷¹ Data from ArtistServer is not considered further in the analysis given the comparably small size of this community. For completeness, the number of CC-licensed songs released between 2001 and 2008 are listed: 2001: 248; 2002: 1,116; 2003: 1,116; 2004: 578; 2005: 663; 2006: 1079; 2007: 978; 2008: 829 (extrapolated based on values from 01/08-10/08)

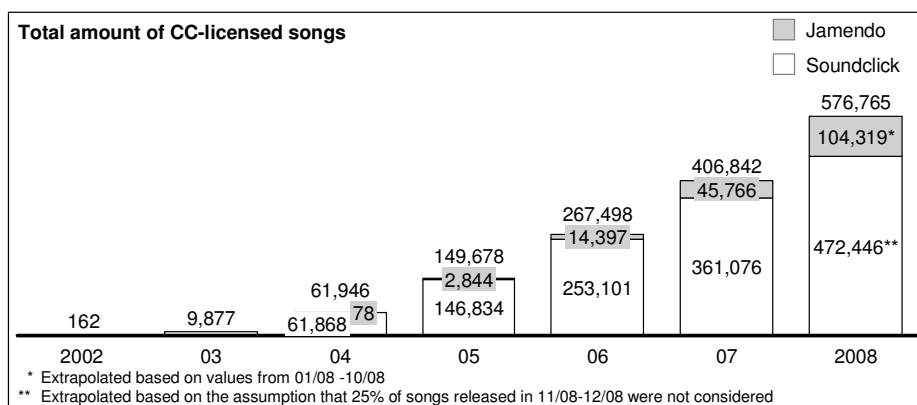


Figure 8.1 Growth of CC-licensed music on Soundclick and Jamendo

However, the number of songs released under a CC license *per year* increases much slower, as Figure 8.2 illustrates. Thus, the growth of CC-licensed music is not primarily driven by artists' increasing interest in CC licenses, but by the increasing amount of content available online. In particular, it is partially caused by the fact that online content is hardly ever deleted.²⁷²

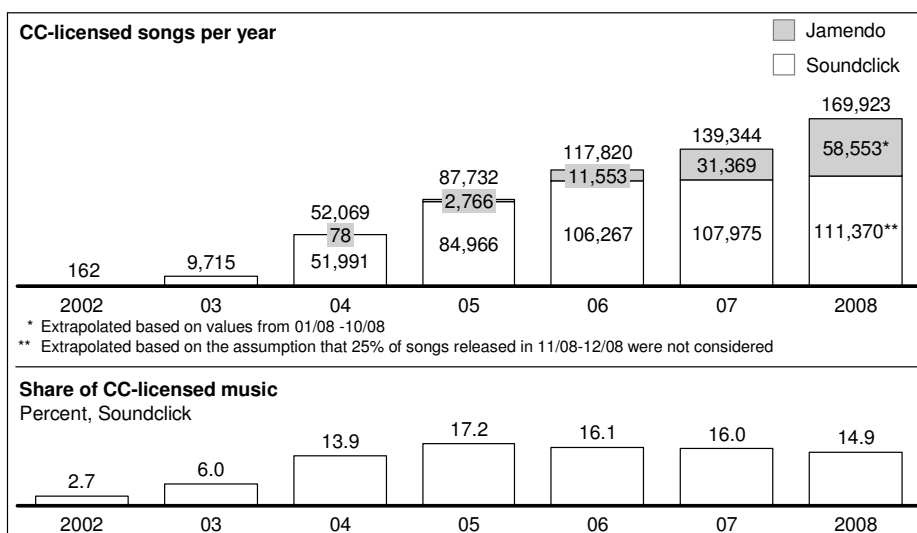


Figure 8.2 Degree of CC usage over time on Soundclick and Jamendo

Since the precise total amount of music released is not known, the available data cannot provide a definite answer on the relative importance of CC licenses for music. However, the relative share of CC-licensed music on Soundclick can be calculated based on the available data. As Figure 8.2 shows, this number declines rather than grows. Thus, there is no indication for a strong trend among musicians towards adopting CC licenses. Consequently, it seems fair to assume that CC licenses are likely to remain a niche phenomenon in the music business within the next years.

²⁷² Of course, artists may have removed old content from Soundclick or Jamendo. However, such behavior would not invalidate, but rather enforce, the drawn conclusion that old content makes up the bulk of CC-licensed works available today.

As the previous chapter illustrated, artists frequently rely on both full copyright and CC licenses. The data analyzed here confirm this pattern. For example, 13.5% of all artists who have released more than one song on ArtistServer use both full copyright and CC licenses. On Soundclick, 11.1% of these artists practice selective CC use. Within the group of artists using CC licenses on Soundclick, 50.0% even release some music under full copyright as well. Thus, a considerable group of musicians prefers to make a decision about how to release each song individually rather than to make a general choice.

Once the decision is made to release a song under a CC license, artists may choose from six available options (see Section 3.5.2). As Figure 8.3 shows, musicians tend to prefer restrictive licenses for their works: 62.9% apply the NC condition, and 50.8% apply the ND condition to their works.²⁷³ While musicians use the NC condition roughly as often as other creators, they rely on the ND condition more often. This preference may originate from greater concerns about the artistic integrity of their works compared to other creators like writers or photographers.

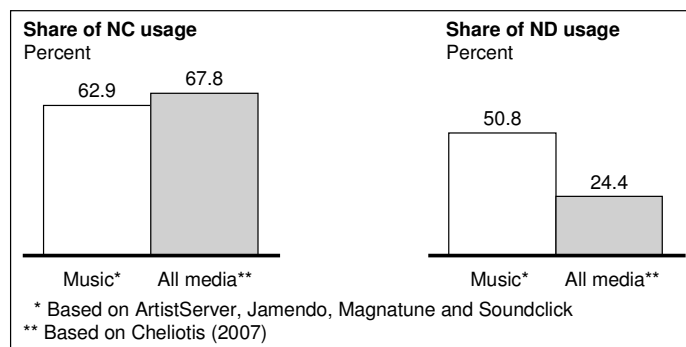


Figure 8.3 License mix for CC-licensed music and other media

Artists may choose different CC licenses for different songs, depending on the songs' characteristics. For example, a musician may release a song intended for promotional purposes under a liberal BY license, while publishing another song for selling or commercial licensing under a more restrictive BY-NC-ND license. Indeed, a considerable share of artists makes use of this option. On Jamendo, 33.0% of artists who have released more than one album have used multiple CC licenses; on ArtistServer and Soundclick, 17.6% and 36.3% of those with multiple CC-licensed songs did so, respec-

²⁷³ Among the four platforms, the license mix varies strongly. In particular, the NC- and ND-conditions are used to significantly different degrees (chi-square test, $p = 0.000$). For example, the majority of artists on ArtistServer and Soundclick choose a BY-NC-ND license; on Jamendo, the BY-NC-SA license is by far the most popular one.

tively.²⁷⁴ This result further substantiates the perception of a rather sophisticated IP management on the part of artists. By using both full copyright and CC licenses as well as multiple CC licenses, artists can fine-tune the level of protection for each song based on its properties.

As Figure 8.4 shows, the share of CC-licensed music varies greatly across multiple genres. The observed deviations may partially be explained by differences in artists' financial orientation and their perception of the commercial potential of their music – two aspects the previous chapter found to influence artists' CC adoption.²⁷⁵ For example, artists making HipHop music (CC adoption: 12.6%) are presumably relatively young. Since they may lack experience in the music business, many of them may still hope to get rich with their music (see Section 6.3.1), which keeps them from using CC licenses. In contrast, the supposedly older age of artists recording classical music may account for a lower financial orientation which may in turn partially explain their stronger CC usage (CC adoption: 26.4%).

Pop music (CC adoption: 14.7%) is by far the most commercially successful genre, dominating the international charts. Thus, Pop artists may perceive their music to have a high commercial value, which may partially explain why they tend to rely more often on full copyright. The high share of CC usage for electronic music (CC adoption: 28.5%) could be explained by this argument as well: Since this music is frequently created with comparably little effort on a computer, its commercial value may on average be rather limited.²⁷⁶

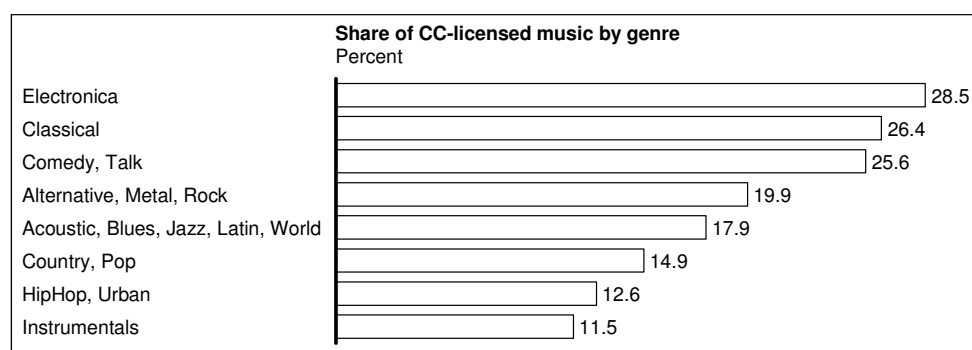


Figure 8.4 CC usage by genre on Soundclick

²⁷⁴ This share largely depends on the number of CC-licensed items. The higher that number, the more common the use of several CC licenses.

²⁷⁵ See Sections 7.2.3 and 7.4 for a more in depth explanation of the influence of financial orientation and perceived commercial value of one's music on the likelihood of using CC licenses.

²⁷⁶ By and large, data from ArtistServer show similar patterns: HipHop (52.6%) and Pop (52.4%) music are among the genres with the lowest, Classical (63.0%) and Electronic (83.0%) music among the ones with the highest utilization of CC licenses.

As illustrated in Figure 8.5, the use of CC varies by geographic region: CC adoption among Soundclick users is highest in Europe and lowest in Asia/Pacific. These findings are in line with Cheliotis et al. (2008) who conjecture that the more conservative stance towards IP in Asia may explain this difference. Despite the fact that CC licenses were invented in the USA, they are not used extensively in North America. Since the survey results point in the same direction (see Section 7.4.4), this difference may either result from a different mindset of American artists or reflect the fact that American artists choose Soundclick primarily because it is an established platform for distributing music in the USA, while artists from other regions choose it more frequently for its integrated CC licensing feature.

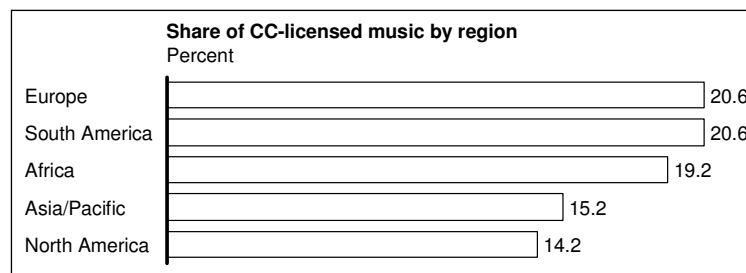


Figure 8.5 CC usage by region on Soundclick

8.3.2 Characterization of CC-licensed music

The survey provided partial support for the hypothesis that CC-licensed music has a lower commercial value than music protected by full copyright. Unfortunately, the available data is not suitable to verify this finding since it measures the commercial success of music *after* its release. Thus, this *ex post* data cannot be used to draw conclusions about artists' *ex ante* perception of the commercial value of their music on which they may base their decision of whether to release a song under a CC license or not.

Given the findings of the survey that suggest that artists using CC licenses earn on average less money and consider their music to have a lower commercial value, one would expect CC-licensed music to be less popular. To measure popularity, this work relies on information from the Soundclick charts. The chart ranking of a song reflects the number of times it has been downloaded and played compared to other songs. This information can be used to distinguish whether CC-licensed music is more or less popular. Since the number of downloads is very much affected by the price of a song, songs that can be downloaded for free and those that have to be purchased are treated separately.

Figure 8.6 compares the share of CC-licensed songs that reached the top 0.5% in the genre-specific charts to the share of songs protected by full copyright which attained the same level of popularity. Contrary to the expectation, CC-licensed music performs just as well as music protected by full copyright. This suggests that either the quality and potential of CC-licensed music are not lower or that CC licenses have a positive marketing effect. Controlling for price and other factors, a multivariate analysis indeed confirms a significant positive effect ($p = 0.000$) of using CC licenses on a song's chart ranking.²⁷⁷ Due to the unclear causal relationships, no formal hypothesis with regards to these effects can be tested. Nevertheless, at least one unambiguous conclusion emerges from the data: The common prejudice that CC-licensed music is always of inferior quality and does not have any commercial potential is clearly unfounded.

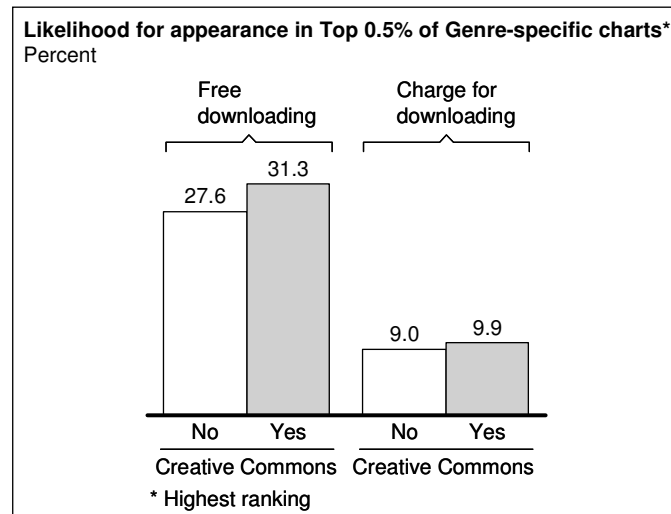


Figure 8.6 Popularity of CC-licensed and full copyright-protected songs on Soundclick

The more effort an artist puts into his music, the more control he may want to retain in order to protect his artistic integrity and see financial profit (see Section 6.3.5). Thus, he may tend to choose a CC license which contains the NC- and/or ND-condition. Following this reasoning, it seems likely that music released under a more restrictive CC license is of higher quality and achieves a higher level of popularity. Figure 8.7 compares the popularity of NC- and non-NC-, as well as ND- and non-ND-, licensed CC music on both Jamendo and Soundclick. On Jamendo, the expected pattern is found: NC- and ND-licensed music performs significantly better (t-test, undirected hypothesis,

²⁷⁷ For the multivariate analysis, ordered probit and ordered logit models were used. A song's chart ranking, measured in five classes (top 0.2%, top 0.5%, top 1.0% of all songs, appearance in charts, no appearance in charts), represents the dependent variable. Its license (CC or copyright) serves as explanatory variable. Control variables include (1) whether it can be purchased or downloaded for free (base case: streaming only), (2) its release date, (3) the total number of songs released by the artist, (4) its genre (see Figure 8.4) and (5) its region (see Figure 8.5). The correlation table for the independent variables can be found in Table A.20 in Appendix A.5.

$p = 0.065$ for NC, $p = 0.000$ for ND).²⁷⁸ On Soundclick, no obvious difference can be detected. Controlling for price and other factors, a multivariate analysis identifies a positive significant effect ($p = 0.000$) of using the NC and the ND conditions on a song's chart ranking on Soundclick (see Footnote 277 for details). For the same reasons as in the previous case, no formal hypotheses are tested.

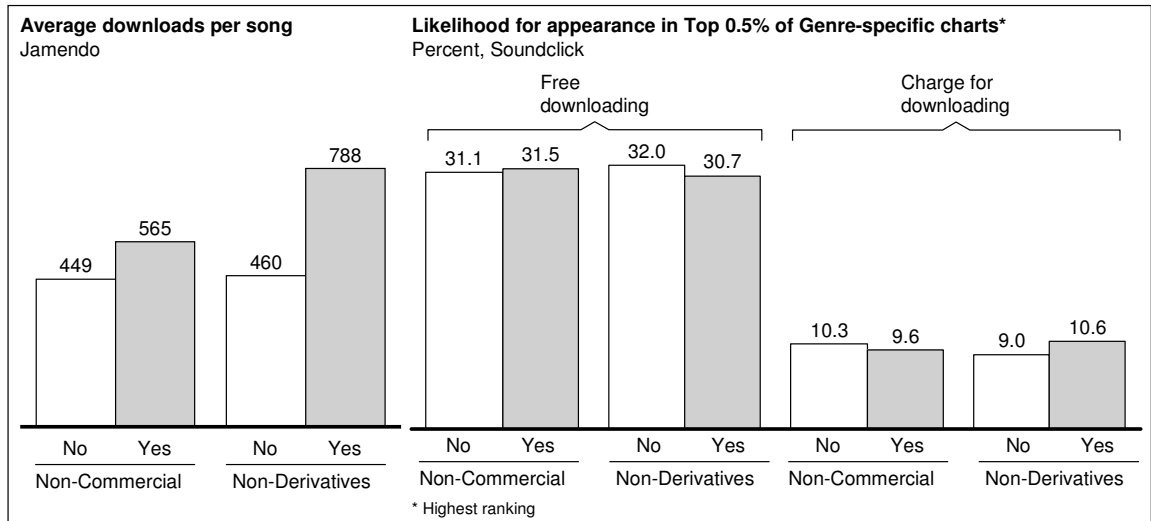


Figure 8.7 Popularity of songs by CC license type on Soundclick and Jamendo

CC-licensed music is frequently given away for free to maximize its dissemination. However, Chapter 6 presented various artists and record labels who demand a fee for downloading their CC-licensed works. On two of the four platforms examined in this chapter, ArtistServer and Jamendo, all music is available for free. In contrast, Magnatune charges between USD 5 and 18 for an album (Regner & Barria 2009). On Soundclick, artists may decide for each song individually whether and how much to charge. Therefore, data from this platform is most suitable in order to study the relationship of price and license. The results of this analysis are illustrated in Figure 8.8.

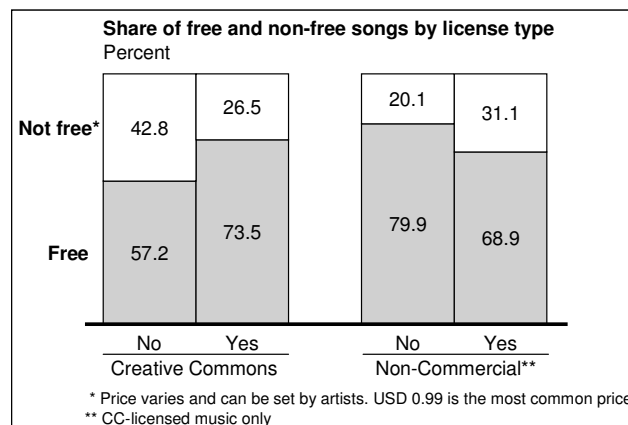


Figure 8.8 Prices charged for music on Soundclick

²⁷⁸ A chi-square test on the medians of downloads is highly significant ($p = 0.000$) in both cases.

The data clearly indicates that artists give away CC-licensed music for free more frequently than full copyright-protected music (t-test, undirected hypothesis, $p = 0.000$). Thus, H1a is confirmed. If musicians intend to sell music and use a CC license at the same time, using one of the NC variants seems advisable because it prevents commercial competition. Following this argument, H1b claims that NC-CC-licensed music is given away for free less often than non-NC-CC-licensed music. Again, the hypothesis is supported (t-test, undirected hypothesis, $p = 0.000$). A multivariate analysis confirms both results.²⁷⁹

Although the data prove that CC-licensed music is frequently given away for free, it also provides large-scale evidence that selling such music is common. Not less than 26.5% of all CC-licensed songs are sold for a fee. Unfortunately, no actual sales data is available to test whether artists actually generate considerable revenues from selling CC-licensed songs.

8.3.3 Change in CC usage

The previous chapter found that artists' intentions to use a CC license were strongly driven by previous experiences with CC licenses and hindered by experiences in the copyright-centered music business. Using a larger and complementary data set, this section attempts to verify these results.²⁸⁰

First, the relationship between artists' experiences with CC licenses and the likelihood of using a CC license for a new song is studied. The data shown in Figure 8.9 indicates support for H2a: The more extensive an artist's experience with CC licenses, i.e., the more songs he previously released under CC licenses, the more likely he is to release a new song under the same terms. A multivariate analysis confirms this signifi-

²⁷⁹ CC-licensed songs are more likely to be released for free ($p = 0.000$); within the group of CC-licensed songs, those that come with a NC condition are less likely to be released for free ($p = 0.000$). For the multivariate analysis, probit and logit models were used. The dependent variable measured whether a song can be downloaded for free. Songs that cannot be downloaded for free are either available for purchase or for streaming only. Apart from price, the same control variables were used as in the previous cases.

²⁸⁰ For this purpose, data from Soundclick is used since it covers a comparably long time span and a large number of songs. Data from ArtistServer is not suitable as the average artist has released too few songs to study changes over time. At Jamendo, artists have to release albums instead of songs so that the average artist has too few releases to observe changes.

cant positive effect of prior CC use ($p = 0.000$) on the likelihood of releasing a new song under a CC license. Thus, H2a can be accepted.²⁸¹

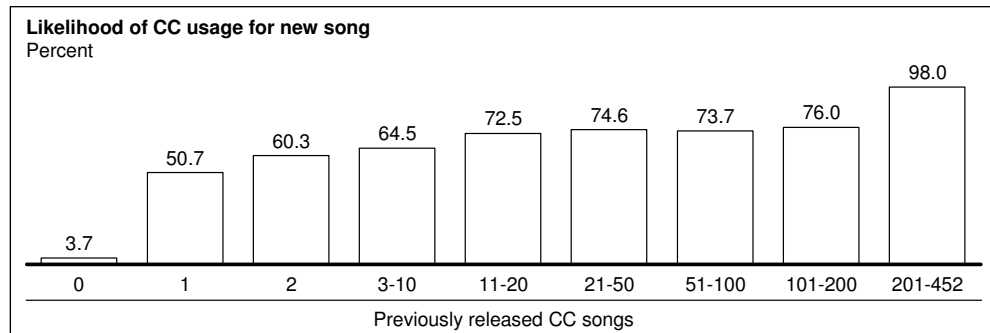


Figure 8.9 Degree of CC usage by artists' experience with CC on Soundclick

Unfortunately, the data available from Soundclick does not contain any information on artists' experience in the music business. However, it contains information on artists' experience with full copyright on Soundclick, measured by the number of songs previously released under full copyright. As Figure 8.9 illustrates, previous utilization of full copyright reduces artists' willingness to release a new song under a CC license. It can be explained as follows: The more familiarity artists have with the traditional way of protecting music and relying on full copyright, the more difficult is it for them to change their behavior and release some control. As a multivariate analysis confirms the negative significant effect of prior full copyright use ($p = 0.000$) on CC usage, H2b is supported as well.

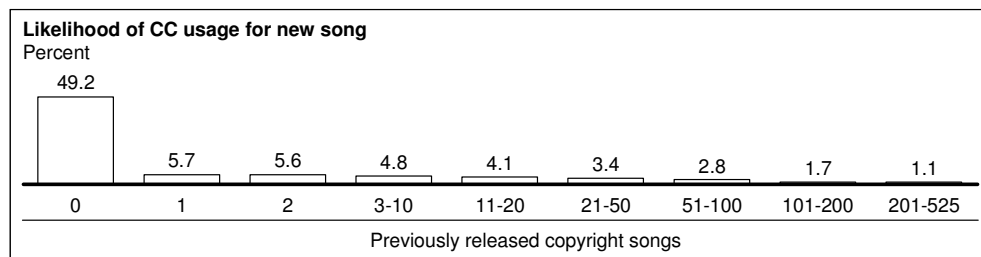


Figure 8.10 Degree of CC usage by artists' experience with full copyright on Soundclick

Summarizing, the data retrieved from Soundclick confirms the survey results. Experience with CC licenses is a major driver for CC adoption, experience with full copyright/in the music business is a major inhibitor. Both effects are plausible: When artists have experiences with openness and learn how to deal with it, they become more willing to release music under a CC license. In contrast, change towards openness is par-

²⁸¹ Probit and logit models were used as statistical methods. Prior CC and copyright use were, as shown in Figure 8.9 and Figure 8.10, measured by the songs previously released under CC and copyright, respectively. The same set of control variables was used as in the previous cases. The correlation table for the independent variables can be found in Table A.21 in Appendix A.5.

ticularly difficult for those artists who are most familiar with the established practices of strongly protecting their content.

Besides the strength of CC adoption, the license choice represents a second dimension of artists' openness. When artists gain experiences with giving up control, they may be increasingly willing to use more liberal licenses. In particular, one may expect that artists first prohibit the creation of derivative works as they fear losing control, but later allow such transformative uses as they realize the associated benefits such as receiving valuable contributions from other artists and establishing a closer connection to their fans. With regards to the NC condition, such a change may also happen, but seems less likely since artists mostly apply this condition to prevent other parties from profiting from their work.

In line with this argumentation, the CC initiative recognizes a slight change towards using more liberal licenses. In particular, the proportionate use of the NC and ND conditions has slightly declined. As expected, the use of the NC condition has decreased less (Linksvayer 2006). As Figure 8.11 illustrates, data available from Jamendo mirrors this trend. Both the NC and ND conditions are used less frequently over time. Congruent with the previous assumption, the decline in the use of the ND condition exceeds that in the use of the NC condition. However, data from Soundclick does not at all show a similar development. While the use of ND licenses does not show a clear trend, more songs are actually released over time under a NC license. Thus, none of the above propositions finds strong support.

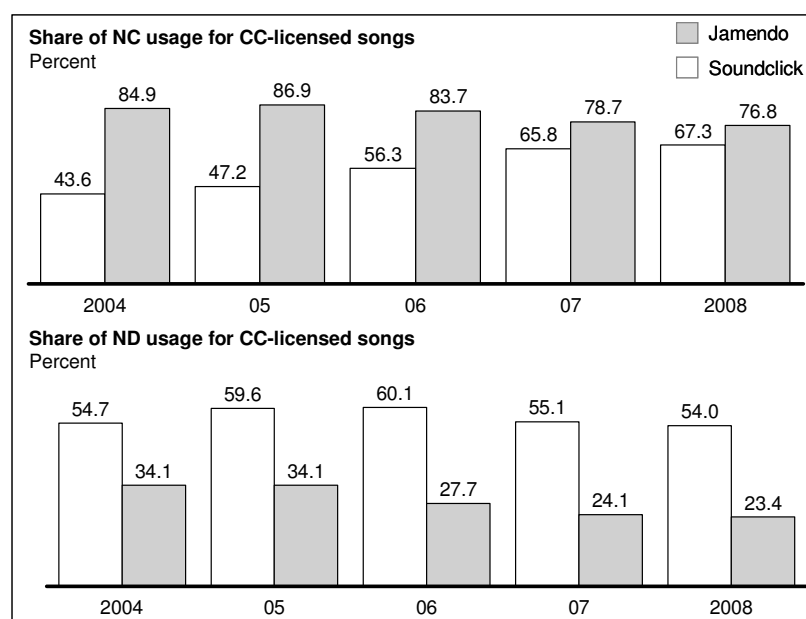


Figure 8.11 License mix over time on Soundclick and Jamendo

8.4 Intermediate conclusion

The qualitative study presented in Chapter 6 and the survey presented in Chapter 7 provided insights into artists' motives for using CC licenses. To substantiate the relevance of the phenomenon of CC for music, this chapter examined the proliferation of CC licenses in the music business. For this purpose, the properties of 3.5 million songs from four web sites, all focusing on CC-licensed music, were analyzed.

As of now, nearly one million songs are available under a CC license. Moreover, the amount of CC-licensed music grows steadily. Nevertheless, CC-licensed music is likely to remain a niche phenomenon over the coming years – unless market conditions change. In particular, explicit support for CC licenses by more record labels, PROs and distributors would probably boost their popularity.

Many artists employ CC licenses selectively, i.e., use them only for some of their music. For example, half of all artists using CC licenses on Soundclick release some of their songs under full copyright. Besides, a substantial number of artists uses different CC licenses for different songs, e.g., restrictive ones for music of higher quality and liberal ones for music with a lower commercial potential. These two facts indicate that artists by no means treat their IP thoughtlessly. In fact, many musicians capitalize on the modularity of their music and choose the most suitable license for each song individually (Henkel & Baldwin 2009).

CC-licensed music is surrounded by various myths; for example, it is believed to be of poor quality and always released for free (e.g., Manes 2004; Dusollier 2006; Weatherall 2006). This chapter disproves both prejudices. First, CC-licensed music performs just as well as full copyright-protected music in the Soundclick charts, which indicates its quality and commercial potential. Second, a considerable amount of artists on Soundclick prefer to sell CC-licensed music instead of giving it away for free. Nevertheless, giving away music for free and using CC licenses is a popular combination, in particular when commercial uses are permitted.

The survey presented in the previous chapter identified prior experience with CC and full copyright as factors that influence artists' CC adoption: Artists with experience using CC licenses were more likely to release music under a CC license in the future; those with a history of using full copyright were less likely to do so. Analyzing artists' past use of copyright and CC licenses on Soundclick, this study confirms both effects. Thus, it enhances the value and accuracy of the conclusions drawn earlier.

9 Determining consumers' valuation of Creative-Commons-licensed music

The previous chapters explored artists' use of CC licenses based on a variety of qualitative and quantitative data sources. Among other things, they illustrated that CC licenses are frequently used by artists as a marketing tool, e.g., to receive more publicity and intensify the interaction with their fans (see Section 7.2.5). Besides, anecdotal evidence suggested that some users would prefer CC-licensed music because it offers more freedom than traditional copyright-protected music. This phenomenon raises an interesting question: Are consumers indeed willing to pay for the additional rights that are part of CC-licensed content? This chapter intends to answer this question.²⁸²

Literature provides rich evidence to support the assumption that customers are indeed willing to pay a higher price for products that grant additional rights and flexibility. Below, three examples are presented that substantiate this proposition.

- **Copy protection:** Various empirical studies show that consumers are less inclined to purchase a product with highly restricted uses, e.g., through intrusive copy protection measures (e.g., Buxmann et al. 2005; Dufft et al. 2005). In addition, Strube et al. (2008) reveal that consumers are willing to pay only a much lower price for DRM-protected content.
- **Permitting copying:** In contrast, customers' valuation of a good usually increases if they are able to copy it or share it with others (Ordovery & Willig 1978; Besen & Kirby 1989; Bakos et al. 1999). For example, libraries usually pay higher prices for academic journals compared to individual subscribers because they frequently create photocopies for their members (Liebowitz 1985).
- **Open source:** In line with its definition, customers may require access to the source code of OSS they use, modify it and employ or redistribute the changed version (OSI 2001; FSF 2007). Since closed, proprietary software does usually not grant customers these rights, OSS is frequently perceived as more valuable (Morrison et al. 2000; Franke & von Hippel 2003). For example, Käs (2008) reports that some device manufacturers consider availability of source code so important that they are

²⁸² This chapter is based on a collaboration of the author with Timo Fischer and Steffen Winkler. A more elaborate description of the methodology and the findings can be found in Winkler (2009).

willing to pay a high premium for it, as the statement of one firm illustrates: “*I would cheerfully pay \$5000+USD for my next system if it came with all the source for everything in the system.*” (Käs 2008, p. 144)

In summary, these examples suggest that consumers may indeed assign a higher value to CC-licensed content because they may share it with others or use it within their own creations. The remainder of this chapter is organized to verify this proposition in a systematic way. Section 9.1 and 9.2 outline the design of the study and the statistical method, respectively. Then, Section 9.3 presents the results and discusses the extent to which additional usage rights actually matter.

In addition to the value-enhancing effect outlined above, CC licenses may also have a value-reducing effect. Consumers may be willing to pay less for CC-licensed content if they become able to receive a free copy from other content owners or perceive it as unfair to pay for content which others can get for free. Since examining the revenue-decreasing aspects of CC licenses requires a different study design, these effects are not studied as part of this chapter. However, one should keep their existence in mind when interpreting the results given below.

9.1 Study design

A survey seemed to be the most appropriate approach for studying consumers' valuation of additional usage rights.²⁸³ Students were chosen as sample since this group has been characterized as the “*best representatives*” (Huang 2005, p. 44) of digital music consumers and surveyed frequently before for comparable studies (e.g., Rob & Waldfogel 2006). Furthermore, this demographic group constitutes a large portion of music fans and spends significant amounts of money on music (Holbrook & Schindler 1989).

Between June and August 2009, 915 business students at the Technische Universität München were invited by e-mail to participate in the study. Similar to the approach taken in Chapter 7, various measures such as personalized invitations and reminder messages were taken in order to maximize the response quote. In total, 393 partially and

²⁸³ The survey was designed to determine the premium consumers would be willing to pay for the additional rights that come with CC-licensed content. Nevertheless, it did not ask respondents directly about their views on CC-licensed content for two reasons. First, a majority of consumers are not aware of the existence of CC. Second, supporters and opponents of the CC initiative may not answer honestly when they are asked directly about CC.

thereof 341 fully completed questionnaires were returned, resulting in a response rate of 46.3% and 40.2%, respectively. Table 9.1 summarizes the survey statistics.

Sample		915
Sending failed		67
Surveys received		848
Surveys returned	All	393
	Fully completed	341
Response rate	All	46.3%
	Fully completed	40.2%

Table 9.1 Survey statistics

Despite the high response rate of over 40%, it seems fair to assume that the survey was more appealing to students who care about music and consequently possess a somewhat higher willingness to pay. However, comparisons between respondents with different levels of interest in music and purchasing behaviors indicates no major difference in their willingness to pay for additional usage rights.²⁸⁴ Thus, there does not seem to be a systematic bias in the responses that would invalidate the obtained results.

The questionnaire consisted of two sections: a set of choice experiments to determine participants' willingness to pay for additional usage rights, as well as various additional questions to learn more about the ways participants obtain and consume music. The design of the choice experiments, including the statistical method used for analyzing the responses, is described in greater detail in the next section.

9.2 Choice experiments and statistical method

The main purpose of this study was to determine whether and how much consumers are willing to pay for additional rights. To overcome the problems of asking respondents directly for their preferences using Likert-type scale questions, this study conducted a series of choice experiments (also known as choice-based conjoint or discrete choice experiments) with the participants (Green & Srinivasan 1978, 1990; Stening & Everett 1984). In such a setting, survey participants are repeatedly asked to choose the preferred

²⁸⁴ For this purpose, the participants were split into three groups based on their purchasing behavior. The first group consisted of students who regularly bought music legally (N=92). The second group consisted of students who regularly obtained music illegally (N=112). The third group did not download any music (N=126). While the second and third group care slightly more about price and slightly less about sound quality, their valuation of additional usage rights is roughly comparable. This analysis can be found in Figure A.6 in Appendix A.5.

alternative from a set of options. Each alternative is characterized by several attributes at different levels. By estimating the impact of the various attribute levels on the probability of choosing an alternative, respondents' preferences for the attribute levels can be indirectly determined.

To figure out whether users are willing to pay for additional freedoms, i.e., the right to share music and create derivative works, three attributes had to be included: (1) the *price* of music, (2) the right to pass music on to others in an unmodified form (*sharing/passing on*), and (3) the right to modify music or combine it with other media, e.g., user-created videos, and to share those modifications (*modifying/combining with other media*). To obtain meaningful values for these attributes, choice experiments have to be made as realistic as possible. Thus, other attributes also needed to be included which may influence consumers' willingness to pay. To find such properties, the literature on pricing for music was reviewed.

Various scholars find that technical restrictions, i.e. copy protection, negatively affect consumers' willingness to pay (Fetscherin & Vlietstra 2004; Bamert et al. 2005; Dufft et al. 2005; Strube et al. 2008). However, including DRM as an attribute does not make sense since the right to share and modify music, two key attributes of this study, are useless if technology prevents their practice.

Other factors which have been identified as determinants are range of products, payment options (Bamert et al. 2005), availability of a booklet (Braidert & Hahsler 2006), *sound quality* (Braidert & Hahsler 2006; Strube et al. 2008) and *music category* (Buxmann et al. 2005). While online stores in 2003/04 strongly differed in their product offering and the payment options they provided, by now they hardly differ in these aspects. Therefore, range of products and payment options were not considered further. Since Braidert and Hahsler (2006) did not find that consumers cared much about booklets, this attribute was also disregarded.

Sound quality, measured by the bitrate of a download, was included in this study since it still varies between different retailers. Moreover, its impact on price has been confirmed previously (Strube et al. 2008). It is well-known that consumers prefer the music of already-famous artists instead of newcomers (Rosen 1981; Adler 1985; Buxmann et al. 2005). Therefore, including an attribute *music category* to track the up-to-

dateness and popularity of a song makes sense, too. Table 9.2 lists all attributes and the chosen levels.²⁸⁵

Attribute	Levels
Price	EUR 0.69 EUR 0.99 EUR 1.29
Sharing/ passing on*	Not allowed Up to 3 times allowed Unlimited allowed
Modifying/ combining with other media**	Not allowed Allowed
Music category	Older song Newcomer Current hit Rarity
Sound quality	192 kbit/s 320 kbit/s

* Sharing/passing on music in an unmodified form

** Modifying/combining music with other media and sharing those modifications

Table 9.2 Attributes and levels of conjoint study

The five attributes, each at two to four levels, were used to construct the choice experiments. Each alternative represents a hypothetical song which consumers could download from a retailer such as iTunes or Musicload. Given the number of attributes and possible levels outlined above, 144 possible combinations (the full-fractional design) existed. To restrict the number of necessary experiments, an efficient fractional-factorial design was generated by computerized search (Huber & Zwerina 1996; Yu et al. 2009).²⁸⁶ This model required survey participants to choose their preferred song ten times out of three alternatives. An example of such a choice experiment can be found in Figure A.7 in Appendix A.5. A pretest with various students confirmed that suitable attributes and realistic levels were chosen, that the choice experiments were presented in a meaningful and convenient way and that the time needed for completion (ca. 12-15 minutes) was acceptable.

In the choice experiments, participants had to select their preferred alternative in every choice set. In order to estimate the value the respondents assigned to the different levels of an attribute, a mixed Logit model (also called random coefficient model) was

²⁸⁵ The price levels used in the conjoint study (EUR 0.69, 0.99, 1.29) are the ones that iTunes, the market leader for online music, charges for downloads in Germany. The levels for sharing and modifying music were derived from the properties of CC licenses. An intermediate option for sharing (“Allowed up to 3 times”) was introduced since Magnatune, a popular store for buying CC-licensed music, grants its consumers exactly this number of copies. For music category, the same values were used as in Buxmann et al. 2005. The sound quality comprises two values which are currently common in the market place.

²⁸⁶ The design was generated using the software package NGene 1.0 by ChoiceMetrics.

applied. It is an extension of the conditional Logit model (Revelt & Train 1998; Brownstone & Train 1999; McFadden & Train 2000; Andrews et al. 2002). Since its log-likelihood function to be maximized did not have a closed form solution, the likelihood function value needed to be simulated (Revelt & Train 1998). For this purpose, this study used Hole's (2007) STATA implementation of this procedure.

Each alternative shown to the participants contained five attributes at two to four levels. In order to apply the mixed logit model, each attribute was transformed into one to three dummy variables indicating the deviation from the base case. To make the interpretation of the coefficient estimates convenient, the least preferred value was chosen as reference for each attribute.

9.3 Results

9.3.1 Relative importance of attributes

In order to determine the importance of each attribute, the difference between its most and least preferred values is divided by the total sum of the differences between the most and least preferred values of all attributes (Wittink et al. 1982). This value indicates how much respondents care about a certain attribute. Figure 9.1 shows the relative importance of each attribute.²⁸⁷

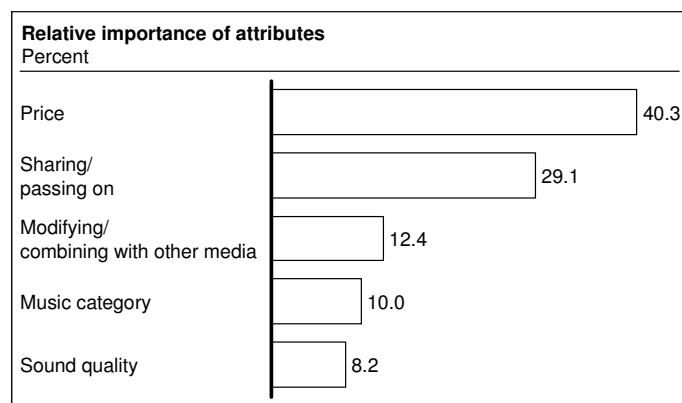


Figure 9.1 Relative importance of attributes

²⁸⁷ For example, the coefficient estimates for price are -2.37 for the worst value (EUR 1.29) and 0 for the best value (EUR 0.69) (see Section 9.3.2). Dividing 2.37 by the sum of all other coefficients of the best attribute values yields an importance of 40.3% for price.

The graphic clearly shows that *price* is the most important attribute for consumers with a value of 40.3%.²⁸⁸ *Sharing/passing on* and *modifying/combining with other media* follow with 29.1% and 12.4%, respectively. Fourth comes *music category* with 10.0%, fifth *quality of downloads* with 8.2%. The dominance of price is expected and consistent with previous studies (Bamert et al. 2005; Buxmann et al. 2007). However, the high value of liberal usage rights is striking. In particular, the right to share music is nearly as important as the price and more than three times as important as the sound quality.

9.3.2 Benefit contributions of individual attributes and levels

Having determined the importance for the five attributes, it remains to be examined in greater detail the coefficient estimates of each attribute. These values are graphically illustrated in Figure 9.2.²⁸⁹

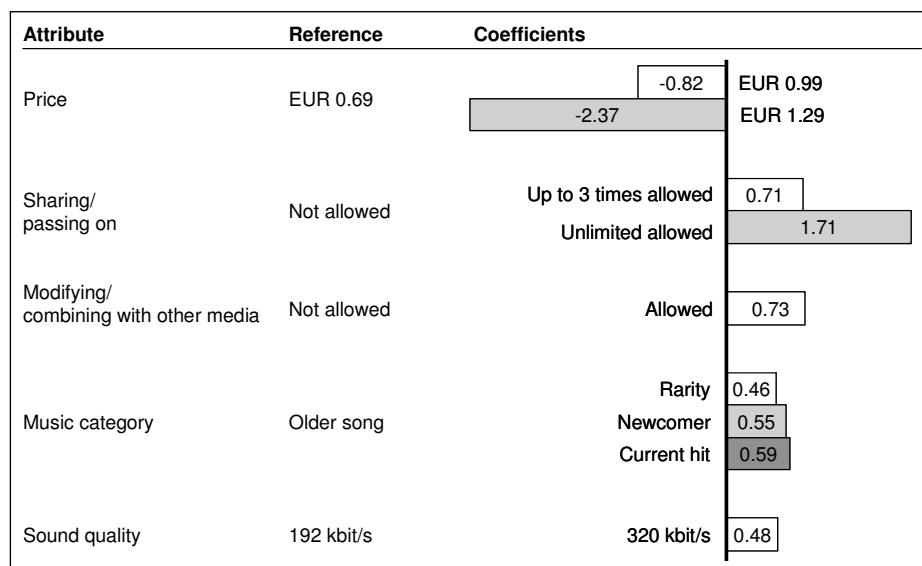


Figure 9.2 Coefficient estimates of mixed logit estimation

Charging EUR 0.99 for a song instead of EUR 0.69 has a negative benefit contribution of 0.82, charging EUR 1.29 generates a roughly three times higher negative contribution of 2.37. This suggests that EUR 1 seems to be the maximum price that a large number of customers is willing to accept for a download. This result is consistent with previous studies that find most consumers consider prices for downloads to be too high and do not, on the majority, accept prices above EUR 1 (Buxmann et al. 2005, 2007).

²⁸⁸ When interpreting these results, one has to keep in mind that an attribute's importance highly depends on the given range. For example, a larger price range (e.g., EUR 0.49-1.49 instead of EUR 0.69-1.29) would probably increase the importance of this attribute.

²⁸⁹ The estimation results of the mixed logit model can be found in Table A.22 in Appendix A.5.

Consumers' high sensitivity to prices may be explained to some degree by previous experiences with file sharing which have instilled an expectation that music has to be available for free or at a low price (Clement 2003). Besides, Apple's long-standing policy to charge EUR 0.99 for all songs may account for consumers' dislike of prices above EUR 1.

Allowing users to share one song up to three times has a benefit contribution of 0.71. This value indicates that respondents appreciate it when content providers explicitly permit them to share music with a few others. Not imposing any restrictions on sharing has a 2.5 times higher benefit contribution of 1.71. Thus, users prefer it when they do not face any restrictions at all with regards to sharing. The higher valuation of unlimited sharing may be explained by three reasons: First, consumers regularly share music with more than three other people. Second, consumers do not usually share music on a large scale, but dislike the feeling of being controlled and restricted. Third, consumers do not currently share music, but would likely start sharing if it were legalized. Since only 6.2% of the respondents in this survey regularly give music to more than five other people, the first reason can be largely ruled out. However, both the second and third explanation remain possible.

Being given permission to modify songs or combine them with other media, such as personal videos, has a benefit contribution of 0.73. Thus, this freedom matters less than sharing. This result is understandable because only a fraction of respondents – in this survey 24.9% – engage in activities such as remixing or sampling music, or creating videos with background music. However, the results suggest that some consumers assign a relatively high importance to this right.

Buxmann et al. (2005) found in a large-scale survey that consumers are willing to pay most for rarities, followed by older songs, current hits and newcomers. The results of this study are different. Given older songs as the base case, rarities, newcomers and current hits have positive benefit contributions of 0.46, 0.55 and 0.59, respectively. This means that participants like current hits most, followed by newcomers, rarities and older songs. The deviation from Buxmann et al. (2005) can be easily explained with respondents' demographic characteristics. Since the participants of this study were students and usually between 20 and 25 years old, they naturally had a stronger preference for more recent music (current hits, newcomers) than the participants in Buxmann et al. (2005) who were on average older. Compared to the three previously discussed attributes, the category of a song is however clearly of subordinate importance.

Encoding a song at a bitrate of 320 kbit/s instead of 192 kbit/s has a positive benefit contribution of 0.48. Again, this value is significantly lower than the ones for price and usage rights. It suggests that most consumers are satisfied with the sound quality of downloads and that current efforts of various retailers to increase the sound quality may have limited value for consumers and will not drastically increase their willingness to pay.

Examining the relative importance of attributes yields two conclusions. First, price is the biggest factor for consumers. Second, additional freedoms, in particular the right to share, also matter. Comparing the benefit contributions across all attributes clearly shows that consumers care more about usage rights than about the category or sound quality of a song. By granting users additional freedoms, online stores or record labels may thus be able to turn more people into buyers or charge higher prices for music.

9.3.3 Differences in consumers' perceptions

The participants of this study may be divided into three groups: those who regularly download music legally on the Internet (N = 92), those who regularly download it illegally (N = 112) and those who do not download any music at all (N = 126).²⁹⁰ When analyzing the importance each group assigns to the five attributes, a couple of differences emerge. First, consumers who download music legally care least about price (36.9% importance of attribute “price”), followed by illegal downloaders (37.9%) and those not downloading music at all (44.1%). This result is in line with various previous studies which suggest that the current price levels of online music are too high and keep many consumers from buying (e.g., Buxmann et al. 2007). Illegal downloaders assign the highest importance to sharing (35.3% importance for attribute “sharing”), followed by non-downloaders (27.4%) and legal downloaders (24.4%).²⁹¹

The implications of these observations for the music business are ambiguous. On the one hand, one may argue that legalizing sharing would stimulate file sharing since illegal downloaders may take advantage of that right and make legally purchased music available on file-sharing networks. This scenario is likely to hurt sales of record labels.

²⁹⁰ Some of the results discussed in this section can be found in Figure A.6 in Appendix A.5. All others can be found in Winkler (2009).

²⁹¹ In addition, those users sharing music with others care significantly more about the right to share music (33.6% importance for attribute “sharing”) than those who never pass on music to others (21.5%). For modifying music, the picture looks similar. For example, users modifying music or combining it with other media consider this right more important (16.0% importance for attribute “modifying”) than those who do not practice such activities (7.7%).

On the other hand, it is known that some illegal downloaders engage in file sharing because they are convinced they are getting too little value for their money at legal stores or because they perceive the music business as “evil” (see Section 6.3.4). Granting consumers more freedoms may solve such issues: If prices remain constant, the value for money would increase by permitting sharing; additionally, the record labels could improve their reputation, which has suffered strongly in the past by having employed restrictive DRM and sued file sharers. Thus, more liberal usage rights may turn some of the illegal downloaders into legal customers and help to grow the market for online music further.

9.3.4 Willingness to pay for additional freedoms

As stated in the introduction of this chapter, this work intends to determine the premium that consumers may be willing to pay for additional freedoms. Besides measuring consumers’ tradeoffs among multi-attribute products, conjoint analyses can be employed for this purpose as well (Mahajan et al. 1982; Kohli & Mahajan 1991).

The procedure for calculating consumers’ willingness to pay for a product based on its properties is shown in Figure 9.3. It is based on the popular method of Kohli and Mahajan (1991), which has been applied before to online music (Strube et al. 2008).

Assumptions	
<ul style="list-style-type: none"> • Properties of “status quo” product s: price: 0.99 EUR, sharing and modifying allowed, older song, 192 kbit/s • Properties of modified product m: price: unknown, sharing and modifying allowed, older song, 192 kbit/s • Properties of alternative product a: price: 0.69 EUR, sharing and modifying allowed, older song, 192 kbit/s 	
Value of modified product m = Value of “status quo” product s	
$u(\text{Price}_m) + u(\text{Sharing}_m) + u(\text{Modifying}_m) = u(\text{Price}_s) + u(\text{Sharing}_s) + u(\text{Modifying}_s)$ $u(\text{Price}_m) + \underbrace{1.71 + 0.73}_{\text{See Figure 9.2}} = -0.82 + 0 + 0$ $u(\text{Price}_m) = -3.26$	
Determining price of modified product based on its value	
$u(\text{Price}_m) = u(\text{Price}_a) + \frac{(\text{Price}_m - \text{Price}_a) * (u(\text{Price}_s) - u(\text{Price}_a))}{\text{Price}_s - \text{Price}_a}$ $-3.26 = 0 + \frac{(\text{Price}_m - 0.69) * (-0.82 - 0)}{0.99 - 0.69}$ $-3.26 * (0.99 - 0.69) = \text{Price}_m * (-0.82) - (0.69) * (-0.82)$ $-0.98 = \text{Price}_m * (-0.82) + 0.57$ $\text{Price}_m = \frac{-0.98 - 0.57}{-0.82} = 1.89$	<p>Formula proposed by Strube et al. (2008), assuming a linear relationship between price and value</p>

Figure 9.3 Example for calculation of willingness to pay for additional usage rights

The calculation assumes a linear relationship between the benefit of a product configuration and its price. As Figure 9.2 shows, this assumption is not fully correct. Thus,

the results derived from the formula can only give a rough idea on the amount of the premium consumers are willing to pay for additional usage rights.

In order to calculate how much value consumers place on more liberal usage rights, one needs to make an assumption about how much they are ready to spend for online music when sharing and modifying are *not* permitted (Kohli & Mahajan 1991; Banfi et al. 2008; Strube et al. 2008). Since EUR 0.99 represents the most common price for online music with these attributes and lies within the price range used for this study, one may assume this value as consumers' willingness to pay for such a download (the so-called "status quo" product).²⁹² Figure 9.4 illustrates the amount by which additional freedoms may increase the price consumers are prepared to pay for online music.

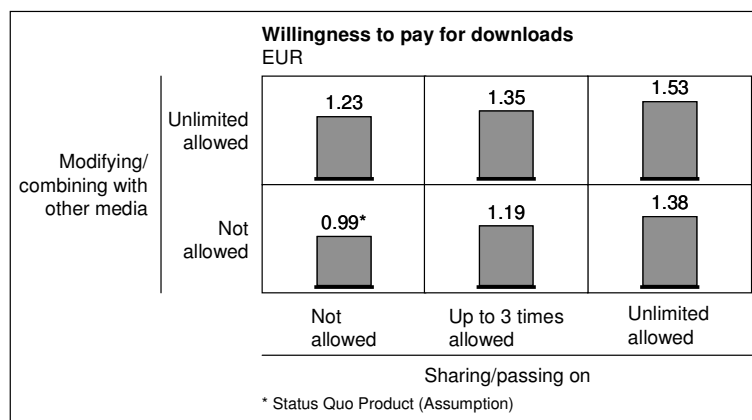


Figure 9.4 Willingness of consumers who currently buy music online to pay for additional usage rights (own illustration based on Winkler 2009)

As one might realize, the price calculated in Figure 9.3 for totally unrestricted music differs from the one shown in Figure 9.4. This difference can be explained with two reasons. First, the assumption made before that consumers are willing to pay EUR 0.99 for online music does not hold for people who do not download music at all or just download it illegally. Thus, only purchasers of legal music are considered for the results presented in Figure 9.4. Since this group has different preferences than the other two groups, its willingness to pay varies as well. Second, the formula used to determine consumers' willingness to pay assumes a linear relationship between price and value. However, this assumption is only valid for a limited price range. Thus, observations

²⁹² Various academic studies believe that a lot of users consider EUR 0.99 to be significantly too high and are not ready to purchase music for this fee (Buxmann et al. 2005; Bamert et al. 2005; Hill 2007). For example, Buxmann et al. (2007) recommend EUR 0.37 as the profit-maximizing price for online music. Thus, one may alternatively assume EUR 0.37 as the amount consumers are currently willing to pay for online music in its current form. However, it seems questionable that the obtained results hold for such a price. Thus, this alternative is not considered further.

were dropped when unrealistically high prices (> EUR 4) were obtained from the formula.

Figure 9.4 suggests that granting users more rights may have considerable top line potential for record labels and retailers. Consumers may pay up to 25% more if restrictions on sharing or modifying music are relaxed. For completely unrestricted music, they may even pay up to 55% more.

However, legalizing sharing may also spur file sharing and increase the losses caused by such activities. Thus, it is beyond the scope of this work to provide a definite answer as to whether and how much the music business could raise its profits by granting additional freedoms to users. Nevertheless, it strongly suggests further exploring possibilities for reducing control. For example, record labels could easily allow their customers to share music with up to three friends and still continue to take legal actions against file sharers. Besides, allowing users to create and publish remixes or merge music with their own videos seems more likely to be effective marketing than substituting sales. Thus, this thesis recommends considering at least forms of “selective openness” which may, according to the model, increase the revenues of record labels by at least 20%.

9.4 Intermediate conclusion

While the previous chapters focused on CC from the perspective of artists and record labels, this chapter studies consumers' views. In particular, it attempts to answer the question of whether consumers are willing to pay a premium for the additional rights that come with CC-licensed content. The conducted analyses lead to a clear conclusion: Yes, customers appreciate being granted additional freedoms and are ready to pay a considerable higher price for such rights.

Among the five attributes that have been used to characterize music downloads, price is most relevant for consumers. In particular, EUR 0.99 seems to be the maximum price which most consumers are willing to pay for downloads in their current form. The right to share music and the right to create derivative works are the second and third most important attributes. Although most respondents only share their music with a very limited number of people, the permission to share music matters a lot to them. This paradox may be explained by consumers' desire to act in a self-determined way without being restricted by other parties.

Building on these results, this thesis finds that consumers are willing to pay significantly more for music that has liberal usage rights. Depending on the freedoms granted to users and assumptions made on consumers' current willingness to pay, retailers may charge between 20% and 55% more. These figures clearly indicate a significant revenue potential. Apart from demanding higher prices, record labels and retailers may also grant additional rights while leaving prices constant to turn more people into buyers. In particular, former file sharers may start to purchase music as the value for money increases and they can no longer criticize record labels for restricting them in actions they perceive as legitimate.

Of course, legalizing sharing incurs some risks as well. Malicious consumers may take advantage of this right and distribute music for free on a large scale. Such piracy would most likely cause additional losses for record labels. However, there are various ways to limit such dangers, like restricting the number of copies to be made per song. Evidence suggests that consumers do not often exploit benevolent actions, which can be explained by social preferences or reciprocity (e.g., Rabin 1993; Regner & Barria 2009).

Having summarized the key results of this conjoint analysis, it remains to point out contributions to theory and practice. At the beginning of this chapter, various studies were introduced that argue – usually based on theoretical models – that granting customers additional freedoms may increase their valuation for a good and consequently raise the sellers' profits (e.g., Ordover & Willig 1978; Besen & Kirby 1989; Bakos et al. 1999). While there is rich empirical evidence for the negative effect of strong protection on the value of a product and the profits of a seller (e.g., Buxmann et al. 2005; Dufft et al. 2005; Strube et al. 2008), empirical evidence for the positive impact of openness is scarce (Liebowitz 1985). By providing data on this matter, this work gives a rough estimate on the premium which consumers may be willing to pay for “open” instead of “closed” products in the context of music. Thus, it backs up the argument that opening products may be profitable for firms as the resulting goods become more valuable for customers (e.g., Franke & von Hippel 2003). The practical implications of these findings are obvious: Firms should keep in mind that open, flexible products are more desirable to customers and, consider opportunities for reducing the level of protection where it is not needed.

10 Summary and conclusion

This chapter summarizes the findings of this research, outlines its practical and theoretical implications, and provides avenues for further research.

Traditional management literature stresses the importance of protection and exclusion in order to appropriate adequate returns from innovations (Arrow 1962; Liebeskind 1996; Spencer 2003). However, more recent research shows that opening up the innovation process (e.g., Chesbrough et al. 2003a, 2003b) and freely revealing innovations can be profitable strategies (e.g., Harhoff et al. 2003; Henkel 2007). Commercial OSS is the most famous example and provides several explanations of why relinquishing control of innovations can be economically rational. Most notably, it illustrates how free revealing opens up possibilities of collaboration with external parties. However, there are some doubts whether there is a compelling case for free revealing in industries that lack the preconditions for distributed, collaborative development (Lerner & Tirole 2002). It was this skepticism that motivated this research.

The recorded music business was chosen as the empirical setting for three reasons. First, strong protection of IP was common for a long time; thus, openness and free revealing constitute a significant deviation from the norm. Second, the music business is becoming increasingly open, with more and more record labels and artists reducing the level of control. Third, the way innovations are created differs substantially from OSS; in particular, collaborative invention is rare. Thus, it represents an interesting setting for studying the emergence of openness, the associated benefits and changes over time.

This research studied two dimensions of openness. First, it examined what motivated record labels to give up copy protection and to choose a weaker level of technical protection. This aspect was investigated using qualitative empirical methods, mainly relying on 26 interviews with different market participants as well as publicly available information such as newspaper articles and press releases. Second, this thesis examined why record labels and artists adopted CC licenses and waived some of the exclusion rights provided by full copyright. Studying this facet of openness involved both qualitative and quantitative empirical methods. 34 interviews were conducted and various documents were analyzed to gain an understanding of the relevant causal relationships. After that, a large-scale survey with artists, an extensive analysis of publicly available

data on CC adoption and a conjoint experiment with students were conducted to substantiate and complement the exploratory analyses.

Findings. After the emergence of digital technologies, many record labels introduced DRM in order to strengthen the appropriability regime and protect their content against piracy. Driven by technical issues generated by incompatible technologies and customer demand for interoperable formats, one after another stopped using such technology and switched to open formats. Anecdotal evidence indicates that relying on open, interoperable formats gave some firms a competitive edge and led to increases in sales numbers. However, not all record labels chose the same level of protection. Smaller firms, so-called independent labels, relied far less on DRM. They either abolished it earlier than larger firms, so-called major labels, or never used it at all. Four characteristics of independent labels might explain their different IP management: Independent labels are less affected by piracy and realize higher profits from openness due to their resource constraints; they realized customers' dislike of DRM faster because they maintained closer relationships to consumers; they could change their IP policies faster since their decision-making processes were more flexible; and, they responded more quickly to customers' complaints since they cared more about a good standing with customers.

In addition to giving up copy protection, some rights holders explicitly allow consumers to share their music or create derivative works. For this purpose, they release their music under a CC license. By waiving some of the exclusive rights granted by full copyright, they express a higher level of openness and practice a form of free revealing (Harhoff et al. 2003; Pénin 2007). Record labels and artists employ CC licenses for three purposes: to provide marketing, to express idealistic or altruistic motives and to ease collaboration with other creators. With respect to marketing, they expect to gain publicity for their music, build a community of fans and improve their reputation. Altruistic or idealistic reasons for using CC include a desire to grant users more freedoms and to contribute to cultural progress. Last, artists expect that others may build on their works and develop them further. However, concerns about losing control over their work or the opportunity to profit financially prevent many artists from using CC licenses. For unknown artists, remaining unnoticed poses a greater threat to their careers than being pirated. Thus, gaining additional attention through use of CC licenses may frequently outweigh the associated drawbacks. When artists are already popular, the negative aspects of using CC licenses become more dominant.

Artists releasing works under a CC license by no means treat their IP thoughtlessly. For example, most of them attach a condition to their work that prohibits commercial uses, and many release only some works under a CC license while others are under full copyright. By giving their works different IP status, they practice selective openness and capture more value from their music (Henkel & Baldwin 2009).

Similar to the vast majority of musicians, most artists using CC licenses regard making music as a leisure activity and do not pursue financial goals. However, some of them manage to derive a substantial income from music. They have developed successful business models which capitalize on the benefits of CC licenses. Their income typically originates from selling CDs and downloads, playing concerts and commercial licensing. Additionally, leveraging one's fan base or the capabilities of other artists can save marketing and production costs. CC-licensed content is more valuable than content protected by full copyright because it may be shared or reused in derivative works. Indeed, this work finds that users are willing to pay a significant premium for the additional freedoms granted by CC licenses. Thus, charging higher prices represents another way for artists to profit from CC-licensed music.

Using multivariate techniques, this thesis attempted to explain why artists decide to adopt CC licenses and grant users additional rights. Studying various facets of openness, a couple of drivers were found. Artists believing in the benefits of using CC licenses employ the licenses more strongly, while those fearing disadvantages use them less. Moreover, their CC usage increases when the commercial potential of their music appears to be limited or financial interests do not exist. Artists' backgrounds and experiences matter as well. The more exposure they have to the traditional practices of the music business, the more unlikely they are to adopt CC licenses. Vice versa, experiences with CC licenses enforce their intentions to use them in the future. As expected, some business models fit better with CC licenses than others: Artists strongly relying on selling music as a primary source of income use CC licenses less frequently as they may suffer from the availability of free copies; artists generating returns from complementary income sources such as playing concerts use them more strongly as they may profit from the additional exposure.

Practical implications. The results of this work have several practical implications both for firms in the music business as well as in other industries.

Intrusive protection mechanisms decrease the quality and value of a product and reduce customers' willingness to pay (e.g., Strube et al. 2008). In addition, consumers

appreciate open products (e.g., Bakos et al. 1999; Morrison et al. 2000) and are, as this thesis finds, prepared to pay a premium for the increased flexibility. Thus, reducing control may enable firms to charge higher prices for their products or turn more people into buyers. In particular, this work recommends reevaluating the benefits and drawbacks of legal and technical protection measures and rethinking the attitude of exercising maximal control, as Shapiro and Varian (1999) note: “*The important thing is to maximize the value of your intellectual property, not to protect it for the sake of protection.*” (p. 97).²⁹³

Opening up one’s products and innovation processes yields a second important benefit: It enables valuable interactions with parties outside the firm. For example, this thesis provided various examples of where an increased level of openness motivated other artists to further improve a musical composition, or fans to promote music they liked. Given such benefits, firms may want to “*look hard at whether there are areas where you can give up some control, because the returns are great*” (Mendonca & Sutton 2008), as Mitchell Baker, chairman of the Mozilla foundation, recommends.

In software, commercial firms have started to require source code access to assure quality, increase vendor independence and enable customizations (e.g., Microsoft 2001; Matusow 2005; Käs 2008, p. 215). So far, most end-users do not yet seem to care about openness. Limited skills to modify products, as well as a lack of awareness for IP-related matters, may cause this ignorance (Dufft et al. 2005). However, the ongoing lawsuits against individual file sharers as well as the use of copy protection technology which prohibits previously tolerated uses may expand the number of users appreciating openness. Moreover, users may demand additional usage rights as they become more familiar with the opportunities created by digital technologies (Prahalad & Ramaswamy 2000; Vargo & Lusch 2004; Benkler 2006). Firms should watch out such changes in customer preferences in order to react accordingly and seize opportunities to achieve a competitive advantage (Käs 2008, p. 215f.).

When an appropriability regime becomes weaker, as happened to recorded music, attempts to strengthen it by impeding imitation and piracy are the most obvious reactions. By taking legal actions against file sharing and implementing copy protection measures, record labels followed this strategy. In order to improve the conditions for

²⁹³ Jacobides et al. (2006) recommend that firms should focus on the question “*How can you find a way to generate value and capture the greatest possible amount of surplus, regardless of whether others emulate the ideas or not?*” instead of asking “*How do you protect innovation in order to reap the maximum amount of surplus?*” (p. 1217).

value appropriation, firms may alternatively invest in their complementary assets position. For example, they may attempt to provide better sales and service or establish a closer relationship to their customers. In the recorded music business, Apple followed this path with its iTunes store, as its CEO Steve Jobs notes: “*We’re going to fight illegal downloading by competing with it. We’re not going to sue it. We’re not going to ignore it. We’re going to compete with it.*” (Kahney 2003) Despite the presence of piracy, Apple’s iTunes store became a huge success and has managed to sell billion of songs since its foundation in 2003. This example underlines the importance of complementary assets and challenges the notion that firms should invest all their energy into establishing a tight appropriability regime (Pisano 2006).

Theoretical contributions. This research contributes to two strains of literature – that of CC and that of openness and free revealing.

Most academic research conducted on CC focused on legal matters or discussed the approach taken by this initiative (e.g., Elkin-Koren 2005, 2006; Jones & Cameron 2005; Pasquinelli 2008). Despite the significant amount of CC-licensed works (Creative Commons 2009b), its business implications are still largely unexplored. This research aimed at filling this gap. Based on rich qualitative and quantitative empirical evidence, it provided the first comprehensive analysis of the benefits and drawbacks of using such licenses, as well as the drivers and inhibitors for their adoption. It also identified four viable business models and showed that, when properly used, the licenses can serve both emerging and established artists well. Thus, the results indicate that the CC movement needs to be taken seriously and that broader adoption of the licenses is to be expected.

Previous empirical studies revealed various drivers for openness (e.g., Henkel 2006, 2007; Fosfuri et al. 2008; Käs 2008): perceived benefits related to marketing and development support, customer demand, firm policies, experience and learning, firm size and ownership of complementary assets and IPRs. Through the qualitative and quantitative studies, this work found evidence for each of the aspects listed above and confirms previous findings. However, while it is well-known that characteristics of firms or individuals influence their level of openness, it is only partially known how and why they matter (Jeppesen & Frederiksen 2006; Henkel 2007). This research addressed these issues. With regards to firms, it explained why smaller firms profit more strongly from openness and open up faster. With regards to individuals, it found that people with a low financial orientation and a low perception of the commercial potential of their

works are more likely to freely reveal them. These findings not only improve our understanding of free revealing, but also contribute to our understanding of collaborations among firms and the participation and behavior in user communities in general (e.g., von Hippel & Katz 2002; Bagozzi & Dholakia 2006; Jeppesen & Frederiksen 2006).

Among the broad range of reasons given in literature to explain free revealing by commercial entities, harnessing external developments stands out (e.g., von Hippel 2001; Henkel 2006). Thus, free revealing and distributed, collaborative invention (e.g., Allen 1983) are commonly regarded as closely connected. This study extends our understanding of free revealing by firms in two ways. First, it illustrates that free revealing of innovations can make sense even when collaborations with other parties are of subordinate importance. In such cases, the decision for free revealing can be motivated by market-related reasons such as gaining publicity or deepening customer relationship, as well as by idealistic or altruistic motives. This result indicates that free revealing involves broader benefits and has the potential to occur in many more settings than initially assumed. Second, this research adds large-scale quantitative data on the scope and drivers for free revealing which further corroborate the relevance of the phenomenon.

Future research. This research touched some topics that merit further exploration. Three starting points for further research are briefly discussed below.

The qualitative empirical study on DRM explained the causal processes for abolishing copy protection. In addition, it provided anecdotal evidence for the positive market impact of dropping DRM. Analyzing actual sales data could test for incidence of the reported sales growth and substantiate the derived propositions.²⁹⁴ Moreover, it would allow to quantify the financial impact of omitting DRM.

In contrast to music, copy protection is still widely used for various products such as movies, games and software. While there is anecdotal evidence of customer complaints and changes in firms' DRM policies (e.g., Shy & Thisse 1999), copy protection seems to be a smaller concern for users of such products (e.g., Singleton 2007). Studying industries other than the music business was beyond the scope of this study. Empirical evidence from other industries could, however, provide further insights on the factors influencing customers' perception of DRM, as well as firms' decisions to employ such technology. Considering the large number of theoretical models that analytically derive

²⁹⁴ The author made two attempts to convince firms (one market research firm, one leading online retailer) to provide data to study the impact of DRM on sales. Since this data was confidential and could not be shared by the firms, neither of the requests was successful.

the optimal level of protection (e.g., Gopal & Sander 1997; Ünü & Hess 2003; Sundarajan 2004), the lack of empirical data on the use and sales impact of copy protection is even more perturbing.

This thesis examined the use of CC licenses in the music business. Mainly adopting the perspective of individual musicians, it revealed patterns in their use of CC licenses, as well as drivers and inhibitors for their CC adoption. Given their similarities with other kinds of creators, it seems reasonable to assume that the identified causal relationships hold for other artists such as writers or painters, too. However, differences in motivations, creative activities and business models are likely to influence their attitudes towards and utilization of CC licenses. Consequently, studying the CC adoption of other creators would yield a more comprehensive picture of the process of adopting CC licenses and the involved benefits and drawbacks.

The concept of open innovation has frequently been elevated to be the “*new imperative for creating and profiting from technology*”, as Chesbrough entitled one of his books (Chesbrough 2003b). However, the transition from “closed” to “open” is far from easy. This research provided initial answers on the emergence of openness and factors facilitating its adoption. However, various questions remain unanswered which provide great potential for further research.

Appendix

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A.1 Creative Commons licenses

The following table contains the human-readable summaries of the six main CC licenses (unported 3.0 versions) and the two sampling licenses (unported 1.0 versions) as defined by the CC initiative (Creative Commons 2009f).

License	You are free:	Under the following conditions:
Attribution (BY)	<ul style="list-style-type: none"> • to Share – to copy, distribute and transmit the work • to Remix – to adapt the work 	<ul style="list-style-type: none"> • Attribution – You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work).
Attribution-ShareAlike (BY-SA)	<ul style="list-style-type: none"> • to Share – to copy, distribute and transmit the work • to Remix – to adapt the work 	<ul style="list-style-type: none"> • Attribution – You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work). • Share Alike – If you alter, transform, or build upon this work, you may distribute the resulting work only under the same, similar or a compatible license.
Attribution-Noncommercial (BY-NC)	<ul style="list-style-type: none"> • to Share – to copy, distribute and transmit the work • to Remix – to adapt the work 	<ul style="list-style-type: none"> • Attribution – You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work). • Noncommercial – You may not use this work for commercial purposes.
Attribution-No Derivative Works (BY-ND)	<ul style="list-style-type: none"> • to Share – to copy, distribute and transmit the work 	<ul style="list-style-type: none"> • Attribution – You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work). • No Derivative Works – You may not alter, transform, or build upon this work.
Attribution-Noncommercial-ShareAlike (BY-NC-SA)	<ul style="list-style-type: none"> • to Share – to copy, distribute and transmit the work • to Remix – to adapt the work 	<ul style="list-style-type: none"> • Attribution – You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work). • Noncommercial – You may not use this work for commercial purposes. • Share Alike – If you alter, transform, or build upon this work, you may distribute the resulting work only under the same, similar or a compatible license.
Attribution-Noncommercial-No Derivative Works (BY-NC-ND)	<ul style="list-style-type: none"> • to Share – to copy, distribute and transmit the work 	<ul style="list-style-type: none"> • Attribution – You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work). • Noncommercial – You may not use this work for commercial purposes. • No Derivative Works – You may not alter, transform, or build upon this work.
Sampling Plus (S+)*	<ul style="list-style-type: none"> • to sample, mash-up, or otherwise creatively transform this work for commercial or noncommercial purposes • to perform, display, and distribute copies of this whole work for noncommercial purposes (e.g., file-sharing or noncommercial webcasting) 	<ul style="list-style-type: none"> • Attribution – You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work).
Noncommercial Sampling Plus (NC-S+)*	<ul style="list-style-type: none"> • to sample, mash-up, or otherwise creatively transform this work for noncommercial purposes • to perform, display, and distribute copies of this whole work for noncommercial purposes (e.g., file-sharing or noncommercial webcasting) 	<ul style="list-style-type: none"> • Attribution – You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work).

Table A.1 Human-readable summaries of six main CC licenses

A.2 Exploring the use of Digital Rights Management

Group	Name of institution	Location	Name of interview partner(s)	Position/Role of Interview partner(s)	Date	Mode	Duration (minutes)
Record labels	Cherry Red Records	United Kingdom	Matt Bristow	Director of Business Affairs	February 14, 2008	E-mail	
	Defbeat	Germany	Kaweh Kalirad	CEO	March 26, 2008	Phone	32
	Four Music	Germany	Markus Roth	New Media Director	March 13, 2008	Phone	54
	Kitty-Yo	Germany	Raik Hölzel	Founder	October 31, 2008	Phone	46
	Magnatune	USA	John Buckman	Founder, CEO	September 1, 2008	In person	85
	Naxos	Hongkong	Klaus Heymann	Founder, CEO	September 22, 2008	Phone	27
	Warner Music Group	USA	Howie Singer, Ph.D.	CTO, VP	August 15, 2008	Phone	28
Retailers	Akuma	Germany	Sascha Hottes	CEO	September 26, 2008	Phone	35
	Amie Street	USA	Joshua Boltuch	Founder	July 14, 2008	Phone	17
	CD Baby	USA	Ben Kihnel	Director of Partner & Label Relations	March 25, 2008	Phone	32
	Finetunes	Germany	Till Schumann	Encoding and Delivery Affairs	February 21, 2008	Phone	27
	Musicgremlin	USA	Jonathan Axelrod	CEO	March 10, 2008	Phone	28
	Musicload	Germany	Michael Helber	Marketing	February 2, 2009	E-mail	
	Prefueled	Luxembourg	Christian Marstrander	CEO	February 28, 2008	Phone	27
	Spiralfrog	USA	Matthew Stern	VP Marketing and PR	March 19, 2008	E-mail	
Technology providers	CoreMedia	Germany	Dr. Willms Buhse	Head of Products and Marketing	August 13, 2008	Phone	27
	SDC	Switzerland	Dr. Markus Hof	CTO	December 2, 2008	Phone	38
	Sunncomm	USA	Peter Jacobs	CEO	August 19, 2008	Phone	50
Content aggregators	Ioda	USA	Isaac Bess	Director of Business Development	May 10, 2008	E-mail	
	Kontor New Media	Germany	Michael Pohl	CEO	August 15, 2008	E-mail	
	Zebalution	Germany	Kurt Thielen	CEO	July 15, 2008	Phone	33
Experts	Berlecon Research	Germany	Philipp Bohn	Analyst	May 23, 2008	Phone	51
	VUT	Germany	Eva Kiltz	CEO	June 4, 2008	Phone	47
New ventures	Ezmo	Norway	Stale Mortensson	Director of Global Communications	March 28, 2008	Phone	53
	Kazzong	Germany	Matthias Riedl	Founder	March 12, 2008	In person	45
	Simfy	Germany	Frank Freund	Finance & Compliance	April 23, 2008	Phone	35

Table A.2 List of interviews on DRM

The interview guide presented in the following served as a rough guideline for interviews with record labels on DRM. Based on the answers given by their representatives, some of the questions did either not apply or had to be modified. Besides, some questions had to be adapted for other interview partners such as retailers. For reasons of readability, conditional questions and alternatives are not shown below.

Characteristics
<ul style="list-style-type: none"> • What is your position and your job description? • Since when is your firm in the music business? • Which are your key markets? • What does the economic situation of your firm look like? • Which are your most important income sources? Which share of your revenues does come from non-physical sales? • How did your firm transform over the last ten years? • How would you describe your attitude towards the digital business in the early days? Did you regard it more as an opportunity or as a threat?
Improving conditions for value appropriation
<ul style="list-style-type: none"> • Does your firm take legal actions against copyright infringers/file-sharers? • Besides legal and technical measures: what else did you do to make sure that people still buy your music (instead of obtaining it for free from file-sharing networks)? • Most labels claim that you content needs to be strongly protected in order to make money from it and prevent piracy. Would you agree to this statement? • On the one hand, various labels use technological as well as legal means to protect their content as strongly as possible. On the other hand, some musicians even allow their fans to share their music with others or remix it, i.e., grant users a lot of rights. How much protection do you consider appropriate for music? • Do you think that a tighter legal regime would be beneficial for the music business?
Reasons for using DRM
<ul style="list-style-type: none"> • What are the benefits of using DRM? • In particular, how important are the following potential reasons: <ul style="list-style-type: none"> – Secure existing revenues (enforce copyright and establish excludability; reduce piracy; secure value appropriation) – Generate additional revenues (enable new business models; control distribution) • For which products and services do you believe in the value of DRM, for which ones do you not? How do you see the future of DRM in the music business? • Did you see DRM primarily as a way to prevent piracy or as a lever to establish new business models? • In the early days of the digital business, the music business was quite optimistic about DRM. What was the role that you had in mind for DRM to play?
Reasons against using DRM
<ul style="list-style-type: none"> • What are the drawbacks of using DRM? • In particular, how important are the following potential reasons: <ul style="list-style-type: none"> – Lower product value (degrade functionality and interoperability; repeal traditional customer rights; harm privacy, security and quality) – Lower sales (harm customer relationship; diminish willingness to buy) – Additional costs (generate additional costs and complexity; be ineffective) – Long-term damages (prevent competition; stifle innovation and creativity) • How do you deal with those drawbacks? • Which aspects of DRM would you like to see changed? • What do customers think about DRM? Do they prefer DRM-free music? Did they actively ask for it?
Change over time
<ul style="list-style-type: none"> • How has your perception of DRM changed over time? • Has your attitude towards DRM been different in the beginnings? How? • The benefits and drawbacks of DRM are well-known for a long time. What has been the trigger for your firm to change its DRM policy? • What has been the decisive factor for dropping DRM? • Is there any special event which has changed your mindset towards DRM? • How would you characterize the public perception of DRM? Has it changed over time? How? • Have other people influenced your decision to use or not to use DRM? Who and how?

Use of DRM over time
<ul style="list-style-type: none"> • CDs <ul style="list-style-type: none"> – Have you ever used copy protection for CDs? To which extent have you used it? When have you started to use it? When have you stopped to use it? – What were the main benefits of this kind of copy protection, what were the main drawbacks? – Has the technology you used for copy protecting CDs changed over time, in particular with regards to the restrictions imposed on consumers? How? – What were the main reasons for (not) introducing copy protection for CDs? – What were the main reasons for abolishing copy protection for CDs? – Who does make the decision whether to copy protect CDs or not? • Online <ul style="list-style-type: none"> – Have you ever used copy protection for music sold online (excluding subscription-based services)? To which extent have you used it? When have you started to use it? When have you stopped to use it? – What were the main benefits of this kind of copy protection, what were the main drawbacks? – Has the technology you used for copy protecting online music changed over time, in particular with regards to the restrictions imposed on consumers? How? – What were the main reasons for (not) introducing copy protection for online music? – What were the main reasons for abolishing copy protection for online music? – Who does make the decision whether to copy protect online music or not? • Mobile <ul style="list-style-type: none"> – Have you ever used copy protection for music sold mobile (excluding subscription-based services)? To which extent have you used it? When have you started to use it? When have you stopped to use it? – What were the main benefits of this kind of copy protection, what were the main drawbacks? – Has the technology you used for copy protecting mobile music changed over time, in particular with regards to the restrictions imposed on consumers? How? – What were the main reasons for (not) introducing copy protection for mobile music? – What were the main reasons for abolishing copy protection for mobile music? – Who does make the decision whether to copy protect mobile music or not? – Why does DRM work better for mobile than for online music?
Differences between major and independent labels
<ul style="list-style-type: none"> • Which share of independent labels does currently employ DRM? Which share of independent labels did employ DRM five years ago? • How does the use of DRM differ between independent and major labels? Are there any particular characteristics of independent labels that may explain this difference? How do record labels supporting and not supporting DRM differ? • Compared to other labels: would you describe your DRM policy as comparable, more restrictive, or more liberal? • Why do you think that other record labels evaluated DRM differently and consequently chose a different DRM policy? • Impact of sharing and piracy <ul style="list-style-type: none"> – Do you appreciate when consumers share music with friends or not? – Do you appreciate when consumers share music via file-sharing networks? – How heavily are you affected by piracy? • Understanding of technology <ul style="list-style-type: none"> – At the time you introduced DRM, how well did you understand the technological foundations of DRM and could anticipate its impact on consumers? – Did you receive any feedback from retailers or customers on their experiences with DRM? • Innovativeness and decision-making processes <ul style="list-style-type: none"> – Who did take the decisions whether to use DRM or not? – How would you characterize your decision-making processes compared to other firms? – How innovative would you characterize your firm? • Sympathy for needs and freedoms of fans <ul style="list-style-type: none"> – Do you find it legitimate to copy protect music? – Assuming a perfect DRM solution would exist addressing all known issues of this technology: would you use it? – How would you characterize the relationship to your fans?
Market impact and competitive importance of DRM
<ul style="list-style-type: none"> • How would you describe the impact of DRM on <ul style="list-style-type: none"> – the sales of your firm and – the overall market development? • What has been the impact of abolishing DRM? How have your sales numbers changed? • How do you expect the market to develop once DRM is fully abolished for online music? • How did consumers react to your decision to release music in DRM-free formats? • Are more customers willing to buy DRM-free music? Are they willing to pay higher prices? • Would you say that not using DRM makes your music more appealing and creates a competitive advantage? In what respect? • Given the experiences you gained during the last years: Under which circumstances would you now recommend using DRM, when would you recommend not using it?

Table A.3 Interview guide on DRM

Level			Example
1	2	3	
Benefits of DRM	Lower product value	Harm customer relationships	<p><i>"We felt that one of the worst decisions the music industry ever made was to take advantage of people and treat customers like criminals before they even committed any crimes."</i> [Retailer]</p> <p><i>"It is not that consumers don't have a choice. They can simply copy it illegally."</i> [Technology provider]</p>
Drawback of DRM	Lower sales and profits	Diminish willingness to buy	
Use of DRM over time	Low effectiveness	Generate additional costs and complexity	<p><i>"98% of all the questions we have at our customer support are not related to our product offering or new releases – it's always related to why the hell are we selling DRM files."</i> [Retailer]</p>
Differences between major and independent labels	...		
...			

Table A.4 Excerpt of coding scheme for DRM study

A.3 Exploring the use of Creative Commons licenses

Group	Name of institution	Location	Name of interview partner(s)	Position/Role of Interview partner(s)	Date	Mode	Duration (minutes)
Record labels	1-Bit Wonder	Germany	Mirko Schmidt	Founder	June 14, 2008	In person	57
	AF Music	Germany	Falk Merten	CEO	March 20, 2008	Phone	36
	Fading Ways	Canada	Neil Leyton	Founder, Creative Director and A&R	August 19, 2008	Phone	42
	Kitty-Yo	Germany	Raik Hölzel	Founder	October 31, 2008	Phone	46
	Magnatune	USA	John Buckman	Founder, CEO	September 1, 2008	In person	85
	Monotonik	USA	Simon Carless	Founder	June 19, 2008	E-mail	
	Test Tube	Portugal	Pedro Leitão	Founder	June 5, 2008	Phone	49
	Zymogen	Italy	Filippo Aldovini	Founder	June 16, 2008	Phone	50
Artists	Allison Crowe	Canada	Adrian du Plessis	Manager	April 17, 2008	Phone	69
	BurnsheeThornside	Sweden	Matt Thornside	Artist	June 3, 2008	Phone	44
	Curious	Germany	Oliver Schlichter	Artist	April 4, 2008	E-mail	
	Jammin Inc	Germany	Martin, Markus	Artist	August 14, 2008	E-mail	
	Jonathan Coulton	USA	Jonathan Coulton	Artist	June 30, 2008	Phone	46
	Grünanlage	Germany	Marcel Weller	Artist	June 24, 2008	Phone	30
	Kangaroo Musique	Germany	Thorsten Mitschele	Artist	May 26, 2008	Phone	34
	Nadja Adam	Germany	Nadja Adam	Artist	November 7, 2008	Phone	26
	Pornophonique	Germany	Kai Richter	Artist	May 7, 2008	Phone	63
	Rob Costlow	USA	Rob Costlow	Artist	June 6, 2008	Phone	44
Roger John	USA	Roger Contardi	Artist	June 24, 2008	Phone	20	
Tryad	USA	Vavrek	Artist	June 4, 2008	Phone	39	
Retailers	Akuma	Germany	Sascha Hottes	CEO	September 26, 2008	Phone	35
	AmieStreet	USA	Joshua Boltuch	Founder	July 14, 2008	Phone	17
	ArtistServer	USA	Gideon Marken	Founder	August 7, 2008	Phone	37
	Jamendo	Luxembourg	Moritz Brumsack	Marketing and Support	April 17, 2008	Phone	35
	Jamglue	USA	Gautam Jayaraman	Founder	July 23, 2008	Phone	18
Kazzong	Germany	Matthias Riedl	Founder	March 12, 2008	In person	45	
Content aggregators	Neuland + Herzer	Germany	Tanja Haki	Project Management	July 24, 2008	Phone	30
	Zebralution	Germany	Kurt Thielen	CEO	July 15, 2008	Phone	33
Experts	Berlecon Reserach	Germany	Philipp Bohn	Analyst	May 23, 2008	Phone	51
	Blogstelle.de	Germany	Steffen Ehrh	Owner	June 18, 2008	Phone	47
	Creative Commons	Germany	Markus Bechedahl	Public Project Lead Germany	June 18, 2008	Phone	36
		Germany	John Weitzmann	Legal Project Lead Germany	May 18, 2008	Phone	50
	Sunncomm	USA	Peter Jacobs	CEO	August 19, 2008	Phone	50
VUT	Germany	Eva Kiltz	CEO	June 4, 2008	Phone	47	

Table A.5 List of interviews on Creative Commons

The interview guide presented in the following served as a rough guideline for interviews with artists on CC licenses. Based on the answers given by artists, some of the questions did either not apply or had to be modified. Besides, some questions had to be adapted for other interview partners such as record labels. For reasons of readability, conditional questions and alternatives are not shown below.

Characteristics
<ul style="list-style-type: none"> • What kind of music are you doing? • What part does making music have in your life? • Since when have you been doing music? • Why are you making music? How important is it for you to make money with your music? • Are you a professional artist or a hobby-musician? Are you signed to a record label? Can you make a living from music? • How and where do you release your music? • How would you characterize your ambitions going forward? Do you intend to get signed by a record label? • Which experiences have you made in the music business so far? • Do you appreciate if fans share your music with friends, share your music on file-sharing networks, remix it or sample it? • How do you react if users ask you for permission to share your music, create remixes or sample it?
Adoption of CC licenses
<ul style="list-style-type: none"> • How well do you know CC licenses? • Have you ever released music under a CC license? • When have you used a CC license for the first time? • Which share of your songs do you release under a CC license? • Which songs do you release under a CC license, which songs do you release under full copyright? • Are the songs you release under a CC license of lower commercial value? • Is there a certain type of music which you would always/never release under a CC license? Why? • Who does make the decision whether to release music under a CC license or not? • How would you characterize your experiences with releasing music under a CC license?
Triggers for using CC licenses
<ul style="list-style-type: none"> • What has been the decisive factor for releasing music under a CC license? • Do you consume CC-licensed content as well? • How would you characterize the public perception of CC licenses? • Have other people influenced your decision to use or not to use CC licenses? Who and how? • Is there any special event which has changed your mindset towards CC licenses? • How clear, easy to use and precise do you consider CC licenses to be?
Reasons for using CC licenses
<ul style="list-style-type: none"> • What are the benefits of using CC licenses? • In particular, how important are the following potential reasons: <ul style="list-style-type: none"> – Market-related reasons (gain publicity and marketing; improve reputation; build community and closer connection to fans; satisfy customer demand; open up opportunities) – Collaboration-related reasons (improve quality of music; ease collaboration with other artists; get inspiration from modifications) – Idealism-related reasons (treat users fairly and respect their rights; contribute to cultural progress; oppose copyright and business practices of record labels) • How do customers react to your decision to release music under a CC license? Do they actively ask for CC-licensed music? • Would you say that using CC licenses makes your music more appealing and creates a competitive advantage? • Are you required to release music under a CC license? For what reasons?

Reasons against using CC licenses
<ul style="list-style-type: none"> • What are the drawbacks of using CC licenses? • In particular, how important are the following potential reasons: <ul style="list-style-type: none"> – Financial loss (make selling music impossible; lose income; suffer competition from free copies; reduce value of music; reduce chances to get signed by a record label) – Control loss (lose control over uses and changes; do not provide more value than copyright; violate artistic integrity) • How do you deal with those drawbacks? • CC are irrevocable, i.e., they cannot be terminated. Are you aware of this fact? Does it worry you? • Has anyone ever violated the CC license you have chosen for your work? • Which aspects of CC licenses would you like to see changed? • Can you be member of a PRO and release music under a CC license at the same time? If not: Is this incompatibility an issue for you? How does it influence your behaviour? • Are you not allowed to release music under a CC license for other reasons?
CC-supported business
<ul style="list-style-type: none"> • Do you give away some of your music for free? How much? Why? • What does your business model look like? • Which are your most important income sources? • Do you sell CDs/downloads? Do you play live? • Why do people pay for your music when they can legally obtain it for free, e.g., from file-sharing networks? • How does the use of CC licenses support your business model? • How does a business model have to look like in order to profit from the use of CC licenses?
Suitability for different artists
<ul style="list-style-type: none"> • Would you in general recommend the use of CC licenses for unknown/emerging artists? Why (not)? • Would you in general recommend the use of CC licenses for popular artists? Why (not)? • Would it make sense for Britney Spears to release her next album under a CC license? • Which preconditions need to be in place for an artist to profit from using CC licenses? • Why do most established artists and record labels avoid the use of CC licenses? • Can you think of a point in your career where you decide to stop to use CC licenses?
Change over time
<ul style="list-style-type: none"> • Has the extent to which you release music under a CC license changed over the last years? • What are the key reasons for this development? • Would you say that customers' interest in CC-licensed music is stronger today? Why? • How has the adoption and reputation of CC licenses in the music business changed over time?

Table A.6 Interview guide on CC

Level	1	2	3	Example
	Characterization of CC users	Market-related reasons	Gain publicity and marketing	<i>"One of the nice features of CC licenses is that I can review and present music without any hassles."</i> [Expert]
	Adoption of CC licenses	Collaboration-related reasons	Improve reputation	<i>"CC is one more way that you can sort of make your brand seem more like you're independent, you're rebelling, you're not a part of the system – that's Rock'n'Roll."</i> [Artist]
	Facilitators and inhibitors for using CC licenses	Idealism-related reasons	Build community and closer connection to fans	<i>"Gifts ask for reciprocation, and in the back and forth that ensues relationships form."</i> (Sal Randolph, US artist (Paharia 2005b))
	Reasons for using CC licenses	...	Satisfy customer demand	<i>"It's not that we don't want to offer CC, it's just that we've honestly never been asked by our artists or by our members."</i> [Retailer]
	

Table A.7 Excerpt of coding scheme for CC study


A.4 Explaining artists' adoption of Creative Commons licenses

A.3.1 Questionnaire


Invitation sent to artists using CC licenses
<p>Dear "<artist name>":</p> <p>You have decided to release music on Soundclick.com under a Creative Commons license. We are curious to learn more about your view on the benefits and drawbacks of Creative Commons licenses as well as the experiences you made so far.</p> <p>We want to find out why artists decide to use or not to use a Creative Commons license. Furthermore, we intend to understand better if using a Creative Commons license has a positive or negative effect on artists' success.</p> <p>This study is a joint project by Professor Joachim Henkel, Technische Universitaet Muenchen (currently at Harvard Business School) and Johannes Wechsler, Technische Universitaet Muenchen, and is supported by Professor Lawrence Lessig, Stanford Law School.</p> <p>As a user of Creative Commons licenses, we would like to invite you to participate in our survey. The questionnaire will take about 10-15 minutes to complete. Your responses will be treated strictly confidential. Results will only be published in aggregated form. Please find below the link to our survey.</p> <p>http://www.tim.wi.tum.de/surveys/limesurvey/index.php?sid=71777&lang=en&token=XXXXX</p> <p>After submitting the survey, you can sign up for a prize draw – we are giving away ten Amazon gift certificates worth USD 30. In addition, you can order a copy of the survey results.</p> <p>Should you have any questions concerning the research project or the survey, please do not hesitate to contact Johannes Wechsler at wechsler@wi.tum.de or by phone under +49 89 289 25748.</p> <p>Thank you very much for your participation!</p> <p>Joachim Henkel, Professor, Technische Universitaet Muenchen (currently at Harvard Business School) Johannes Wechsler, Ph.D. candidate, Technische Universitaet Muenchen Lawrence Lessig, Professor, Stanford Law School</p>
Invitation sent to artists <u>not</u> using CC licenses
<p>Dear "<artist name>":</p> <p>You have decided to release music on Soundclick.com. Your music is protected by "standard" copyright. In contrast, a significant amount of other artists on Soundclick decided to put their music under a Creative Commons license, which allows users to share and remix these songs. Standard copyright does not grant these rights. You can find an introduction to Creative Commons at http://en.wikipedia.org/wiki/Creative_Commons.</p> <p>We are curious to learn more about the way you, not being a user of Creative Commons licenses, make and promote your music. This would help us determining if using a Creative Commons license has a positive or negative effect on artists' success. In case you are familiar with Creative Commons licenses, we would also be interested in your view on the benefits and drawbacks of Creative Commons licenses as well as the experiences you made so far.</p> <p>This study is a joint project by Professor Joachim Henkel, Technische Universitaet Muenchen (currently at Harvard Business School) and Johannes Wechsler, Technische Universitaet Muenchen, and is supported by Professor Lawrence Lessig, Stanford Law School.</p> <p>We would like to invite you to participate in our survey. The questionnaire will take about 10-15 minutes to complete. Your responses will be treated strictly confidential. Results will only be published in aggregated form. Please find below the link to our survey.</p> <p>http://www.tim.wi.tum.de/surveys/limesurvey/index.php?sid=71777&lang=en&token=XXXXX</p> <p>After submitting the survey, you can sign up for a prize draw – we are giving away ten Amazon gift certificates worth USD 30. In addition, you can order a copy of the survey results.</p> <p>Should you have any questions concerning the research project or the survey, please do not hesitate to contact Johannes Wechsler at wechsler@wi.tum.de or by phone under +49 89 289 25748.</p> <p>Thank you very much for your participation!</p> <p>Joachim Henkel, Professor, Technische Universitaet Muenchen (currently at Harvard Business School) Johannes Wechsler, Ph.D. candidate, Technische Universitaet Muenchen Lawrence Lessig, Professor, Stanford Law School</p>


Figure A.1 Survey invitation sent to artists

Creative Commons in the music business



creativecommons.org/licenses/by-nc-sa/4.0/





Thank you for your participation in our survey. This non-commercial research project focuses on artists' view on the **benefits and drawbacks of Creative Commons licenses** as well as experiences made so far.

This study is a joint project by Professor Joachim Henkel, [Technische Universität Muenchen](#) (currently at [Harvard Business School](#)), Johannes Wechsler, [Technische Universität Muenchen](#), and is supported by Professor Lawrence Lessig, [Stanford Law School](#).

After submitting the survey, you can sign up for a **prize draw** – we are giving away ten Amazon gift certificates worth USD 30. In addition, you can order a copy of the survey results.

The questionnaire will take about **10 to 15 minutes** to complete. Your responses will be treated strictly confidential. Results will only be published in aggregated form.

Should you have any questions, please do not hesitate to contact **Johannes Wechsler** at wechsler@wi.tum.de or by phone under +49 89 289 25758.

Thank you very much for your support!

Joachim Henkel, Professor, Technische Universität Muenchen (currently at Harvard Business School)
 Johannes Wechsler, Ph.D. Candidate, Technische Universität Muenchen
 Lawrence Lessig, Professor, Stanford Law School


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Load Unfinished Survey

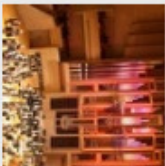
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www.flickr.com/photos/rebec1234567890/4331371776/










Figure A.2 Start page of survey among artists

A. Adoption and Use of Creative Commons Licenses (1/4)

Note for managers and bookers

This survey is about artists' attitudes towards Creative Commons and their experiences using or not using Creative Commons licenses. Thus, the questionnaire should be completed by musicians. If you are not a musician, but received the invitation to this survey since you are working for an artist, e.g., as manager or booker, we would ask you to either - forward the link to this survey to the artist you are working for or - answer the survey from the artist's perspective, given that you know the artist sufficiently well.

***When did you release your first song?**

Please choose.. ▾

? Note: Mandatory questions are marked with asterisks (*).

***Since 2004, how many songs did you release?**

Please choose.. ▾

? If you do not know the exact number, please try to estimate.

***Have you ever released a song under a Creative Commons license?**

- Yes
- No

***When did you release your first song under a Creative Commons license?**

Please choose.. ▾

***Since 2004, how many songs did you release under a Creative Commons license?**

Please choose.. ▾

? If you do not know the exact number, please try to estimate.

***Since 2004, how many of your released songs are available as free download on a public web site (e.g., Jamendo, MySpace, Soundclick) or your personal web site?**

Please choose.. ▾

? Free meaning free of charge or gratis.
If you do not know the exact number, please try to estimate.

Do you have a say in whether to use a Creative Commons license or not?

- Yes, always
- Yes, sometimes
- No

***There are several ways to make money through music. When you for the first time decided to release music under a Creative Commons license:**

How important did you expect the income sources listed below to become for you?

	Very unimportant	Unimportant	Neutral	Important	Very important	I don't know/ Not applicable
Selling downloads/subscriptions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Selling CDs/DVDs/...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Merchandising	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Concerts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commercial licensing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Donations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advertisements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If other, please specify:

***When you think about your most recent Creative-Commons-licensed work: Which license did you choose?**

- Attribution (BY)
- Attribution-Share Alike (BY-SA)
- Attribution-No Derivative Works (BY-ND)
- Attribution-Noncommercial (BY-NC)
- Attribution-Noncommercial-Share Alike (BY-NC-SA)
- Attribution-Noncommercial-No Derivative Works (BY-NC-ND)
- Sampling Plus (S+)
- Noncommercial Sampling Plus (NC-S+)
- Public Domain
- I don't know
- Other

*Have you ever consumed songs, films, texts, or pictures that others have licensed under a Creative Commons license?

Yes
 No

*Do you use Creative-Commons-licensed samples in your music or remix Creative-Commons-licensed songs?

Yes
 No/Not that I know of

*How many songs do you therefore have to release under a Creative Commons license?

Please choose... ▾

? If you do not know the exact number, please try to estimate.

*Do you use samples in your music or remix songs you have licensed, but whose copyright you do not own?

Yes
 No/Not that I know of

*How many songs can you therefore not release under a Creative Commons license?

Please choose... ▾

? If you do not know the exact number, please try to estimate.


*My friends and colleagues say about Creative Commons...

Positive things
 Mixed things
 Negative things
 Nothing/Do not talk about Creative Commons

*Has any of your friends or other artists tried to persuade you to use a Creative Commons license?


Yes
 No

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B. Benefits and Risks of Creative Commons Licenses (2/4)

***How important is it for you to earn money with your music?**
Please indicate your agreement to the following statement.

Earning money is one of my key motivations to make music.

Strongly disagree
 Disagree
 Indifferent
 Agree
 Strongly agree

***There are many ways in which other artists or users could use your music. Which of them do you appreciate?**
Please indicate your agreement to the following statements.

I appreciate when other artists or users...

	Strongly disagree	Somewhat disagree	Indifferent	Somewhat agree	Strongly agree
sample or remix my music	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
share my music with friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
share my music with strangers (e.g., via file sharing networks)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
use my music in combination with other content (e.g., in videos, blogs)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

***What are the attitudes of your business partners (e.g., record labels, distributors) towards Creative Commons licences?**

Business partners I work with...

require the use of Creative Commons licenses
 encourage me to use Creative Commons licenses
 do not care about Creative Commons licenses
 discourage me to use Creative Commons licenses
 do not allow me to use Creative Commons licenses
 Not applicable
 I don't know

***Is it possible in your country to be a member of a collecting society and use Creative Commons licenses at the same time?**

Yes
 No
 I don't know

? Collecting societies provide intermediary functions, particularly royalty collection, between copyright holders and parties who wish to use copyrighted works publicly. They are sometimes also called performance rights organizations (PROs), copyright collectives, or copyright collecting agencies. Examples are ASCAP/BMI/SESAC (USA), SOCAN (Canada), PRS (UK), GEMA (Germany), SGAE (Spain), Sacem (France), and APRA (Australia).

***Is this incompatibility an issue for you?**

Yes
 No
 I don't know

***What are the reasons for you to release music under a Creative Commons license?**
Please indicate your agreement to the following statements.

I release music under a Creative Commons license because...

	Strongly disagree	Somewhat disagree	Indifferent	Somewhat agree	Strongly agree	I don't know/ Not applicable
I want to support the Creative Commons movement and the idea of free music	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
it becomes easier to work together with other artists	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to earn more money when using a Creative Commons license	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
it improves my reputation and recognition in the community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want to disassociate myself from the music industry and its behavior	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
others build on my music and develop it further	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
it is good marketing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I receive more contributions and feedback from my fans	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider it fair to give back to the community, since I benefit from it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I draw inspiration from creative uses and modifications of my music	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect higher demand for my music	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
it helps to establish a closer connection to fans and build a community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I want others to be able to enjoy my music freely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
my music gets more publicity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
users appreciate music being available under a Creative Commons license	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If other, please specify:

***What are/could be reasons for you not to release music under a Creative Commons license?**
Please indicate your agreement to the following statements.

I do not release/could think of not releasing music under a Creative Commons license because...

	Strongly disagree	Somewhat disagree	Indifferent	Somewhat agree	Strongly agree	I don't know/ Not applicable
I cannot sell my music any more	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would give up my copyright	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I become less attractive for record labels to get signed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would lose control over further enhancements to my music	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect to earn less money when using a Creative Commons license	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
others can use my music and build on it without getting asked	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If other, please specify:

***How would you assess the market value of your music?**
Please indicate your agreement to the following statement.


My music has commercial potential.

Strongly disagree
 Disagree
 Indifferent
 Agree
 Strongly agree
 I don't know


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C. Experiences and Future Plans (3/4)

*Have you ever tried to get permission from someone in order to use his or her copyrighted work?

- Yes
 No

*Have you ever been denied permission to use copyrighted work?

- Yes
 No

*What do you think about the level of protection provided by copyright?

Copyright protects works...

- Too extensively
 Exactly right
 Not extensively enough
 I don't know

*What do you think about the duration of copyright?

The duration of copyright is...

- Too long
 Exactly right
 Too short
 I don't know

*How easy and understandable are Creative Commons licenses?

Please indicate your agreement to the following statements.

Creative Commons licenses...

	Strongly disagree	Somewhat disagree	Indifferent	Somewhat agree	Strongly agree	I don't know
are clear and understandable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
are easy to use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*How unambiguously and precisely do you find Creative Commons licenses to be defined?

Please indicate your agreement to the following statements.

Creative Commons licenses...

	Strongly disagree	Somewhat disagree	Indifferent	Somewhat agree	Strongly agree	I don't know
allow me to define exactly the uses for which I want to be asked first	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
are legally unambiguous	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Has the share of songs that you release under a Creative Commons license (per year) changed since your first use of a Creative Commons license?

- I release more
 The amount has not changed
 I release less
 I completely stopped using Creative Commons licenses
 Not applicable

*Assuming you would finish a new album next year:

How likely is it that you release at least some of these songs under a Creative Commons license?

- Not at all likely Somewhat likely Very likely Extremely likely I don't know (yet)

*Has your content ever been used in a setting that you would consider commercial without proper compensation?

- Yes
 No/Not that I know of

*Has your content ever been used or modified by users or other artists in an inappropriate form?

- Yes
 No/Not that I know of

***Has someone ever used your Creative-Commons-licensed songs against the license terms, i.e., violated the license?**

Yes
 No/Not that I know of

Overall, how would you rate your personal experiences with releasing music under Creative Commons licenses?

Very negative Negative Neutral Positive Very positive I don't know



In the future, which share of your songs do you intend to release under a Creative Commons license?

None
 Less than half
 More than half
 All
 I don't know (yet)
 Not applicable

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D. Personal Information (4/4)

*Which share of your total income does come from making music?

- Music is my only source of income
 Music is my main source, but I have other income
 Music is supplementary to my main source of income
 I do not make money from my music at all

*There are several ways to make money through music. In 2008, how important do you expect the income sources listed below to be?

	Very unimportant	Unimportant	Neutral	Important	Very important	I don't know/ Not applicable
Selling downloads/subscriptions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Selling CDs/DVDs/...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Merchandising	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Concerts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commercial licensing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Donations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Advertisements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If other, please specify:

*What revenue (in USD) from music do you expect in 2008?

- 0 - 2,500 20,001 - 35,000 More than 200,000
 2,501 - 5,000 35,001 - 50,000 I don't know
 5,001 - 10,000 50,001 - 100,000 I prefer not to answer
 10,001 - 20,000 100,001 - 200,000

? Revenue refers to your total sales before expenses and taxes. Please report the entire amount of income before deducting expenses, e.g., for musical instruments, travelling, or marketing, and taxes.
 Example: If you sell in 2008 100 CDs, each for USD 9, 200 downloads, each for USD 0.50, and 200 concert tickets, each for USD 25, your total revenue would be $900 + 100 + 5,000 = \text{USD } 6,000$.

1 USD = 1.47 EUR = 1.84 GBP = 0.96 CAD = 0.86 AUD = 0.91 CHF (August 2008)

*How many artists generally participate in the creation of your music, including yourself?

Please choose..

? Please consider members of your core band as well as artists you cooperate with on a loose basis.

*How old are you?

Please choose..

*What is your gender?

- Male
 Female

*How would you assess your expertise in the Internet?

- Beginner
 Basic User
 Average User
 Advanced User
 Expert

*How many years have you spent in schools and further educational institutions (including university, college, ...)?

Please choose..

? Example: If you spent 6 years in elementary school, 6 years in high school, and 3 years in college, please enter $6 + 6 + 3 = 15$ years.

For receiving the survey results and participating in the lottery for the Amazon gift certificates, please fill in your e-mail address.

Do you have any comments about the survey (clarity, wording, structure, content, ...)?

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Figure A.3 Questionnaire of survey among artists

A.3.2 Late- and non-response analysis

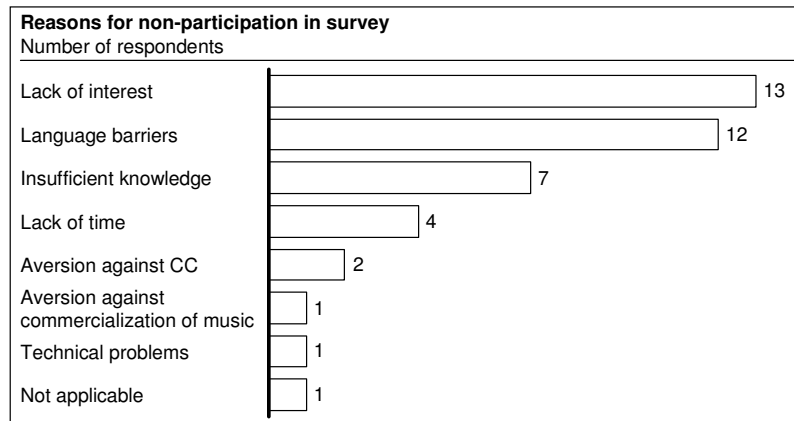


Figure A.4 Communicated reasons for non-participation in survey

Variable	Mean		p-Value
	Early responder	Late responder	
Use of CC	0.565	0.744	0.000***
Share of CC	0.394	0.550	0.000***
Financial orientation	2.977	2.626	0.000***
Commercial value	3.933	3.724	0.002***
Income	0.468	0.412	0.038**
Age	35.765	34.672	0.103
Support movement	3.740	4.059	0.000***
Easier collaboration	3.655	3.892	0.000***
Improve reputation	3.492	3.701	0.002***
Good marketing	3.514	3.645	0.048**
Users appreciate	3.620	3.901	0.000***
Cannot sell	2.829	2.804	0.731
Lose control	3.270	2.985	0.001***

* p < 0.1, ** p < 0.05, *** p < 0.01

Table A.8 Late-response analysis

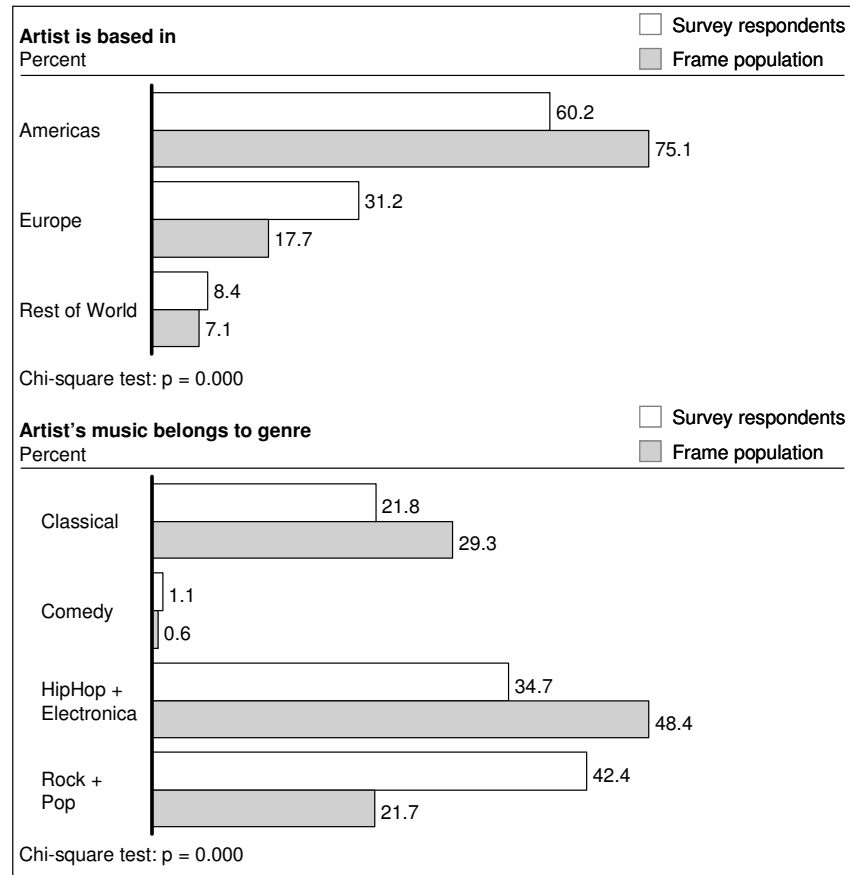


Figure A.5 Non-response analysis

A.3.3 Factor analysis on the benefits and drawbacks of using CC licenses

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Improve reputation															
2 Good marketing	0.54														
3 More contributions	0.53	0.54													
4 More money	0.32	0.42	0.31												
5 Higher demand	0.51	0.58	0.53	0.46											
6 Build community	0.64	0.61	0.66	0.32	0.61										
7 More publicity	0.57	0.64	0.58	0.33	0.66	0.68									
8 Support movement	0.45	0.33	0.38	0.07	0.27	0.48	0.38								
9 Disassociate industry	0.33	0.23	0.33	0.06	0.20	0.34	0.26	0.51							
10 Give back	0.49	0.36	0.50	0.17	0.37	0.57	0.44	0.61	0.42						
11 Enjoy freely	0.43	0.32	0.38	0.02	0.29	0.52	0.50	0.69	0.43	0.58					
12 Users appreciate	0.47	0.46	0.47	0.20	0.38	0.59	0.55	0.54	0.39	0.55	0.56				
13 Others develop	0.42	0.33	0.38	0.19	0.27	0.45	0.31	0.50	0.39	0.51	0.45	0.44			
14 Draw inspiration	0.39	0.31	0.39	0.21	0.34	0.45	0.31	0.47	0.32	0.51	0.42	0.42	0.71		
15 Easier collaboration	0.48	0.37	0.43	0.23	0.31	0.54	0.39	0.58	0.36	0.53	0.49	0.47	0.49	0.47	

All correlations highlighted bold which are significant at $p < 0.1$ (10% level)

Table A.9 Correlation matrix for variables with respect to benefits of using CC licenses

Factor	Eigenvalue	Difference	Proportion	Cumulative explained variance
Factor 1	6.70	4.74	0.44	0.45
Factor 2	1.96	0.93	0.13	0.58
Factor 3	1.03	0.32	0.07	0.65
Factor 4	0.71	0.09	0.05	0.69
Factor 5	0.63	0.08	0.04	0.74
Factor 6	0.55	0.04	0.04	0.77
Factor 7	0.51	0.01	0.03	0.81
Factor 8	0.50	0.05	0.03	0.84
Factor 9	0.44	0.01	0.03	0.87
Factor 10	0.44	0.05	0.03	0.90
Factor 11	0.39	0.06	0.03	0.92
Factor 12	0.32	0.02	0.02	0.95
Factor 13	0.30	0.02	0.02	0.97
Factor 14	0.28	0.03	0.02	0.98
Factor 15	0.25		0.02	1.00

Table A.10 Factors generated for variables on benefits of using CC licenses

	1	2	3	4	5	6
1 Cannot sell						
2 Less attractive	0.48					
3 Less money	0.56	0.53				
4 Give up copyright	0.59	0.49	0.49			
5 Lose control	0.43	0.50	0.54	0.63		
6 Others build	0.39	0.35	0.56	0.53	0.61	

All correlations highlighted bold which are significant at $p < 0.1$ (10% level)

Table A.11 Correlation matrix for variables with respect to drawbacks of using CC licenses

Factor	Eigenvalue	Difference	Proportion	Cumulative explained variance
Factor 1	3.63	2.92	0.61	0.61
Factor 2	0.70	0.14	0.12	0.72
Factor 3	0.56	0.05	0.09	0.82
Factor 4	0.51	0.20	0.08	0.90
Factor 5	0.31	0.04	0.05	0.95
Factor 6	0.28		0.05	1.00

Table A.12 Factors generated for variables on drawbacks of using CC licenses

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
1 Improve reputation																						
2 Good marketing	0.54																					
3 More contributions	0.53	0.54																				
4 More money	0.32	0.42	0.31																			
5 Higher demand	0.51	0.58	0.53	0.46																		
6 Build community	0.64	0.61	0.66	0.32	0.61																	
7 More publicity	0.57	0.64	0.58	0.33	0.66	0.68																
8 Support movement	0.45	0.33	0.38	0.07	0.27	0.48	0.38															
9 Disassociate industry	0.33	0.23	0.33	0.06	0.20	0.34	0.26	0.51														
10 Give back	0.49	0.36	0.50	0.17	0.37	0.57	0.44	0.61	0.42													
11 Enjoy freely	0.43	0.32	0.38	0.02	0.29	0.52	0.50	0.69	0.43	0.58												
12 Users appreciate	0.47	0.46	0.47	0.20	0.38	0.59	0.55	0.54	0.39	0.55	0.56											
13 Others develop	0.42	0.33	0.38	0.19	0.27	0.45	0.31	0.50	0.39	0.51	0.45	0.44										
14 Draw inspiration	0.39	0.31	0.39	0.21	0.34	0.45	0.31	0.47	0.32	0.51	0.42	0.42	0.71									
15 Easier collaboration	0.48	0.37	0.43	0.23	0.31	0.54	0.39	0.58	0.36	0.53	0.49	0.47	0.49	0.47								
16 Cannot sell	-0.03	0.01	-0.07	0.10	-0.04	-0.09	-0.07	-0.20	-0.14	-0.18	-0.20	-0.15	-0.09	-0.10	-0.16							
17 Less attractive	-0.05	-0.00	-0.11	0.06	-0.04	-0.09	-0.04	-0.19	-0.18	-0.23	-0.18	-0.16	-0.10	-0.14	-0.15	0.48						
18 Less money	-0.11	-0.06	-0.15	0.01	-0.11	-0.13	-0.11	-0.27	-0.20	-0.26	-0.26	-0.17	-0.19	-0.18	-0.21	0.56	0.53					
19 Give up copyright	-0.08	-0.03	-0.09	0.09	-0.05	-0.09	-0.07	-0.07	-0.17	-0.18	-0.20	-0.16	-0.18	-0.13	-0.11	0.59	0.49	0.49				
20 Lose control	-0.14	-0.05	-0.16	0.09	-0.08	-0.19	-0.07	-0.07	-0.26	-0.23	-0.28	-0.21	-0.24	-0.19	-0.21	0.43	0.50	0.54	0.63			
21 Others build	-0.18	-0.12	-0.19	-0.01	-0.17	-0.20	-0.13	-0.20	-0.23	-0.26	-0.31	-0.22	-0.29	-0.23	-0.19	0.39	0.35	0.56	0.53	0.61		

All correlations highlighted bold which are significant at $p < 0.1$ (10% level)

Table A.13 Correlation matrix for variables with respect to benefits and drawbacks of using CC licenses

Factor	Eigenvalue	Difference	Proportion	Cumulative explained variance
Factor 1	7.32	3.98	0.35	0.35
Factor 2	3.34	1.66	0.16	0.51
Factor 3	1.67	0.64	0.08	0.59
Factor 4	1.04	0.31	0.05	0.64
Factor 5	0.73	0.02	0.03	0.67
Factor 6	0.72	0.07	0.03	0.71
Factor 7	0.65	0.07	0.03	0.74
Factor 8	0.58	0.02	0.03	0.76
Factor 9	0.56	0.04	0.03	0.79
Factor 10	0.51	0.02	0.02	0.81
Factor 11	0.49	0.03	0.02	0.84
Factor 12	0.47	0.03	0.02	0.86
Factor 13	0.44	0.02	0.02	0.88
Factor 14	0.42	0.05	0.02	0.90
Factor 15	0.37	0.05	0.02	0.92
Factor 16	0.32	0.01	0.02	0.93
Factor 17	0.31	0.01	0.01	0.95
Factor 18	0.30	0.03	0.01	0.96
Factor 19	0.27	0.01	0.01	0.98
Factor 20	0.26	0.01	0.01	0.99
Factor 21	0.24		0.01	1.00

Table A.14 Factors generated for variables on benefits and drawbacks of using CC licenses

Variable	Factor 1 (Marketing)	Factor 2 (Idealism)	Factor 3 (Collaboration)	Factor 4 (Fin./contr. loss)
Improve reputation	0.6736			
Good marketing	0.7827			
More contributions	0.6824			
More money	0.6356			
Higher demand	0.8056			
Build community	0.7172			
More publicity	0.7993			
Support movement		0.7390		
Disassociate industry		0.6377		
Give back		0.6063		
Enjoy freely		0.7652		
Users appreciate		0.5711		
Others develop			0.8306	
Draw inspiration			0.8250	
Easier collaboration				
Cannot sell				0.7654
Less attractive				0.7387
Less money				0.7847
Give up copyright				0.8000
Lose control				0.7755
Others build				0.7181

Extraction: principal component analysis; Rotation: varimax; N = 1,184
63.6% of total variance explained; KMO: 0.9112, Bartlett test: p = 0.000. Factor loadings < 0.5 omitted

Table A.15 Rotated factor loadings of variables related to benefits and drawbacks of using CC licenses

A.3.4 Change in CC usage over time

Variable	Very negative	Negative	Neutral	Positive	Very positive	N
Percent of respondents	0.2	1.4	27.3	41.1	29.9	834
Experiences with CC		No		Yes		N
Violation of CC license		93.4		6.6		872

Table A.16 Experiences with CC licenses

Variable	Not at all likely	Somewhat likely	Very likely	Extremely likely
Percent of respondents (N = 1,003)				
Likelihood of future CC use	17.6	20.5	24.6	37.3

Table A.17 Likelihood of future CC use

A.3.5 Multivariate analysis

	1	2	3	4	5	6	7	8*	9**	10**	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
1 Marketing																													
2 Idealism	-0.05																												
3 Collaboration	0.02	-0.01																											
4 Fin./con. loss	-0.01	-0.04	-0.01																										
5 Fin. orien.	0.25	-0.44	0.04	0.20																									
6 Comm. value	0.22	-0.31	0.03	0.14	0.39																								
7 Exper. music	-0.06	-0.13	-0.02	-0.03	0.10	0.12																							
8 Exper. CC*	0.08	0.38	0.17	-0.19	-0.25	-0.11	0.19																						
9 Selling/licens.**	0.13	-0.29	0.02	0.17	0.39	0.34	0.06	-0.14																					
10 Comp. income**	0.22	-0.07	0.18	0.09	0.28	0.23	0.02	-0.08	0.61																				
11 CopyrightScope	-0.04	0.30	0.18	-0.20	-0.18	-0.19	-0.02	0.27	-0.16	-0.02																			
12 CopyrightDur	-0.00	0.31	0.19	-0.23	-0.18	-0.19	-0.05	0.31	-0.16	-0.04	0.70																		
13 Easy	0.12	0.25	0.06	-0.24	-0.13	-0.08	-0.08	0.21	-0.02	0.06	0.23	0.20																	
14 Precise	0.13	0.20	0.15	-0.22	-0.12	-0.03	-0.05	0.20	0.02	0.11	0.20	0.17	0.62																
15 Share CC req.	-0.03	0.10	0.20	-0.12	-0.07	-0.07	0.00	0.17	-0.05	0.02	0.14	0.15	0.08	0.11															
16 Share CC forb.	0.02	0.01	0.03	0.01	0.05	0.05	0.03	-0.01	0.10	0.16	0.07	0.07	-0.01	-0.01	0.12														
17 Bus. part. pos.	0.13	-0.01	0.16	-0.07	0.06	0.06	0.05	0.12	0.11	0.10	0.08	0.10	0.09	0.07	0.10	0.03													
18 Bus. part. neg.	-0.03	-0.09	-0.03	0.10	0.10	0.05	0.11	-0.09	0.12	0.08	-0.07	-0.04	-0.00	-0.04	0.05	0.05	-0.09												
19 ConsumeCC	0.01	0.31	0.10	-0.16	-0.18	-0.16	0.00	0.32	-0.10	-0.00	0.27	0.28	0.25	0.22	0.23	0.08	0.11	0.01											
20 WordofMouth	0.09	0.22	0.12	-0.20	-0.09	-0.08	0.01	0.22	-0.06	-0.01	0.24	0.26	0.24	0.23	0.15	-0.00	0.18	-0.04	0.24										
21 Peer influence	0.03	0.00	0.08	-0.01	0.05	0.01	0.07	0.05	0.07	0.10	0.04	0.07	0.07	0.04	0.03	0.06	0.19	0.12	0.08	0.20									
22 CC policy	0.09	0.16	-0.03	-0.18	-0.08	-0.09	0.01	0.16	-0.11	0.03	0.17	0.25	0.20	0.19	-0.01	-0.06	0.09	0.01	0.25	0.20	0.11								
23 Age	-0.03	-0.16	-0.05	-0.02	0.11	0.05	0.25	-0.06	0.03	-0.04	-0.08	-0.10	-0.15	-0.10	-0.07	-0.17	-0.04	0.06	-0.16	-0.11	-0.10	-0.02							
24 Education	-0.02	0.08	-0.05	-0.05	-0.09	-0.08	0.03	0.10	-0.16	-0.08	0.08	0.09	0.03	0.02	0.02	-0.08	0.01	0.06	0.08	0.03	0.02	0.16	0.18						
25 Members	0.09	-0.06	0.07	-0.01	0.09	0.08	0.03	-0.04	0.02	0.16	0.02	-0.00	-0.02	0.03	0.05	0.05	0.06	0.08	0.03	0.03	0.08	0.06	-0.05	-0.01					
26 Classic	0.05	-0.04	0.01	-0.01	0.07	0.03	-0.07	0.01	0.06	0.06	-0.03	0.01	0.02	0.01	0.02	0.06	-0.06	0.04	-0.06	-0.04	0.02	-0.06	-0.04	-0.02	-0.02				
27 HipHop/Elec.	-0.00	0.03	0.11	0.00	-0.01	-0.02	-0.00	0.05	0.03	0.01	0.04	0.01	0.06	0.04	0.12	0.08	0.12	0.00	0.11	0.06	-0.00	0.02	-0.23	-0.06	-0.10				
28 Comedy	-0.00	0.04	0.03	-0.03	-0.03	-0.01	0.01	0.04	-0.06	0.00	0.04	0.03	-0.01	0.03	0.01	0.01	0.01	-0.02	-0.00	-0.02	-0.03	-0.04	-0.01	0.01	0.01				
29 Europe	0.01	0.13	-0.05	-0.10	-0.13	-0.15	-0.05	0.06	-0.20	-0.11	0.06	0.09	0.13	0.15	0.01	-0.08	0.04	0.02	0.17	0.17	0.02	0.37	-0.00	0.14	-0.02	-0.05	0.07	-0.03	
30 Rest of World	0.03	-0.02	0.10	0.02	0.01	-0.01	-0.00	-0.02	0.02	-0.01	0.04	0.04	-0.00	-0.01	0.00	0.02	0.05	-0.00	-0.03	-0.01	-0.01	-0.08	-0.08	0.00	0.03	-0.01	-0.01	-0.02	

Spearman correlations. All correlations highlighted bold which are significant at $p < 0.1$ (10% level) * N = 755 ** N = 345

Table A.18 Correlation matrix of independent variables

	0% → > 0% CC		< 50% → > 50% CC		< 100 → 100% CC	
	Coeff.	Std. Err.	Coeff.	Std. Err.	Coeff.	Std. Err.
Marketing	0.22**	0.09	0.87	0.69	0.39	0.06
Idealism	0.74***	0.13	0.64***	0.09	0.28***	0.08
Collaboration	0.42***	0.10	0.35***	0.74	0.12*	0.06
Fin./contr. loss	-0.50***	0.11	-0.42***	0.76	-0.30***	0.07
Fin. orien.	-0.00	0.09	-0.11*	0.06	-0.12**	0.05
Comm. value	-0.71	0.10	-0.02	0.07	-0.15***	0.06
Exper. music	-0.02*	0.13	-0.03***	0.01	-0.03***	0.01
Exper. CC	0.25***	0.06	0.16***	0.04	0.08***	0.03
Copy. scope	0.45**	0.21	0.23*	0.12	-0.00	0.11
Copy. dur	-0.19	0.21	0.05	0.13	0.14	0.12
Easy	0.35	0.11	0.04	0.09	0.05	0.08
Precise	0.64	0.15	-0.03	0.09	0.07	0.08
Share CC req.	20.14*	11.33	-0.04	0.51	-0.53	0.42
Share CC forb.	-1.18	0.77	-2.18***	0.78	-0.63	1.00
Bus. part. pos.	0.65	0.45	0.21	0.23	-0.20	0.17
Bus. part. neg.	-0.45	0.33	-0.34	0.27	-0.07	0.27
Consume CC	0.27	0.21	0.08	0.14	0.06	0.13
Word of Mouth	0.69	0.42	0.39**	0.17	0.17	0.13
Peer influence	-0.04	0.29	0.38	0.23	0.12	0.17
CC Policy	0.16	0.46	0.78***	0.17	0.72***	0.13
Age	0.00	0.01	0.02**	0.01	0.02***	0.01
Education	-0.00	0.02	-0.00	0.02	-0.01	0.01
Members	-0.02	0.02	-0.01	0.01	-0.03	0.02
Classic	0.56**	0.27	0.10	0.17	0.06	0.15
HipHop/Elec.	0.55**	0.24	-0.11	0.15	0.00	0.13
Comedy	2.14***	0.50	-0.18	0.96	0.18	0.59
Europe	0.20	0.21	0.34**	0.15	0.34***	0.13
Rest of World	0.63	0.42	0.77***	0.24	0.49**	0.19
Constant	0.26	0.73	-0.74	0.58	-0.92*	0.52
Observations	755					
Pseudo R ²	0.3742					
Wald test	$\chi^2(84)=1918.66,$					
	$p = 0.000$					

* p < 0.1, ** p < 0.05, *** p < 0.01

Table A.19 Multivariate analysis of future share of CC-licensed music
(*FutureShareCC*) – Generalized Ordered Probit

A.5 Quantifying the adoption of Creative Commons licenses for music

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 CC																	
2 Free	0.12																
3 Purchase	-0.01	-0.38															
4 Date	0.01	-0.21	0.13														
5 TotalSongs	-0.01	-0.09	0.05	0.12													
6 Electronica	0.11	0.05	0.02	-0.05	-0.03												
7 Classical	0.03	0.00	0.02	0.01	0.02	-0.03											
8 Comedy Talk	0.03	0.03	-0.00	0.00	0.01	-0.03	-0.01										
9 Alternative MetalRock	0.05	0.10	-0.01	-0.04	-0.12	-0.10	-0.03	-0.03									
10 Acoustic JazzLatin	0.02	0.04	0.04	0.02	-0.02	-0.08	-0.03	-0.03	-0.10								
11 Country Pop	-0.00	0.00	0.05	0.02	-0.01	-0.06	-0.02	-0.02	-0.07	-0.06							
12 Instrumentals	-0.06	-0.31	0.00	0.13	0.19	-0.17	-0.05	-0.05	-0.21	-0.17	-0.12						
13 Europe	0.06	0.04	-0.01	-0.05	-0.05	0.18	0.02	-0.00	0.05	0.03	0.00	-0.04					
14 North America	-0.03	-0.06	0.02	-0.15	0.11	-0.11	-0.02	-0.00	-0.04	-0.05	-0.02	0.06	-0.47				
15 South America	0.02	0.03	-0.01	-0.00	-0.01	0.03	0.01	-0.00	0.05	0.06	0.00	-0.04	-0.04	-0.12			
16 Asia Pacific	0.00	0.07	-0.03	0.02	-0.01	0.01	0.01	-0.01	0.01	0.04	0.05	-0.06	-0.09	-0.26	-0.02		
17 Africa	0.01	0.01	-0.00	0.01	-0.01	0.01	-0.00	-0.00	-0.01	0.00	-0.01	-0.01	-0.02	-0.06	-0.01	-0.01	

All correlations highlighted bold which are significant at $p < 0.1$ (10% level)

Table A.20 Correlation matrix of independent variables for multivariate analysis on songs' chart rankings

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1 Previous CC																		
2 Previous Copyright	-0.18																	
3 Free	0.10	-0.07																
4 Purchase	-0.01	0.01	-0.38															
5 Date	0.08	0.11	-0.21	0.13														
6 TotalSongs	0.18	0.59	-0.09	0.05	0.12													
7 Electronica	0.09	-0.07	0.05	0.02	-0.05	-0.03												
8 Classical	0.03	-0.01	0.00	0.02	0.01	0.02	-0.03											
9 Comedy Talk	0.03	-0.02	0.03	-0.00	0.00	0.01	-0.03	-0.01										
10 Alternative MetalRock	0.02	-0.10	0.10	-0.01	-0.04	-0.12	-0.10	-0.03	-0.03									
11 Acoustic JazzLatin	0.02	-0.02	0.04	0.04	0.02	-0.02	-0.08	-0.03	-0.03	-0.10								
12 Country Pop	-0.00	0.00	0.00	0.05	0.02	-0.01	-0.06	-0.02	-0.02	-0.07	-0.06							
13 Instrumentals	-0.03	0.13	-0.31	0.00	0.13	0.19	-0.17	-0.05	-0.05	-0.21	-0.17	-0.12						
14 Europe	0.05	-0.05	0.04	-0.01	-0.05	-0.05	0.18	0.02	-0.00	0.05	0.03	0.00	-0.04					
15 North America	0.01	0.10	-0.06	0.02	-0.15	0.11	-0.11	-0.02	-0.00	-0.04	-0.05	-0.02	0.06	-0.47				
16 South America	0.01	-0.02	0.03	-0.01	-0.00	-0.01	0.03	0.01	-0.00	0.05	0.06	0.00	-0.04	-0.04	-0.12			
17 Asia Pacific	-0.00	0.02	0.07	-0.03	0.02	-0.01	0.01	0.01	-0.01	0.01	0.04	0.05	-0.06	-0.09	-0.26	-0.02		
18 Africa	0.01	-0.00	0.01	-0.00	0.01	-0.01	0.01	-0.00	-0.00	-0.01	0.00	-0.01	-0.01	-0.02	-0.06	-0.01	-0.01	

All correlations highlighted bold which are significant at $p < 0.1$ (10% level)

Table A.21 Correlation matrix of independent variables for multivariate analysis on change in CC usage

A.6 Determining consumers' valuation of CC-licensed music

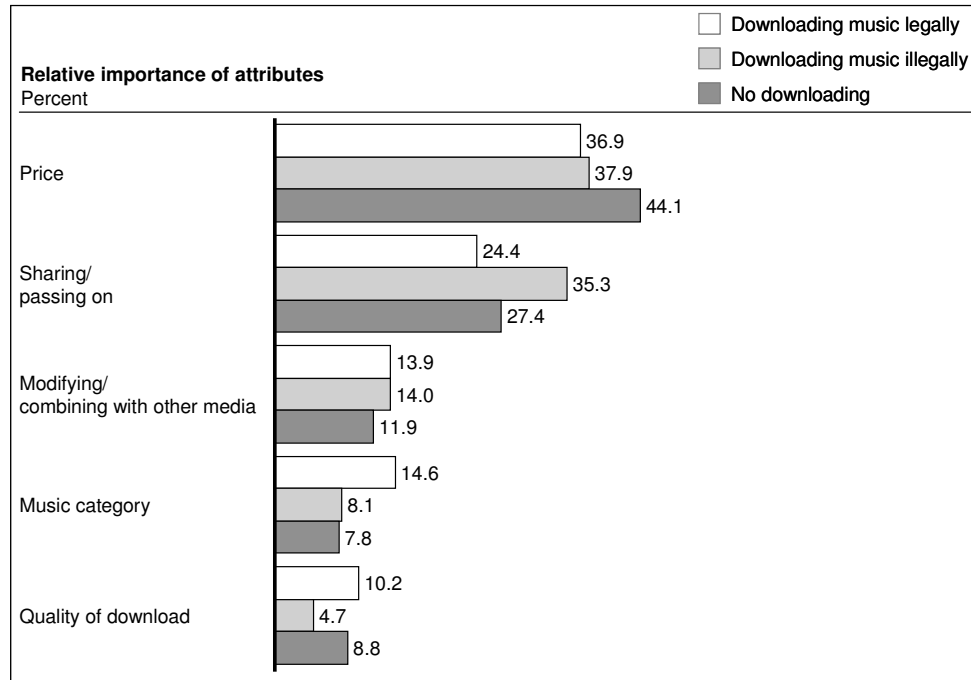


Figure A.6 Relative importance of attributes for participants with different purchasing behavior

Entscheidungsexperiment 1/12

1 Teil: Beschreibung des Experiments -- 2 Teil: 12 Entscheidungsexperimente -- 3 Teil: Ergänzende Fragen

Bitte den Mauszeiger über die unterschiedlichen Wörter, um detaillierter über die einzelnen Eigenschaften informiert zu werden.

	Musiktitel A	Musiktitel B	Musiktitel C
Preis	1,29 Euro	0,99 Euro	0,69 Euro
Tausch und Weitergabe	Maximal 3 mal erlaubt	Unbegrenzt erlaubt	Nicht erlaubt
Bearbeitung und Kombination mit anderen Medien	Erlaubt	Nicht erlaubt	Erlaubt
Musikkategorie	Aktueller Hit	Newcomer	Älterer Titel
Qualität	320 kbit/s	192 kbit/s	192 kbit/s

Bei den drei Musiktiteln handelt es sich jeweils um einen **Singledownload**. Die verschiedenen **Musiktitel sind Dir bekannt** und Du hast, mit Ausnahme der oben genannten Eigenschaften, **gleiches Interesse an einem Kauf**.

Welchen Musiktitel würdest Du wählen?

Musiktitel A
 Musiktitel B
 Musiktitel C

Figure A.7 Choice experiment as presented to survey participants

Attribute	Reference	Parameter value	Coefficient	Standard error
Price	EUR 0.69	EUR 0.99	-0.82***	0.06
		EUR 1.29	-2.37***	0.11
Sharing/ Passing on	Not allowed	Up to 3 times allowed	0.71***	0.07
		Unlimited allowed	1.71***	0.09
Modifying/ Combining with other media	Not allowed	Allowed	0.73***	0.06
Music category	Older song	Rarity	0.46***	0.08
		Newcomer	0.55***	0.07
		Current hit	0.59***	0.07
Quality of download	192 kbit/s	320 kbit/s	0.49***	0.07
Log likelihood	-3182.05			
LL χ^2	838.93			
Observations	12276			
Survey participants	341			

* p < 0.1, ** p < 0.05, *** p < 0.01

Table A.22 Estimation results of mixed logit model

Bibliography

- Abernathy, W., Clark, K. (1985). Innovation: Mapping the winds of creative destruction. *Research Policy* 14(1), 3-22
- Abreu, E. (2001). Behind the Big Blue Wall. *The Industry Standard Magazine*. Retrieved September 30, 2009, from http://www.postfix.org/standard.200101/0_1902_21395-0_00.html
- Adams, G. (2008). Interview with Klaus Heymann. Retrieved July 31, 2009, from <http://www.naxos.com/aboutus.asp?page=interview>
- Adler, M. (1985). Stardom and talent. *American Economic Review* 75(1), 208-212
- Agarwal, R., Prasad, J. (1999). Are Individual Differences Germane to the Acceptance of New Information Technology? *Decision Sciences* 30(2), 361-391
- Ahtiala, P. (2006). The Optimal Pricing of Computer Software and Other Products with High Switching Costs. *International Review of Economics and Finance* 15(2), 202-211
- Akuma (2006). Presseinformation: H² startet MP3-Musikdienst akuma. Retrieved August 15, 2009, from http://www.akuma.de/press/presse_13092006_deutsch.pdf
- ALAI (Association Littéraire et Artistique Internationale) (2006): Memorandum on Creative Commons Licenses. Retrieved June 30, 2009, from http://www.alai.org/documents/Creative_Commons_Licenses.pdf
- Aldrich, H., Auster, E. (1986). Even Dwarfs Started Small: Liabilities of Age and Size and their Strategic Implications. In Cummings, L., Staw, B. (Eds.), *Research in Organizational Behavior*. San Francisco: JAI Press, 165-189.
- Allen, R. (1983). Collective Invention. *Journal of Economic Behavior and Organization* 4, 1-24
- Alexander, P. (1994a), New Technology and Market Structure: Evidence from the Music Recording Industry. *Journal of Cultural Economics* 18(2), 113-123
- Alexander, P. (1994b). Entry Barriers, Release Behavior, and Multi-Product Firms in the Music Recording Industry. *Review of Industrial Organization* 9(1), 85-98
- Alexander, P. (2002). Peer-to-Peer File Sharing: The Case of the Music Recording Industry. *Review of Industrial Organization* 20(2), 151-161
- Alexy, O. (2008). *Free Revealing. How Firms Can Profit from Being Open*. Wiesbaden: Gabler
- Allmusic (2009): Nine Inch Nails: Discography. Retrieved August 15, 2009, from <http://www.allmusic.com/cg/amg.dll?p=amg&sql=11:gifexqr5ld6e~T2>
- Amabile, T. (1983). *The Social Psychology of Creativity*. New York: Springer
- Amabile, T. (1989). *Growing up Creative: Nurturing a Lifetime of Creativity*. New York: Crown
- Amabile, T., Hill, K., Hennessey, A., Tighe, E. (1994). The Work Preference Inventory: Assessing Intrinsic and Extrinsic Motivational Orientations. *Journal of Personality and Social Psychology* 66(5), 950-967

- Amazon (2009): The Best MP3 Albums of 2008, Retrieved June 20, 2009, from http://www.amazon.com/b/ref=amb_link_7866952_18?ie=UTF8&node=1240544011
- Amit, R., Zott, C. (2001). Value Creation in E-business. *Strategic Management Journal* 22(6-7), 493-520
- Anderson, C. (2004). The Long Tail. *Wired* 12 (10). Retrieved July 21, 2009, from <http://www.wired.com/wired/archive/12.10/tail.html>
- Anderson, N. (2006). Making Money Selling Music without DRM: The Rise of eMusic. *Ars Technica*. Retrieved September 30, 2009, from <http://arstechnica.com/gadgets/news/2006/05/emusic.ars>
- Andersen, B., Kozul-Wright, R., Kozul-Wright, Z. (2007) Rents, Rights N'Rhythm: Cooperation, Conflict and Capabilities in the Music Industry. *Industry and Innovation* 14(5), 513-540
- Anderson, N. (2008a): Will Fans Pay? Reznor Opens Books on Net Music Experiment. *Ars Technica*. Retrieved September 29, 2009, from <http://arstechnica.com/old/content/2008/01/gettin-niggy-with-it-reznor-releases-numbers-for-online-experiment.ars>
- Anderson, N. (2008b): Reznor Makes \$750,000 Even When the Music is Free. *Ars Technica*. Retrieved September 29, 2009, from <http://arstechnica.com/old/content/2008/03/reznor-makes-750000-even-when-the-music-is-free.ars>
- Anderson, N. (2009). Free Nine Inch Nails Albums Top 2008 Amazon MP3 Sales Charts. *Ars Technica*. Retrieved May 1, 2009, from <http://arstechnica.com/media/news/2009/01/free-nine-inch-nails-albums-top-2008-amazon-mp3-sales-charts.ars>
- Anderson, P., Tushman, M. (1990). Technological Discontinuities and Dominant Designs: A Cyclical Model of Technological Change. *Administrative Science Quarterly* 35(4), 604-633
- Anding, M., Hess, T. (2004). Modularization, Individualization and the First-Copy-Cost-Effect – Shedding new light on the Production and Distribution of Media Content. *Working Paper*. Retrieved September 28, 2009, from http://www.wim.bwl.uni-muenchen.de/download/epub/ab_2004_01.pdf
- Andrews, R., Ainslie, A., Currim, I. (2002). An Empirical Comparison of Logit Choice Models with Discrete Versus Continuous Representations of Heterogeneity. *Journal of Marketing Research* 39, 479-487
- AP Worldstream (2001). Musikindustrie Leidet Immer Stärker Unter CD-Kopien. Hersteller Kündigen Kopierschutz an. April 19, 2001
- Apple (2007). iTunes Plus Now Offers Over Two Million Tracks at Just 99 Cents. Retrieved August 13, 2009, from <http://www.apple.com/pr/library/2007/10/17itunes.html>
- Appleyard, M. (1996). How Does Knowledge Flow? Interfirm Patterns in the Semiconductor Industry. *Strategic Management Journal* 17, 137-154
- Ardichvili, A., Page, V., Wentling, T. (2003). Motivation and Barriers to Participation in Virtual Knowledge-Sharing Communities of Practice. *Journal of Knowledge Management* 7 (1), 64-77
- Armstrong, J., Overton, T. (1977). Estimating Nonresponse Bias in Mail Surveys. *Journal of Marketing Research* 14(3), 396-402

- Arnab, A., Hutchison, A. (2005). Fairer Usage Contracts for DRM. *Proceedings of the Fifth ACM Workshop on Digital Rights Management*, 1-7
- Arora, A. (1997). Patents, Licensing, and Market Structure in the Chemical Industry. *Research Policy* 26(4-5), 391-403
- Arora, A., Ceccagnoli, M. (2006). Patent Protection, Complementary Assets, and Firms' Incentives for Technology Licensing. *Management Science* 52(2), 293-308
- Arora, A., Fosfuri, A. (2000). The Market for Technology in the Chemical Industry: Causes and Consequences. *Revue d'Economie Industrielle* 92, 317-343
- Arora, A., Fosfuri, A., Gambardella, A. (2001). Markets for Technology and their Implications for Corporate Strategy. *Industrial and Corporate Change* 10(2), 419-451
- Arrow, K. (1962). Economic Welfare and the Allocation of Resources for Invention. In Nelson, R. (ed.), *The Rate and Direction of Inventive Activity*. Princeton: Princeton University Press, 609-630
- Arundel, A. (2001). The Relative Effectiveness of Patents and Secrecy for Appropriation. *Research Policy* 30(4), 611-624
- Arundel, A., Patel, P. (2003). Strategic Patenting: Background Report for the Trend Chart Policy Benchmarking Workshop. New trends in IPR Policy
- Åstebro, T., Dahlin, K. (2005). Opportunity Knocks. *Research Policy* 34(9), 1404-1418
- Audretsch, D., Feldman, M. (1996). R&D Spillovers and the Geography of Innovation and Production. *American Economic Review* 86(3), 630-640
- Australian Copyright Council (2006): Information Sheet. Creative Commons Licenses. Retrieved June 25, 2009, from <http://www.copyright.org.au/g094.pdf>
- Babe, R. (1995). *Communication and the Transformation of Economics: Essays in Information, Public Policy, and Political Economy*. Boulder: Westview Press
- Bach, D. (2004). The Double Punch of Law and Technology: Fighting Music Piracy or Remaking Copyright in a Digital Age? *Business and Politics* 6(2), 1-35
- Backhaus, K., Erichson, B., Plinke, W., Weiber, R. (2006). *Multivariate Analysemethoden*. Heidelberg: Springer
- Bagozzi, R., Dholakia, U. (2006). Open Source Software User Communities: A Study of Participation in Linux User Groups. *Management Science* 52(7), 1099-1115
- Bakker, P. (2005). File-sharing – fight, ignore or compete. Paid download services vs. P2P-networks. *Telematics and Informatics* 22(1-2), 41-55
- Bakos, Y., Brynjolfsson, E. (1999). Bundling Information Goods: Pricing, Profits and Efficiency. *Management Science* 45(12), 1613-1630
- Bakos, J., Brynjolfsson, E., Lichtman, G. (1999). Shared Information Goods. *Journal of Law and Economics* 42(1), 117-155
- Baldini, N., Grimaldi, R., Sobrero, M. (2007). To Patent or Not to Patent? A Survey of Italian Inventors on Motivations, Incentives, and Obstacles to University Patenting. *Scientometrics* 70(2), 333-354
- Baldwin, C., Clark, K. (2000). *Design Rules: The Power of Modularity*. Cambridge: MIT Press

- Baldwin, C., Clark, K. (2006). The Architecture of Participation: Does Code Architecture Mitigate Free Riding in the Open Source Development Model? *Management Science* 52(7), 1116-1127
- Baldwin, C., Hienert, C., von Hippel, E. (2006). How User Innovations Become Commercial Products: A Theoretical Investigation and Case Study. *Research Policy* 35(9), 1291-1313
- Bamert, T., Meier-Bickel, T., Rüdert, C. (2005). Pricing Music Downloads: A Conjoint Study. *Proceedings of the 2005 European Academy of Management Annual Conference*
- Banfi, S., Frasi, M., Filippini, M., Jakob, M. (2008). Willingness to Pay for Energy-Saving Measures in Residential Buildings. *Energy Economics* 30(2), 503-516
- Bangemann, E. (2007). Sony BMG's chief anti-piracy lawyer: "Copying" music you own is "stealing". *Ars Technica*. Retrieved on July 1, 2009, from <http://arstechnica.com/tech-policy/news/2007/10/sony-bmgs-chief-anti-piracy-lawyer-copying-music-you-own-is-stealing.ars>
- Bar-Gill, O., Parchomovsky, G. (2003). The Value of Giving Away Secrets. *Virginia Law Review* 89(8), 1857-1895
- Barley, S. (1986). Technology as an Occasion for Structuring: Evidence from Observations of CT Scanners and the Social Order of Radiology Departments. *Administrative Science Quarterly* 31(1), 78-108
- Barnett, M. (2004). How Much Does Industry Strategy Matter? Organizational Field Dynamics and Cooperation Among Rivals. *Academy of Management Best Conference Paper 2004*
- Barney, J. (1986). Organization Culture: Can It Be a Source of Sustained Competitive Advantage? *Academy of Management Review* 11(3), 656-665
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management* 17(1), 99-120
- Baskerville, D. (1995). *Music Business Handbook and Career Guide*. London: Sage
- Bates, B. (1988). Information as an Economic Good: Sources of Individual and Social Value. In Mosco, V., Wasko, J. (eds.), *The Political Economy of Information*. Madison: University of Wisconsin Press, 76-94
- Bates, B. (1990). Information as an Economic Good: A Re-evaluation of Theoretical Approaches. In Ruben, B., Lievrouw, L. (eds.), *Mediation, Information, and Communication. Information and Behavior*. New Brunswick: Transaction, 379-394
- Bates, B. (2008). Commentary: Value and Digital Rights Management – A Social Economics Approach. *Journal of Media Economics* 21(1), 53-77
- Bates J., Di Bona C., Lakhani K., Wolf B. (2002). *The Boston Consulting Group Hacker Survey*
- Baum, C. (2006). *An Introduction to Modern Econometrics Using Stata*. College Station: Stata Press
- Becker, J., Clement, M. (2006). Dynamics of Illegal Participation in Peer-to-Peer Networks – Why Do People Illegally Share Media Files? *Journal of Media Economics* 19(1) 7-32

- Becker, E., Günnewig, D. (2003). Getting Insights: DRM Conferences 2000 and 2002. In Becker, E., Buhse, W., Günnewig, D., Rump, N. (eds.), *Digital Rights Management*. Berlin: Springer, 655-684
- Behlendorf, B. (1999). Open Source as a Business Strategy. In DiBona, C., Ockman, S., Stone, M. (eds.), *Open Sources: Voices from the Open Source Revolution*. Sebastopol: O'Reilly, 149-170
- Belleflamme, P. (2003). Pricing Information Goods in the Presence of Copying. In Gordon, W., Watt, R. (eds.), *The Economics of Copyright. Developments in Research and Analysis*. Cheltenham: Edward Elgar Publishers
- Benkler, Y. (2002). Coase's Penguin, or, Linux and The Nature of the Firm. *The Yale Law Journal* 112(3), 369-446
- Benkler, Y. (2006). *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. New Haven: Yale University Press
- Bently, L., Sherman, B. (2001). *Intellectual Property Law*. Oxford: Oxford University Press
- Bergquist, M., Ljungberg, J. (2001). The Power of Gifts: Organizing Social Relationships in Open Source Communities. *Information Systems Journal* 11(4), 305-320
- Bergs, S. (1981). *Optimalität bei Clusteranalysen: Experiment zur Bewertung numerischer Klassifikationsverfahren*. Unpublished PhD thesis, Westfälische Wilhelms-Universität Münster
- Berliner Zeitung (2001). Wahre Geräusch-Massaker. Kopiergeschützte Musik-CDs können Lautsprecher und Hi-Fi-Anlagen schädigen. August 17, 2001
- Bernhardt, W., Krasser, R. (1986). *Lehrbuch des Patentrechts. Recht der Bundesrepublik Deutschland, Europäisches und Internationales Patentrecht*. München: Beck-Verlag
- Berry, M. (2006): The Global Digital Commons and Other Unlikely Tales. Retrieved September 15, 2009, from http://www.opendemocracy.net/arts-commons/tales_3668.jsp
- Besen, S. (1986). Private Copying, Reproduction Costs, and the Supply of Intellectual Property. *Information Economics and Policy* 2(1), 5-22
- Besen, S., Kirby, S. (1989). Private Copying, Appropriability, and Optimal Copying Royalties. *Journal of Law and Economics* 32(2), 255-280
- Besen, S., Raskind, L. (1991). An Introduction to the Law and Economics of Intellectual Property. *The Journal of Economic Perspectives* 5(1), 3-27
- Bettig, R. (1996). *Copyrighting Culture: The Political Economy of Intellectual Property*. Boulder: Westview Press
- Bettis, R., Prahalad, C. (1995). The Dominant Logic: Retrospective and Extension. *Strategic Management Journal* 16(1), 5-14
- Bhattacharjee, S. Gopal, R., Lertwachara, K., Marsden, J. (2006a). Whatever Happened to Payola? An Empirical Analysis of Online Music Sharing. *Decision Support Systems* 42(1), 104-120
- Bhattacharjee, S., Gopal, R., Lertwachara, K., Marsden, J. (2006b). Impact of Legal Threats on Individual Behavior: An Analysis of Music Industry Actions and Online Music Sharing. *Journal of Law and Economics*, 49(1), 91-114

- Bhattacharjee, S., Gopal, R., Marsden, J., Sankaranarayanan, R. (2009). To Theme or Not to Theme: Can Theme Strength be the Music Industry's "Killer App"? *Decision Support Systems*, forthcoming
- Bhattacharjee S, Gopal R., Sanders G. (2003). Digital Music and Online Sharing: Software Piracy 2.0? *Communications of the ACM* 46(7), 107-11
- Biddle, P., England, P., Peinado, M., Willman, B. (2002). The Darknet and the Future of Content Distribution. *Proceedings of the 2002 ACM Workshop on Digital Rights Management*
- Bildstein, B. (2007). Finding and Quantifying Australia's Online Commons. Retrieved June 13, 2009, from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.108.1335&rep=rep1&type=pdf>
- Bildstein, B. (2008). New Methodologies for Quantifying Licence-Based Commons on the Web. *Working Paper*. Retrieved on May 23, 2009, from <http://law.bepress.com/cgi/viewcontent.cgi?article=1128&context=unswwps>
- Bitzer, J., Schrettl, W., Schröder, P. (2007). Intrinsic Motivation in Open Source Software Development. *Journal of Comparative Economics* 35(1), 160-169
- Blind, K., Edler, J., Frietsch R., Schmoch, U. (2006). Motives to Patent: Empirical Evidence from Germany, *Research Policy* 35(5), 655-672
- BMAS (Bundesministerium für Arbeit und Soziales) (2000). Bericht der Bundesregierung über die soziale Lage der Künstlerinnen und Künstler in Deutschland. Retrieved on September 2, 2009, from http://www.bmas.de/portal/1982/property=pdf/bericht__der__bundesregierung__u__510.pdf
- Bockstedt, J., Kauffman, R., Riggins, F. (2006). The Move to Artist-led Online Music Distribution: Explaining Structural Changes in the Digital Music Market. *International Journal of Electronic Commerce* 10(3), 7-38
- Böhle, K. (2006). DRM-Systeme – Optionen der Technikgestaltung. In Forschungszentrum Karlsruhe, *Technologiefolgenabschätzung. Nr. 2. 15. Jahrgang*, 52-62
- Bohn, P. (2006a). Attitudes Towards DRM in the Independent Music Sector. In Böhle, K. (ed.): *Indicare Monitor. Volume 2*. Retrieved August 26, 2009, from http://www.indicare.org/tiki-download_file.php?fileId=178, 192-196
- Bohn, P. (2006b). Intrusive DRM. The cases of Sony BMG, StarForce and Microsoft. In: Böhle, K. (ed.): *Indicare Monitor. Volume 2*. Retrieved August 26, 2009, from http://www.indicare.org/tiki-download_file.php?fileId=178, 272-274
- Bohn, P. (2006c). Akzeptanz von Digital Rights Management – Ergebnisse zweier Konsumentenbefragungen. In Forschungszentrum Karlsruhe, *Technologiefolgenabschätzung. Nr. 2. 15. Jahrgang*, 41-46
- Boldrin M., Levine D. (2004). The Case Against Intellectual Monopoly. *International Economic Review* 45(2), 327-350
- Bonaccorsi, A., Giannangeli, S., Rossi, C. (2006). Entry Strategies under Competing Standards: Hybrid Business Models in the Open Source Software Industry. *Management Science* 52(7), 1085-1098
- Bonaccorsi, A., Rossi, C. (2003). Why Open Source Software Can Succeed? *Research Policy* 32(7), 1243-1258

- Bonaccorsi, A., Rossi, C., (2006). Comparing Motivations of Individual Programmers and Firms to Take Part in the Open Source Movement: From Community to Business. *Knowledge Technology and Policy* 18(4), 40-64
- Borcherding, T., Filson, D. (2002). Group Consumption, Free-riding, and Informal Reciprocity Agreements. *Journal of Economic Behavior and Organization* 47(3), 237-257
- Bortz, J., Döring, N. (2006). *Forschungsmethoden und Evaluation für Human- und Sozialwissenschaftler*. Berlin: Springer.
- Bowman, J. (2009). The Eco-Patent Commons: Caring Through Sharing. *Wipo Magazine*. Retrieved on September 12, 2009, from http://www.wipo.int/wipo_magazine/en/2009/03/article_0004.html
- Boyle, J. (2003). The Second Enclosure Movement and the Construction of the Public Domain. *Law and Contemporary Problems* 66(1), 33-74
- Breidert, C., Hahsler, M. (2006). Adaptive Conjoint Analysis for Pricing Music Downloads. *Proceedings of the 30th Annual Conference of the Gesellschaft für Klassifikation e.V., Freie Universität Berlin*
- Bresnahan, T. (1985). Post-Entry Competition in the Plain Paper Copier Market. *The American Economic Review* 75(2), 15-19
- Breyer, S. (1970). The Uneasy Case for Copyright: A Study of Copyright in Books, Photocopies, and Computer Programs. *Harvard Law Review* 84(2), 281-351
- Briegmann, F., Jakob, H. (2005). Management der Wertschöpfungskette. In Clement, M., Schusser, O. (eds.), *Ökonomie in der Musikindustrie*. Wiesbaden: Deutscher Universitäts-Verlag, 83-94
- Brockhoff, K. (1999). *Forschung und Entwicklung: Planung und Kontrolle*. München: Oldenburg Verlag
- Brown, G. (2005): Magnatune. Retrieved on September 12, 2009, from <http://creativecommons.org/audio/magnatune>
- Brownstone, D., Train, K. (1999). Forecasting New Product Penetration with Flexible Substitution Patterns. *Journal of Econometrics* 89(1), 109-129
- Bruno, A. (2007). Charting The Course. *Billboard*. March 17, 2007
- Brynjolfsson, E., Kemerer, C. (1996). Network Externalities in Microcomputer Software: An Econometric Analysis of the Spreadsheet Market. *Management Science* 42(12), 1627-47
- Buckman, J. (2004): Magnatune, an Open Music Experiment. *LinuxJournal*. Retrieved on July 25, 2009, from <http://www.linuxjournal.com/article/7220>
- Buhse, W. (2002). The Role of Digital Rights Management as a Solution for Market Uncertainties for Mobile Music. *The International Journal on Media Management* 4(3), 172-179
- Buhse, W. (2004). *Wettbewerbsstrategien im Umfeld von Darknet und Digital Rights Management – Szenarien und Erlösmodelle für Onlinemusik*. Wiesbaden: Deutscher Universitäts-Verlag
- Bundesverband Musikindustrie (2007). Phonoverband: Apple-Vorstoß zu DRM “scheinheilig”. Retrieved on June 25, 2009, from http://www.musikindustrie.de/recht_aktuell_einzel/back/59/page/3/news/phonoverband-apple-vorstoss-zu-drm-scheinheilig/

- Bundesverband Musikindustrie (2009). Jahreswirtschaftsbericht 2008. Retrieved August 26, 2009, from http://www.musikindustrie.de/uploads/media/ms_branchendaten_jahreswirtschaftsbericht_2008_01.pdf
- Burke, A. (1997). Small Firm Start-up by Composers in the Recording Industry. *Small Business Economics* 9(6), 463-471
- Burnett, R. (1990). Concentration and Diversity in the International Phonogram Industry. *Communication Research* 19(6), 749-769
- Burnett, R. (1996). *The Global Jukebox: The International Music Industry*. London: Routledge
- Business Software Alliance (2006). Third Annual BSA and IDC Global Software Piracy Study. May 2006. Retrieved September 22, 2009, from <http://origin.bsa.org/globalstudy/upload/2005%20Piracy%20Study%20-%20Official%20Version.pdf>
- Business Week (2001): Q&A: EMI's Digital-Music Maven. Retrieved July 11, 2009, from http://www.businessweek.com/technology/content/jun2001/tc20010621_567.htm
- Buxmann, P., Pohl, G., Johnscher, P., Strube, J. (2005). Strategien für den Digitalen Musikmarkt: Preissetzung und Effektivität von Maßnahmen gegen Raubkopien. *Wirtschaftsinformatik* 47(2), 118-125
- Buxmann, P., Strube, J., Pohl, G. (2007). Cooperative Pricing in Digital Value Chains – the Case of Online Music. *Journal of Electronic Commerce Research* 8(1), 32-40
- Bygrave, L. (2002). The Technologisation of Copyright: Implications for Privacy and Related Interests. *European Intellectual Property Review* 24(2), 51-57
- Calinski, T., Harabasz, J. (1974). A Dendrite Method for Cluster Analysis. *Communications in Statistics* 3(1), 1-27
- Carey, M., Wall, D. (2001). MP3: The Beat Bytes Back. *International Review of Law Computers and Technology* 15(1), 35-58
- Carpenter, G., Nakamoto, K. (1990). Competitive Strategies for Late Entry into a Market with a Dominant Brand. *Management Science* 36(10), 1268-1278
- Caves, R. (2000): *Creative Industries*. New York: The Free Press
- CDT (Center for Democracy and Technology) (2006) Evaluating DRM: Building a Marketplace for the Convergent World. Retrieved September 14, 2009, from <http://www.cdt.org/copyright/20060907drm.pdf>
- Chaffin, J., Waters, R. (2007). The Price of Rights: Old and New Media Tangle over Splitting the Digital Spoils. *Financial Times*. February 16, 2007
- Chapple, S., Garofalo, R. (1977) *Rock'n'Roll Is Here to Pay: The History and Politics of the Music Industry*. Chicago: Nelson-Hall
- Cheliotis, G. (2007): Creative Commons Statistics from the CC-Monitor Project. Presentation at the iCommons Summit. Retrieved on May 23, 2009, from http://wiki.creativecommons.org/images/7/71/Statistics-from-the-CC-Monitor-project_eng.pdf
- Cheliotis, G. (2009): From Open Source to Open Content: Organization, Licensing and Decision Processes in Open Cultural Production. *Decision Support Systems* 47(3), 229-244
- Cheliotis, G., Chik, W., Guglani, A., Tayi, G. (2008). Taking Stock of the Creative Commons Experiment. *35th Research Conference on Communication, Information*

- and Internet Policy*. Retrieved on August 29, 2009, from http://wiki.creativecommons.org/images/7/71/Taking-stock-of-the-creative-commons-experiment_eng.pdf
- Cheng, H., Sims, R., Teegen, H. (1997). To Purchase or to Pirate Software: An Empirical Study. *Journal of Management Information Systems* 13(4), 49-60
- Cheng, S., Rambhia, A. (2003): DRM and Standardization – Can DRM be Standardized? In Becker, E., Buhse, W., Günnewig, D., Rump, N. (eds.), *Digital Rights Management*. Berlin: Springer, 162-177
- Chesbrough, H. (2003a). The Era of Open Innovation. *MIT Sloan Management Review* 44(3), 35-41
- Chesbrough, H. (2003b). *Open Innovation – a New Imperative for Creating and Profiting from Technology*. Boston: Harvard Business School Press
- Chesbrough, H., Rosenbloom, R. (2002). The Role of the Business Model in Capturing Value from Innovation: Evidence from Xerox Corporation's Technology Spinoff Companies. *Industrial and Corporate Change* 11(3), 529-555
- Chesbrough, H., Vanhaverbeke, W., West, J. (2006). *Open Innovation: Researching a New Paradigm*. Oxford: Oxford University Press
- Chevalier, J., Mazylin, D. (2006). The Effect of Word Of Mouth on Sales: Online Book Reviews. *Journal of Marketing Research* 43(9), 345-354
- Chow, C., Deng, F., Ho, J. (2000). The Openness of Knowledge Sharing within Organizations: A Comparative Study of the United States and the People's Republic of China. *Journal of Management Accounting Research* 12(1), 65-95
- Christensen, C. (1997). *The Innovator's Dilemma*. Boston: Harvard Business School Press
- Christensen, C., Bower, J. (1996). Customer Power, Strategic Investment, and the Failure of Leading Firms. *Strategic Management Journal* 17(3), 197-218
- Christensen, C., Rosenbloom, R. (1995). Explaining the Attacker's Advantage: Technological Paradigms, Organizational Dynamics, and the Value Network. *Research Policy* 24(2), 233-257
- Christensen, J., Olesen, M., Kjaer, J. (2005). The Industrial Dynamics of Open Innovation: Evidence from the Transformation of Consumer Electronics. *Research Policy* 34(10), 1533-1549
- Christianen, M. (1995). Cycles in Symbol Production? A New Model to Explain Concentration and Diversification in the Music Industry. *Popular Music* 14(1), 55-93
- Christman, E. (2007) Digital Developments Could be Tipping Point for MP3. Reuters. Retrieved August 3, 2009, from <http://www.reuters.com/article/technologyNews/idUSN0132743320071201>
- Church, J., Gandal, N. (1992). Network Effects, Software Provision and Standardization. *Journal of Industrial Economics* 40(1), 85-103
- Churchill Jr., G. (1979). A Paradigm for Developing Better Measures of Marketing Constructs. *Journal of Marketing Research* 16, 64-73
- Cialdini, R., Trost, M. (1998). Social Influence, Social Norms, Conformity, and Complicity. In Gibert, D., Lindzey, G. (eds), *The Handbook of Social Psychology* 2. New York: McGraw-Hill, 151-192

- Clement, M. (2003). Lessons from Content-for-Free Distribution Channels. In Becker, E., Buhse, W., Günnewig, D., Rump, N. (eds.), *Digital Rights Management*. Berlin: Springer, 321-333
- Clement, M., Engh, M., Thielmann, B. (2003): Innovative Product- and Customer Retention Strategies in the Music Business. *The International Journal on Media Management* 5(3), 190-198
- Clement, M.; Schusser, O. (2006). Marketing-Strategien für die Musikindustrie im Zeitalter der Digitalisierung. *Zeitschrift für betriebswirtschaftliche Forschung* 58 (12), 1081-1104
- Clemons, E., Gu, B., Lang, K. (2002). Newly Vulnerable Markets in an Age of Pure Information Products: An Analysis of Online Music and News. *Journal of Management Information Systems* 19(3), 17-41
- CNN (2004): 12-year-old Settles Music Swap Lawsuit. Retrieved July 8, 2009, from <http://www.cnn.com/2003/TECH/internet/09/09/music.swap.settlement/>
- Cohen, J. (2003). DRM and Privacy. *Communications of the ACM* 46(4), 46-49
- Cohen, N. (2007): Use My Photo? Not Without Permission. *New York Times*. Retrieved June 14, 2009, from <http://www.nytimes.com/2007/10/01/technology/01link.html>
- Cohen, W., Goto, A., Nagata, A., Nelson, R., Walsh, J. (2002). R&D Spillovers, Patents and the Incentives to Innovate in Japan and the United States, *Research Policy* 31(8), 1349-1367
- Cohen, W., Levinthal, D. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly* 35(1), 128-152
- Cohen, W., Nelson, R., Walsh, J. (2000). Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not). *NBER Working Paper No. W7552*
- ComicRadioShow (2007): Pornophonique – Das Interview. Retrieved October 1, 2009, from <http://www.comicradioshow.com/Article2541.html>
- Computerwoche (2001). Trotz Kopierschutz bei Musik-CDs: Eine “Sicherheitskopie” geht immer. September 7, 2001
- Comscore (2007). For Radiohead Fans, Does “Free” + “Download” = “Freeload”? Retrieved June 29, 2009, from http://www.comscore.com/Press_Events/Press_Releases/2007/11/Radiohead_Downloads
- Conner, K., Rumelt, R. (1991). Software Piracy: An Analysis of Software Protection Strategies. *Management Science* 37(2), 125-139
- Connolly, M., Krueger, A. (2006). Rockonomics – The Economics of Popular Music. In Ginsburgh, V., Throsby, D. (eds.), *Handbook of the Economics of Arts and Culture*. Amsterdam: Elsevier Science, 667-720
- Contactmusic (2009): Trent Reznor Urges Musicians to Ditch Labels. Retrieved September 26, 2009, from http://www.contactmusic.com/news.nsf/article/reznor%20urges%20musicians%20to%20ditch%20labels_1099985
- Cordaro, G. (2007): Zymogen.Net. Italian Netlabels Grow Up. *Digicult.it*. Retrieved on June 15, 2009, from <http://www.digicult.it/digimag/article.asp?id=1047>
- Corey, E., Hollenbeck, G., Ingols, C. (1990). Project Management. In Corey, E. (ed.), *MBA Field Studies: A Guide for Students and Faculty*. Boston: Harvard Business School Publishing Division, 1-19

- Cowen T., Tabarrok A. (2000). An Economic Theory of Avant-garde and Popular Art, or High and Low Culture. *Southern Economic Journal* 67(2), 232-233
- Cox, T., Lobel, S., McLeod, P. (1991). Effects of Ethnic Group Cultural Differences on Cooperative Versus Competitive Behavior on a Group Task. *Academy of Management Journal* 34(4), 827-847
- Coyle, J., Gould, S., Gupta, P. Gupta. R. (2009). "To Buy or to Pirate": The Matrix of Music Consumers' Acquisition-mode Decision-making. *Journal of Business Research* 62(10), 1031-1037
- Creative Commons (2006): Pearl Jam Music Video unter CC. Retrieved July 30, 2009, from <http://www.creativecommons.ch/blog/3-allgemein/25-pearl-jam-music-video-unter-cc?format=pdf>
- Creative Commons (2007). History. Retrieved July 15, 2009, from <http://wiki.creativecommons.org/History>
- Creative Commons (2008). Jamendo Study. Retrieved August, 2, 2009, from http://wiki.creativecommons.org/Jamendo_Study
- Creative Commons (2009a). Legal Concepts. Retrieved August 2, 2009, from http://wiki.creativecommons.org/Legal_Concepts
- Creative Commons (2009b): Metrics. Retrieved August 2, 2009, from <http://wiki.creativecommons.org/Metrics>
- Creative Commons (2009c): Frequently Asked Questions. Retrieved August 2, 2009, from http://wiki.creativecommons.org/Frequently_Asked_Questions
- Creative Commons (2009d): Nine Inch Nails Ghosts I-IV. Retrieved August 2, 2009, from http://wiki.creativecommons.org/Nine_Inch_Nails_Ghosts_I-IV
- Creative Commons (2009e). Content Directories. Retrieved June 1, 2009, from http://wiki.creativecommons.org/Content_Directories
- Creative Commons (2009f). About Licenses. Retrieved August 2, 2009, from <http://creativecommons.org/about/licenses>
- Creative Commons (2009g). Jurisdiction Comparison. Retrieved August 2, 2009, from http://monitor.creativecommons.org/Jurisdiction_Comparison
- Creative Commons (2010). Attribution 3.0 Unported. Legal Code. Retrieved March 5, 2010, from <http://creativecommons.org/licenses/by/3.0/legalcode>
- Cruz, P. (2007). U.S. Top Selling Computer Hardware for January 2007. *Bloomberg*. Retrieved December 1, 2009, from <http://www.bloomberg.com/apps/news?pid=conewsstory&refer=conews&tkr=AAPL:US&sid=ap0bqJw2VpwI>
- Curien N., Laffond G., Lainé J., Moreau F. (2004). Towards A New Business Model for the Music Industry: Accomodating Piracy Through Ancillary Products. *Mimeo, Laboratoire d'Économétrie, Conservatoire National des Arts et Métiers*
- Currah, A. (2007). Hollywood, the Internet and the World: A Geography of Disruptive Innovation. *Industry and Innovation* 14(4), 359-384
- Cusumano, M., Mylonadis, Y., Rosenbloom, R. (1992). Strategic Maneuvering and Mass Market Dynamics: the Triumph of VHS over Beta. *Business History Review* 66(1), 51-94
- Dahl, M., Pedersen, C. (2004). Knowledge Flows through Informal Contacts in Industrial Clusters: Myth or Reality? *Research Policy* 33(10), 1673-1686

- Dahlander, L. (2005). Appropriation and Appropriability in Open Source Software. *International Journal of Innovation Management* 9(3), 259-285
- Dahlander, L., Magnusson, M. (2005). Relationships between Open Source Software Companies and Communities: Observations from Nordic Firms. *Research Policy* 34(4), 481-493
- Dahlander, L., Wallin, M. (2006). A Man on the Inside: Unlocking Communities as Complementary Assets. *Research Policy* 35(8), 1243-1259
- Dahlin, K., Taylor, M., Fichman, M. (2004). Today's Edisons or Weekend Hobbyists: Technical Impact and Success of Inventions by Independent Inventors. *Research Policy* 33(8), 1167-1183
- Dalle, J.-M., Jullien, N. (2003). 'Libre' Software: Turning Fads into Institutions? *Research Policy* 32(1), 1-11
- Dalrymple, J., Seff, J., Michaels, P. (2009). Apple reports record profit for first quarter. *Macworld*. Retrieved December 1, 2009, from <http://www.macworld.com/article/138362/2009/01/earnings.html>
- Dasgupta, P., David, P. (1994). Towards a New Economics of Science. *Research Policy* 23(5), 487-521
- Datamonitor (2007). Imeem strikes strategic partnership with EMI Music. November 2, 2007
- Dam, K. (1995) Some Economic Considerations in the Intellectual Property Protection of Software. *Journal of Legal Studies* 24(2), 321-377
- Davis, F. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly* 13(3), 318-340
- Davis, F., Bagozzi, R., Warshaw, P. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science* 35(8), 982-1003
- Deci, E., Ryan, R. (1985). *Intrinsic Motivation and Self-Determination in Human Behavior*. New York: Plenum
- Davies, G. (1983). *The Private Copying of Sound and Audio-visual Recordings*. A Study Requested by the Commission of the European Communities. Brussels
- Dax, P. (2007): Das Geschäft geht in unsere Richtung. *ORF Futurezone*. Retrieved June 3, 2009, from <http://futurezone.orf.at/stories/236576/>
- De Laat P. (2005), Copyright or Copyleft? An Analysis of Property Regimes for Software Development. *Research Policy* 34(10), 1511-1532
- Delahunty, J. (2009). iPod market share at 73.8 percent, 225 million iPods sold, more games for Touch than PSP & NDS: Apple. *Afterdawn*. Retrieved December 1, 2009, from <http://www.afterdawn.com/news/archive/19294.cfm>
- DeLong, B., Froomkin, M. (2000). *Speculative Microeconomics for Tomorrow's Economy*. First Monday 5 (2)
- DeLong, D., Fahey, L. (2000). Diagnosing Cultural Barriers to Knowledge Management. *Academy of Management Executive* 14(4), 113-127
- Demsetz, H. (1967). Towards a Theory of Property Rights. *American Economic Review* 57(2), 347-359
- Denisoff, R. (1986). *Tarnished Gold: The Record Industry Revisited*. New Brunswick: Transaction Books

- Denzin, N. (1970). *The Research Act: A Theoretical Introduction to Sociological Methods*. New York: Aldine
- Depoorter, B., Parisi, F. (2002): Fair Use and Copyright Protection: a Price Theory Explanation. *International Review of Law and Economics* 21 (2002), 453-473
- DiBona, C. (2005). Open Source and Proprietary Software Development. In DiBona, C., Cooper, D., Stone, M. (eds.). *Open Sources 2.0: The Continuing Evolution*. Sebastopol: O'Reilly, 21-36
- Dickinson, H. (1936). *James Watt: Craftsman & Engineer*. Cambridge: Babcock and Wilcox
- Die Welt (2001). Warner Music will kopiergeschützte CDs produzieren. August 31, 2001
- Dierickx, I., Cool, K. (1989). Asset Stock Accumulation and Sustainability of Competitive Advantage. *Management Science* 35(12), 1504-1511
- Dilman, D. (1978). *Mail and Telephone Surveys*. New York: Wiley
- Doctorow (2004). Ballmer: iPod Users are Thieves. *Boing Boing*. Retrieved May 30, 2009, from <http://www.boingboing.net/2004/10/04/ballmer-ipod-users-a.html>
- Domon, K., Joo, E. (2006). Copy Control of Digital Broadcasting Content: an Economic Perspective. In Cave, M., Nakamura, K. (eds.), *Digital Broadcasting: Policy and Practice in the Americas, Europe and Japan*. Cheltenham: Edward Elgar
- Dosi, G. (1982). Technological Paradigms and Technological Trajectories: A Suggested Interpretation of the Determinants and Directions of Technical Change. *Research Policy* 11(3), 147-162
- Dougherty, C. (2002). *Introduction to Econometrics*. New York: Oxford University Press
- Dowd, T. (2004). Concentration and Diversity Revisited: Production Logics and the U.S. Mainstream Recording Market, 1940-1990. *Social Forces* 82(4), 1411-1455
- DPMA (Deutsches Patent- und Markenamt) (2007). Annual Report 2007. Retrieved October 1, 2009, from http://www.dpma.de/docs/service/veroeffentlichungen/jahresberichte/jb2007_engl.pdf
- DTI (Department of Trade and Industry), ESRC (Economic and Social Research Council) (2005) IPR and the Creative Industries. Seminar Report
- Dubber, A. (2008). *The 20 Things You Must Know About Music Online*. Retrieved on June 18, 2009, from <http://www.newmusicstrategies.com.php5-2.dfw1-2.websitetestlink.com/wp-content/uploads/2008/06/nms.pdf>
- Duchêne, A., Waelbroeck, P. (2005). Peer-to-Peer, Piracy and the Copyright Law: Implications for Consumers and Artists. In Takeyama, L., Gordon, W., Liacos, P., Towse, R. (eds.), *Developments in the Economics of Copyright: Research and Analysis*. Cheltenham: Edward Elgar, 60-79
- Duchêne, A., Waelbroeck, P. (2006). The Legal and Technological Battle in the Music Industry: Information-Push versus Information-Pull Technologies. *International Review of Law and Economics* 26 (4), 565-580
- Duda, R., Hart, P. (1973). *Pattern Classification and Scene Analysis*. New York: Wiley

- Dufft, N., Stiehler, A., Vogeley, D., Wichmann, T. (2005). Digital Music Usage and DRM. Results from a European Consumer Survey. Retrieved on October 1, 2009, from http://www.indicare.org/tiki-download_file.php?fileId=110
- Dusollier, S., (2006). The Master's Tools v. The Master's House: Creative Commons v. Copyright. *Columbia Journal of Law and The Arts* 29(3), 101-123
- Dvorak, J. (2005): Creative Commons Humbug. *PCMag.com*. Retrieved on August 6, 2009, from <http://www.pcmag.com/article2/0,2817,1838244,00.asp>
- E-Market-Online (2003). Sony: Neuer CD-Kopierschutz für Deutschland. November 10, 2003
- Earley, P. (1993). East Meets West Meets Mideast: Further Explorations of Collectivistic and Individualistic Work Groups. *Academy of Management Journal* 36(2), 319-348
- Eberenz, M. (2001). Kopierschutz für Musik-CDs. *Hamburger Abendblatt*. December 2001, 11
- Easley, R., Michel, J., Devaraj, S. (2003). The MP3 Open Standard and The Music Industry's Response to Internet Piracy. *Communications of the ACM* 46(11), 90-96
- Economides, N. (1996). Network Externalities, Complementarities, and Invitations to Enter. *European Journal of Political Economy* 12(2), 211-233
- Ebadi, Y., Utterback, J. (1984). The Effects of Communication on Technological Innovation. *Management Science* 30(5), 572-585
- Eclipse (2009). Eclipse Plugin Central. Retrieved September 5, 2009, from <http://www.eclipseplugincentral.com/>
- Edmondson, A., McManus, S. (2007). Methodological Fit in Management Field Research. *Academy of Management Review* 32(4), 1155-1179
- Eichhof, O. (2007). DRM-freie Tracks ohne Preiserhöhung. *Digital Listening*. Retrieved August 13, 2009, from http://www.digital-listening.de/50226711/drmfreie_tracks_ohne_preiserhahung.php
- Eisenhardt, K. (1989). Building Theories from Case Study Research. *Academy of Management Review* 14(4), 532-550
- Eisenhardt, K., Bourgeois, L. (1988). Politics of Strategic Decision Making in High-Velocity Environments: Toward a Midrange Theory. *Academy of Management Journal* 31(4), 737-770
- Eisenhardt, K., Graebner, M. (2007). Theory Building from Cases: Opportunities and Challenges, *Academy of Management Journal* 50(1), 25-32
- Elektrischer Reporter (2008): Urheber 2.0. Was Tun, Wenn Keiner Kauft? Retrieved on July 1, 2009, from <http://www.elektrischer-reporter.de/elr/video/88/>
- Elkin-Koren, N. (2005) What Contracts Can't Do: The Limits of Private Ordering in Facilitating a Creative Commons. *Fordham Law Review* 74
- Elkin-Koren, N. (2006) Exploring Creative Commons: a Skeptical View of a Worthy Pursuit. In Hugenholtz, B., Guibault, L. (eds.), *The Future of the Public Domain*. Kluwer Law International.
- Elkin-Koren, N. (2007). Making Room for Consumers Under the DMCA. *Berkeley Technology Law Journal* 22(3), 1119-1155

- Emes, J. (2004). *Unternehmergewinn in der Musikindustrie*. Wiesbaden: Deutscher Universitäts-Verlag
- EMI (2007a). EMI Music Launches DRM-free Superior Sound Quality Downloads Across its Entire Digital Repertoire. Retrieved August 23, 2009, from <http://www.emigroup.com/Press/2007/press18.htm>
- EMI (2007b). EMI Music's Launch of Higher Quality DRM-free Downloads Opens Door for Global Brand Deals. Retrieved May 15, 2008, from <http://www.emigroup.com/Press/2007/press52.htm>
- Enders Analysis (2007): Recorded Music and Music Publishing. March 2007
- Enos, J. (1962). *Petroleum Progress and Profits: A History of Process Innovation*. Cambridge: MIT Press
- EPIC (Electronic Privacy Information Center) (2004). Digital Rights Management and Privacy. Retrieved October 1, 2009, from <http://www.epic.org/privacy/drm/>
- EPO (European Patent Office) (2008). Annual Report 2008. Retrieved June 19, 2009, from <http://www.epo.org/about-us/publications/general-information/annual-reports.html>
- Ermert, M. (2008). Creative-Commons-Gründer ruft Musikindustrie zu Veränderungen auf. *Heise Online*. Retrieved August, 6, 2009, from <http://www.heise.de/newsticker/Creative-Commons-Gruender-ruft-Musikindustrie-zu-Veraenderungen-auf-/meldung/102508>
- Farrell, J., Gallini, N. (1988). Second-Sourcing as a Commitment: Monopoly Incentives to Attract Competition. *Quarterly Journal of Economics* 103(4), 673-694
- Farrell, J., Saloner, G. (1985). Standardization, Compatibility, and Innovation. *Rand Journal of Economics* 16(1), 70-83
- Farrell, J., Saloner, G. (1986) Installed Base and Compatibility: Innovation, Product Preannouncements, and Predation. *American Economic Review* 76(5), 940-955
- Farrell, N. (2007). EMI Has DRM Free Sales Boom. *The Inquirer*. Retrieved June, 26, 2009, from <http://www.theinquirer.net/inquirer/news/1022890/emi-drm-free-sales-boom>
- Faulder, S. (2005): What Creative Commons Really Means for Writers. Retrieved May 3, 2009, from http://www.apra.com.au/writers/downloads/creative_commons_writers.pdf
- Fauchart, E. (2003). On Knowledge Sharing Patterns among Rival Firms: The Case of Knowledge on Safety. DRUID Summer Conference 2003. Retrieved October 1, 2009, from http://www.druid.dk/uploads/tx_picturedb/ds2003-789.pdf
- Fauchart, E., von Hippel, E. (2006). Norms-based Intellectual Property Systems: The Case of French chefs. *Working Paper 4576-06, MIT Sloan School of Management*
- FD Wire (2006). Q4 2006 Warner Music Group Earnings Conference Call
- Fehr, E., Gächter, S. (2000). Fairness and Retaliation: The Economics of Reciprocity. *Journal of Economic Perspectives* 14(3), 159-181
- Feller, J., Fitzgerald, B. (2002). *Understanding Open Source Software Development*. London: Addison-Wesley
- Felten, E. (2003b). Skeptical View of DRM and Fair Use. *Communications of the ACM* 46(4), 57-59

- Fetscherin M. (2005). *Implications of Digital Rights Management on the Demand for Digital Content*. dissertation.de
- Fetscherin, M. (2006). Economics of Online Music and Consumer Behavior. *Proceedings of the 8th International Conference on Electronic Commerce*, 599-604
- Fetscherin, M.; Schmid, M. (2003): Comparing The Usage of Digital Rights Management Systems in the Music, Film and Print Industry. *Proceedings of the 5th International Conference on Electronic Commerce*, 316-325
- Fetscherin, M., Vlietstra, C. (2004) DRM and Music: How Do Rights Affect the Download Price? In: Böhle, K. (ed.): *Indicare Monitor. Volume 1*. Retrieved August 26, 2009, from http://www.indicare.org/tiki-download_file.php?fileId=105, 99-101
- Fetto, J. (2000). Penny for Your Thoughts. *American Demographics*, 8-9
- Filzo (2006). Interview mit Kai von Pornophonique. Retrieved Jun 30, 2009, from <http://filzo.de/2006/09/17/interview-mit-kai-von-pornophonique/>
- Fink, M. (2003). *The Business and Economics of Linux and Open Source*. Upper Saddle River: Prentice Hall
- Fischer, T., Henkel, J. (2009). Complements and Substitutes in Value Appropriation – An Empirical Analysis of Patents’ Interactions. *Working Paper*
- Fisher C., Pearson M., Barnes J. (2002). A Study of Strength of Relationship Between Music Groups and Their External Service Providers: Impacts on Music Group Success. *Services Marketing Quarterly* 24(2), 43-60.
- Fisher, K. (2005): Sony: What You Don’t Know Can’t Hurt You. *Ars Technica*. Retrieved May 22, 2009, from <http://arstechnica.com/news.ars/post/20051109-5542.html>
- Flick, U. (2005). *Qualitative Sozialforschung – Eine Einführung*. Hamburg: Rowohlt
- Flick, U. (1987). Methodenangemessene Gütekriterien in der qualitativ-interpretativen Forschung. In Bergold, J., Flick, U. (eds.). *Einsichten – Zugänge zur Sicht des Subjekts mittels qualitativer Forschung*. Tübingen: DGVT, 247-262
- Flowers, S. (2008). Harnessing the Hackers: The Emergence and Exploitation of Outlaw Innovation. *Research Policy* 37(2), 177-193
- Focus (2001). Musik-CDs. Nicht Brennbar. October 1, 2001
- Foray, D. (2004). *The Economics of Knowledge*. Cambridge, MA: MIT Press.
- Foroughi, A., Albin, M., Gillard, S. (2002). Digital Rights Management: a Delicate Balance Between Protection and Accessibility. *Journal of Information Science* 28(5), 389-395
- Forrester Research (2004). US Antipiracy Bill Won’t Stop File Sharing
- Fosfuri, A., Giarratana, M., Luzzi, A. (2008). The Penguin Has Entered the Building: The Commercialization of Open Source Software Products. *Organization Science* 1(2), 292-305
- Foster, A., Rosenzweig, M. (1995). Learning by Doing and Learning from Others: Human Capital and Technical Change in Agriculture. *Journal of Political Economy* 103(6), 1176-1210
- Foster, R. (1986). *Innovation: The Attacker’s Advantage*. New York: Summit Books.

- Franke, N., von Hippel, E. (2003). Satisfying Heterogeneous User Needs Via Innovation Toolkits: The Case of Apache Security Software. *Research Policy* 32(7), 1199-1215
- Franke, N., Shah, S. (2003). How Communities Support Innovative Activities: An Exploration of Assistance and Sharing Among End-Users. *Research Policy* 32(1), 157-78
- Fraser, M. (2005). Information Wants to Be Free? Presentation to the Copyright Symposium. Retrieved May 3, 2008, from http://www.copyright.com.au/reports%20&%20papers/Copyright_symposium_2005.pdf
- Freeman, C. (1968). Chemical Process Plant: Innovation and the World Market. *National Institute Economic Review* 45, 29-51
- Fried, I. (2003). Will iTunes Make Apple Shine? *CNET*. Retrieved December 1, 2009, from <http://news.cnet.com/2100-1041-5092559.html?tag%BCnl>
- Frith, S. (1981). *Sound Effects: Youth, Leisure and the Politics of Rock'n'Roll*. New York: Pantheon
- Frith, S. (1988). Art Ideology and Pop Practice. In Nelson, C., Grossberg, L. (eds.) *Marxism and the Interpretation of Culture*. Chicago: University of Illinois Press, 461-476
- Frith, S. (1990). *Facing the Music. Essays on Pop, Rock and Culture*. London: Mandarin
- Frith, S. (2004) Music and the Media. In Frith, S., Marshall, L. (eds.). *Music and Copyright*. Edinburgh: University Press, 171-188
- Galloway, T., Kinnear, D. (2001). Unchained Melody: A Price Discrimination-Based Policy Proposal for Addressing the MP3 Revolution. *Journal of Economic Issues* 35(2), 279-287
- Gallini, N. (1984). Strategic Deterrence by Market Sharing: Licensing in Research and Development Markets. *American Economic Review* 74(5), 931-941
- Gallivan, M. (2001). Striking a Balance between Trust and Control in Virtual Organizations: A Content Analysis of Open Source Software Case Studies. *Information Systems Journal* 11(4), 277-304
- Gander, J., Rieple, A. (2002). Inter-organisational Relationships in the Worldwide Popular Recorded Music Industry. *Creativity and Innovation Management* 11(4), 248-254
- Ganley, P. (2004) Digital Copyright and the New Creative Dynamics. *International Journal of Law and Information Technology* 12(3), 282-332
- Garbarino, J. (1975). The Impact of Anticipated Reward Upon Cross-age Tutoring. *Journal of Personality and Social Psychology* 32(3), 421-428
- Garlick, M. (2005a). A Review of Creative Commons and Science Commons. *EDUCAUSE Review* 40(5), 78-79
- Garlick, M. (2005b). Ottmar Liebert. Retrieved on June 15, 2009, from <http://creativecommons.org/interviews/2005/11/14/7016>
- Garlick, M. (2009). Creative Commons Version 3.0 Licenses – A Brief Explanation. Retrieved July 4, 2009, from http://wiki.creativecommons.org/Version_3
- Garofalo, R. (1994). Die Relativität der Autonomie. *PopScriptum* 2, 9-30

- Gawer, A., Cusumano, M. (2002). *Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation*. Boston: Harvard Business School Press
- Gayer, A., Shy, O. (2005). Copyright Enforcement in the Digital Era. *CESifo Economic Studies* 51(2-3), 477-489
- Gayer, A., Shy, O. (2006). Publishers, Artists, and Copyright Enforcement. *Information Economics and Policy* 18(4), 374-384
- George, C., Chandak, N. (2006). Issues and Challenges in Securing Interoperability of DRM Systems in the Digital Music Market. *International Review of Law Computers* 20(3), 271-285
- Gerpott, T. (2005). *Strategisches Technologie- und Innovationsmanagement*. Stuttgart: Schäffer-Poeschel Verlag
- GfK (2007). Brennerstudie 2007. Retrieved on April 15, 2009, from http://www.musikindustrie.de/uploads/media/ms_branchendaten_brennerstudie_2007_03.pdf
- Ghosh, R. (2005). Understanding Free Software Developers: Findings from the FLOSS Study. In Feller, J., Fitzgerald, B., Hissam, S., Lakhani, K. (eds.), *Perspectives on Free and Open Source Software*. Cambridge: The MIT Press, 23-45
- Ghosh R., Glott R., Krieger B., Robles G. (2002). Survey of Developers. Free/Libre and Open Source Software: Survey and Study. *Report, International Institute of Informatics, University of Maastricht*
- Gill, D. (2008). Strategic Disclosure of Intermediate Research Results. *Journal of Economics and Management Strategy* 17(3), 733-758
- Gillespie, T. (2004). Copyright and Commerce: The DMCA, Trusted Systems, and the Stabilization of Distribution. *The Information Society* 20(4), 239-254
- Gillett, C. (1996). *The Sound of the City*. London: Souvenir Press
- Giuri, P., Mariani, M., Brusoni, S., Crespi, G., Francoz, D., Gambardella, A., Garcia-Fontes, W., Geuna, A., Gonzales, R., Harhoff, D., Hoisl, K., Le Bash, C., Luzzi, A., Magazzini, L., Nesta, L., Nomaler, Ö., Palomeras, N., Patel, P., Romanelli, M., Verspagen, B. (2007). Inventors and Invention Processes in Europe: Results from the PatVal-EU Survey. *Research Policy* 36(8), 1107-1127
- Givon, M., Mahajan, V., Muller, E. (1995). Software Piracy: Estimation of Lost Sales and the Impact on Software Diffusion. *Journal of Marketing* 59(1), 29-37
- Glaser, B., Strauss, A. (1967). *The Discovery of Grounded Theory*. Chicago: Aldine Publications
- Glucksberg, S. (1962). The Influence of Strength of Drive on Functional Fixedness and Perceptual Recognition. *Journal of Experimental Psychology* 63, 36-41
- Golden, B. (2004). *Succeeding with Open Source. An Overview*. Boston: Addison-Wesley.
- Goldman, R., Gabriel, R. (2005). *Open Source as Business Strategy: Innovation Happens Elsewhere*. San Francisco: Morgan Kaufmann
- Goldstein, P. (2003a). *Copyright's Highway*. Palatino: Stanford University Press
- Goldstein, P. (2003b). Is Hollywood Failing to See the Big Picture? *Los Angeles Times*. Retrieved April 3, 2009, from <http://articles.latimes.com/2003/nov/09/nation/nation-piracy9?pg=1>

- Goodman, P., Bazerman, M., Conlon, E. (1980). Institutionalization of Planned Organizational Change. In Staw, B., Cummings, L. (eds.), *Research in Organizational Behavior*. Greenwich, JAI Press, 215-246
- Goonan, M. (2008). Rhapsody to Launch iTunes Competitor. *Appletell*. Retrieved June 13, 2009, from <http://www.appletell.com/apple/tag/itunes%20market%20share/>
- Gopal, R., Bhattacharjee, S., Sanders, G. (2006). Do Artists Benefit from Online Music Sharing? *The Journal of Business* 79(3), 1503-1534
- Gopal, R., Sanders, G. (1997). Preventive and Deterrent Controls for Software Piracy. *Journal of Management Information Systems* 13(4), 29-47
- Gopal, R., Sanders, G. (1998). International Software Piracy: Analysis of Key Issues and Impacts. *Information Systems Research* 9(4), 380-397
- Gordon, S. (2005). *The Future of the Music Business: How to Succeed with the New Digital Technologies*. San Francisco: Backbeat
- Gordon, W., Bone, R. (1999). Copyright. In Bouckaert, B., De Gest, G. (eds.) *Encyclopedia of Law and Economics*. Cheltenham: Edward Elgar
- Graham, G, Burnes, B, Lewis, G, and Langer, J. (2004). The Transformation of the Music Industry Supply Chain. A Major Label Perspective. *International Journal of Operation and Production Management* 24(11), 1087-1103
- Graham, J. (2003). RIAA Lawsuits Bring Consternation, Chaos. *USA Today*. Retrieved September 10, 2009, from http://www.usatoday.com/tech/news/techpolicy/2003-09-10-riaa-suit-reax_x.htm
- Graham, J. (2006). EMusic's pitch: Download Song – and Own It. Company Thinks Copy-Protecting Files Hinders Sales. *USA Today*. Retrieved September 10, 2009, from http://www.usatoday.com/tech/products/services/2006-07-30-emusic_x.htm
- Grand, S., von Krogh, G., Leonard, D., Swap, W. (2004). Resource Allocation Beyond Firm Boundaries: A Multi-Level Model for Open Source Innovation. *Long Range-Planning* 37(6), 591-610
- Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology* 91(3), 481-510
- Granstrand, O. (1999). *The Economics and Management of Intellectual Property*. Cheltenham: Edward Elgar
- Green, P., Srinivasan, V. (1978). Conjoint Analysis in Consumer Research: Issues and Outlook. *Journal of Consumer Research* 5(2), 103-123
- Green, P., Srinivasan, V. (1990). Conjoint Analysis in Marketing: New Developments With Implications for Research and Practice. *Journal of Marketing* 54(4), 3-19
- Greene, J., Caracelli, V., Graham, W. (1989). Toward a Conceptual Framework for Mixed-Method Evaluation Designs. *Educational Evaluation and Policy Analysis* 11(3), 255-274
- Greene, W. (2003). *Econometric Analysis*. Upper Saddle River: Prentice Hall.
- Greenspan, A. (1983), Statement Re S. 31 before the Subcommittee on Patents, Copyrights, and Trademarks, Senate Committee on the Judiciary
- Grimm, R. (2005). DRM-Techniken und ihre Grenzen. In: Picot, A., Thielmann, H. (2005). *Distribution und Schutz Digitaler Medien durch Digital Rights Management*. Berlin: Springer, 85-96

- Gronow, P., Saunio, I. (1998). *An International History of the Recording Industry*. London: Cassell
- Grote, A. (2007). Große Auswahl, Kleine Preise. *Süddeutsche Zeitung*. October 30, 2007
- Gruber, M., Henkel J. (2006). *New Ventures Based on Open Innovation – an Empirical Analysis of Start-Up Firms in Embedded Linux*. *International Journal of Technology Management* 33(4), 256-372
- Gruber, S. (1993). *Das Konsumentenverhalten bei Independent-Tonträgern. Eine Empirische Untersuchung der Käuferschaft von “Unpopulärer Populärmusik”*. Frankfurt am Main: Lang
- Gupta P., Gould S., Pola B. (2004). “To Pirate or not to Pirate”: a Comparative Study of the Ethical versus Other Influences on the Consumer’s Software Acquisition-mode Decision. *Journal of Business Ethics* 55(3), 255-74
- Haber, S., Horne, B., Pato, J., Sander, T., Tarjan, R. (2003): If Piracy Is the Problem, Is DRM the Answer? In Becker, E., Buhse, W., Günnewig, D., Rump, N. (eds.), *Digital Rights Management*. Berlin: Springer, 224-233
- Hall, B. (2005). Exploring the Patent Explosion. *Journal of Technology Transfer* 30(2_2), 35-48
- Hall, B., Ham Ziedonis, R. (2001). The Patent Paradox Revisited: An Empirical Study of Patenting in the U.S. Semiconductor Industry 1979-1995. *The RAND Journal of Economics* 32(1), 101-128
- Haller, D. (2008): The Creative Commons and Photography. Retrieved June 3, 2009, from <http://www.danheller.com/blog/posts/creative-commons-and-photography.html>
- Hancock, T. (2007): Some Numbers on Creative Commons. *Free Software Magazine*. Free Software Magazine. Retrieved April 22, 2009, from http://www.freesoftwaremagazine.com/columns/some_numbers_on_creative_commons
- Handke, C. (2006a). Copyright and Digital Copying Technology. In Eisenberg, C., Gerlach, R., Handke, C. (eds.), *Cultural Industries: The British Experience in International Perspective*. Humboldt University Berlin. Edoc-Server.
- Handke, C. (2006b). Plain Destruction or Creative Destruction? Copyright Erosion and the Evolution of the Record Industry. *Review of Economic Research on Copyright Issues* 3(2), 29-51
- Handke, C. (2007a). Indies im Aufwind? Der Umbruch am Tonträgermarkt und sein Verteilungseffekt. In Schneider, B., Weinacht, S. (eds.), *Die Musikwirtschaft – aus der Perspektive der Medien*. München: Fischer
- Handke, C. (2007b). Bericht zum MIDEMNET Forum. Retrieved April 2, 2009, from <http://www2.hu-berlin.de/gbz/downloads/pdf/MidemReport.pdf>
- Hannan, M., Freeman, J. (1977). The Population Ecology of Organizations. *American Journal of Sociology* 82(5), 929-964
- Harabi, N. (1995). Appropriability of Technical Innovations: An Empirical Analysis. *Research Policy* 24(6), 981-992
- Hardin, G. (1968). The Tragedy of Commons. *Science* 162, 1243-1248
- Hardin, R. (1971). Collective Action as an Aggregate N-Prisoner’s Dilemma. *Behavioral Science* 16, 472-481

- Harhoff, D. (1996). Strategic Spillovers and Incentives for Research and Development. *Management Science* 42(6), 907-925
- Harhoff, D., Henkel, J., von Hippel, E. (2003). Profiting from Voluntary Information Spillovers: How Users Benefit by Freely Revealing Their Innovations. *Research Policy* 32(10), 1753-1769
- Hars, A., Ou, S. (2002). Working for Free? Motivations for Participating in Open Source Projects. *International Journal of Electronic Commerce* 6(2), 25-30
- Hart, H. (1927). *Science of Social Relations*. New York: Holt
- Hartmann, B. (2004). Netlabels and the Adoption of Creative Commons Licensing in the Online Electronic Music Community. Retrieved May 13, 2009, from <http://fr.creativecommons.org/articles/hartmann.htm>
- Hartung, F. (2003). Mobile DRM. In Becker, E., Buhse, W., Günnewig, D., Rump, N. (eds.), *Digital Rights Management*. Berlin: Springer, 138-149
- Hass, B. (2002). *Geschäftsmodelle von Medienunternehmen – Ökonomische Grundlagen und Veränderungen durch neue Informations- und Kommunikationstechnik*. Wiesbaden: Gabler
- Haughey, M. (2004). Free Online Music Booms as Soundclick Offers Creative Commons Licenses. Retrieved March 30, 2009, from <http://creativecommons.org/press-releases/entry/4363>
- Haughey, M. (2005). Independent Musicians. Retrieved April 26, 2009, from <http://creativecommons.org/audio/musicians>
- Hauschildt, J. (1997). *Innovationsmanagement*. München: Franz Vahlen
- Hayes, R., Clark, K. (1985). *Exploring the Sources of Productivity Differences at the Factory Level*. New York: Wiley
- Hecker, F. (1999). Setting Up Shop: The Business of Open-Source Software. *IEEE Software* 16(1), 45-51
- Helberger, N. (2006). Digitales Rechtemanagement und Verbraucherinteressen. In Forschungszentrum Karlsruhe, *Technologiefolgenabschätzung, Nr. 2, 15. Jahrgang*, 33-40
- Heise (2000). Smudo: Musiker sollten mit Musik auch Geld verdienen können. Retrieved August 20, 2009, from <http://www.heise.de/newsticker/Smudo-Musiker-sollten-mit-Musik-auch-Geld-verdienen-koennen--/meldung/13551>
- Heise (2008). US-Musiker veröffentlichen Album unter Creative-Commons-Lizenz. Retrieved August 20, 2009, from <http://www.heise.de/newsticker/US-Musiker-veroeffentlichen-Album-unter-Creative-Commons-Lizenz-Update--/meldung/104384>
- Heise (2009). Bericht: iTunes erweitert DRM-freies Musik-Angebot. Retrieved August 20, 2009, from <http://www.heise.de/newsticker/Bericht-iTunes-erweitert-DRM-freies-Musik-Angebot--/meldung/121185>
- Hellmann, H. (1983) The New State of Competition in the Record Industry. *Sociologia* 20(4), 285-295
- Henderson, R. (1993). Underinvestment and Incompetence as Responses to Radical Innovation: Evidence from the Photolithographic Alignment Equipment Industry. *RAND Journal of Economics* 24(2), 248-270

- Henderson, R., Clark, K. (1990). Architectural Innovation: the Reconfiguration of Existing Product Technologies and the Failure of Established Firms. *Administrative Science Quarterly* 35, 9-30
- Henkel, J. (2004). Open Source Software from Commercial Firms – Tools, Complements, and Collective Invention. *Zeitschrift für Betriebswirtschaft*, Ergänzungsheft 4, 1-23
- Henkel, J. (2005). The Jukebox Mode of Innovation – a Model of Commercial Open Source Development. *CEPR Discussion Paper 4507*. Retrieved August 26, 2009 from http://www.tim.wi.tum.de/home/index.php?option=com_docman&task=doc_download&gid=6&Itemid=27&lang=en
- Henkel, J. (2006). Selective Revealing in Open Innovation Processes: The Case of Embedded Linux. *Research Policy* 35(7), 953-969
- Henkel, J., Pangerl, S., (2008). Defensive Publishing – An Empirical Study. *Working Paper*. Retrieved October 1, 2009, from <http://ssrn.com/abstract=981444>
- Henkel, J. (2007). *Offene Innovationsprozesse: Die kommerzielle Entwicklung von Open-Source-Software*. Wiesbaden: Deutscher Universitäts-Verlag
- Henkel, J., Baldwin, C. (2009). Modularity for Value Appropriation: Drawing the Boundaries of Intellectual Property. *Harvard Business School Finance Working Paper No. 09-097*. Retrieved September 2, 2009, from <http://ssrn.com/abstract=1340445>
- Henkel, J., Block, J. (2008). Peer Influence in Network Markets: An Empirical and Theoretical Analysis. *Working Paper*. Retrieved August 31, 2009, from <http://ssrn.com/abstract=956564>
- Hertel, G., Niedner, S., Herrmann, S. (2003). Motivation of Software Developers in Open Source Projects: An Internet-Based Survey of Contributors to the Linux Kernel. *Research Policy* 32(7), 1159-1177
- Hicks, D. (1995). Published Papers, Tacit Competencies and Corporate Management of the Public/Private Character of Knowledge. *Industrial and Corporate Change* 4(2), 401-424
- Hienerth, C. (2004). The Commercialization of User Innovations: Sixteen Cases in an Extreme Sporting Industry. *Proceedings of the 26th R&D Management Conference*
- Hietanen, H. (2008). A License or a Contract, Analyzing the Nature of Creative Commons Licenses. *Nordic Intellectual Property Law Review*, Forthcoming. Retrieved September 3, 2009, from <http://ssrn.com/abstract=1029366>
- Hietanen, H., Oksanen, V. (2004) Legal Metadata, Open Content Distribution and Collecting Societies. Retrieved May 20, 2009, from <http://fr.creativecommons.org/articles/finland.htm>
- Hill, B. (2005): Towards a Standard of Freedom: Creative Commons and the Free Software Movement. Retrieved August 23, 2009, from http://mako.cc/writing/toward_a_standard_of_freedom.html
- Hill, C. (2007). Digital Piracy: Causes, Consequences, and Strategic Responses. *Asia Pacific Journal of Management* 24, 9-25
- Hill, C., Rothaermel, F. (2003). The Performance of Incumbent Firms in the Face of Radical Technological Innovation. *Academy of Management Review* 28(2), 257-274

- Hirsch, P. (1972). Processing Fads and Fashions: An Organization-set Analysis of Cultural Industry Systems. *American Journal of Sociology* 77(4), 639-659
- Hirsch, P. (2000). *Cultural Industries Revisited*. *Organization Science* 11(3), 356-361
- Hissam, S., Weinstock, C., Plakosh, D., Asundi, J. (2001). Perspectives on Open Source Software. *Technical Report*. Retrieved November 19, 2009, from <http://www.sei.cmu.edu/pub/documents/01.reports/pdf/01tr019.pdf>
- Höverkamp, T. (2004). Downloadplattform Finetunes - Kritik ausdrücklich erwünscht! *Phlow*. Retrieved August 1, 2009, from http://phlow.net/mag/interview_portrait/downloadplattform_finetunes_kritik_ausdrcklich_erwnscht.php
- Hoeren, T. (2003). Welche Chancen hat das Urheberrecht im Internetzeitalter? In Picot, A. (ed). *Digital Rights Management*. Berlin: Springer, 5-92
- Hohndel, D. (2006). The Open Source Driver Business Case. *Speech held at the Open Driver Summit*. Retrieved September 26, 2007, from http://developer.osdl.org/dev/opendrivers/summit2006/dirk_hohndel.mp3
- Holbrook, M., Schindler, R. (1989). Some Exploratory Findings on the Development of Musical Tastes. *Journal of Consumer Research* 16(1), 119-124
- Hole, A. (2007). Fitting Mixed Logit Models by Using Maximum Simulated Likelihood. *The Stata Journal* 7, 388-401
- Homburg, C., Baumgartner, H. (1995). Die Kausalanalyse als Instrument der Marketingforschung: Eine Bestandsaufnahme. *Zeitschrift für Betriebswirtschaft* 65(10), 1091-1108
- Hopf, C. (1978). Die Pseudo-Exploration – Überlegungen zur Technik Qualitativer Interviews in der Sozialforschung. *Zeitschrift für Soziologie* 7(2), 97-115.
- Hopf, C. (1995). Qualitative Interviews in der Sozialforschung – ein Überblick. In Flick, U., von Kardorff, E., Keupp, H., von Rosenstiel, L., Wolff, S. (eds.), *Handbuch Qualitative Sozialforschung*. München: Psychologie Verlags Union, 177-181
- Horn, P., Maxwell, E., Crawford, S. (2004). Promoting Innovation and Economic Growth: The Special Problem of Digital Intellectual Property. Retrieved August 26, 2009, from http://www.scrawford.net/display/report_dcc_new.pdf
- Hottes, O., Block, A. (2007) Einnahmenverteilung beim Musikverkauf. Retrieved July 15, 2009, from <http://www.gulli.com/img/2009/EISQDL.pdf>
- Howe, J. (2003). Licensed to Bill. *Wired*. Retrieved May 5, 2009, from http://www.wired.com/wired/archive/9.10/drm_pr.html
- Huang C. (2005). File Sharing as a Form of Music Consumption. *International Journal Electronic Commerce* 9(4), 37-55
- Huber, J., Zwerina, K. (1996). The Importance of Utility Balance in Efficient Choice Designs. *Journal of Marketing Research* 33(3), 307-317
- Hüber, F. (2005). iTunes Music Store UK mit 80 Prozent Marktanteil. *ComputerBase*. Retrieved June 5, 2009, from http://www.computerbase.de/news/internet/musikportale/2005/september/itunes_music_store_uk_80_prozent Marktanteil/
- Hughes, J., Lang, K. (2006). Open Source Culture and Digital Remix: A Theoretical Framework. *Journal of Management Information Systems*, 23(2)

- Hughes, T., McCullough, F. (1982). *The Journals of Sylvia Plath*. New York: Dial
- Hui, K., Png, I. (2003) Piracy and the Legitimate Demand for Recorded Music. *Contributions to Economic Analysis and Policy* 2(1)
- Hull, G. (2004). *The Recording Industry*. New York: Taylor & Francis
- Hurt, R., Schuchman, R.(1966). The Economic Rationale of Copyright. *American Economic Review* 56(1-2), 421-432
- IBM (2005). IBM Statement of Non-Assertion of Named Patents Against OSS. Retrieved June 17, 2009, from <http://www.ibm.com/ibm/licensing/patents/pledgedpatents.pdf>
- IFPI (International Federation of the Phonographic Industry) 2004. *The Recording Industry in Numbers*. London: IFPI.
- IFPI (International Federation of the Phonographic Industry) (2006). *The Recording Industry 2006. Piracy Report*. Retrieved June 2, 2009, from <http://www.ifpi.org/content/library/piracy-report2006.pdf>
- IFPI (International Federation of Phonographic Industry). (2008). *IFPI Digital Music Report 2008*. Retrieved June 2, 2009, from http://www.musikindustrie.de/uploads/media/digital_music_report_2008.pdf
- Jacobides, M., Knudsen, T., Augier, M. (2006). Benefiting from Innovation: Value Creation, Value Appropriation and the Role of Industry Architectures. *Research Policy* 35(8), 1200-1221
- Jaisingh, J. (2007). Piracy on File-sharing Networks: Strategies for Recording Companies *Journal of Organizational Computing and Electronic Commerce* 17(4), 329-348
- Jakob, H. (2005a). Musik – eine Wachstumsindustrie im Winterschlaf. In: Picot, A., Thielmann, H. (2005). *Distribution und Schutz Digitaler Medien durch Digital Rights Management*. Berlin: Springer, 24-42
- Jakob, H. (2005b). Wirtschaftlichkeit der Musikindustrie. In Clement, M., Schusser, O. (eds.), *Ökonomie in der Musikindustrie*. Wiesbaden: Deutscher Universitäts-Verlag, 27-44
- Jamendo (2007a): Interview Jamendo Paul Keller. Retrieved May 25, 2009, from http://www.dailymotion.com/video/x2zwx_c_interview-jamendo-paul-keller_music
- Jamendo (2007b): Jamendo Closes Series A Funding from Mangrove Capital Partners. Retrieved April 28, 2009, from <http://blog.jamendo.com/2007/07/17/jamendo-closes-series-a-funding-from-mangrove-capital-partners/>
- Jamglue (2009): Jamglue: Contests and Promotions. Retrieved June 4, 2009, from <http://www.jamglue.com/contests>
- Jeppesen, L., Fredriksen, L. (2006). Why Firm-established User Communities Work for Innovation: The Personal Attributes of Innovation Users in the Case of Computer-controlled Music. *Organization Science* 17(1), 45-63
- Jeppesen, L., Molin, M. (2003). Consumers as Co-developers: Learning and Innovation Outside the Firm. *Technology Analysis and Strategic Management* 15(3), 363-383
- Jick, T. (1979). Mixing Qualitative and Quantitative Methods: Triangulation in Action. *Administrative Science Quarterly* 24(4), 602-611

- Jobs, S. (2007). Thoughts on Music. Retrieved July 20, 2009, from <http://www.apple.com/hotnews/thoughtsonmusic/>
- Johnson, N. (2007): Q & A with Trent Reznor of Nine Inch Nails. *Herald Sun*. Retrieved March 9, 2009, from <http://www.news.com.au/heraldsun/story/0,21985,21741980-5006024,00.html>
- Johnson, W. (1985). The Economics of Copying. *Journal of Political Economy* 93(1), 158-174
- Jones, R., Cameron, E. (2005): Full Fat, Semi-skimmed or No Milk Today – Creative Commons Licences and English Folk Music. *International Review of Law, Computers and Technology* 19(3), 259-275
- Junnarkar, S. (2001). IBM Makes \$ 40 Million Open-Source Offer. *News.com*. Retrieved November 5, 2007, from <http://news.com.com/2100-1001-275388.html>.
- Käs, S. (2008). *Rethinking Industry Practice: The Emergence of Openness in the Embedded Component Industry*. Berlin: Pro Business
- Kafka, P. (2008). Amazon's MP3 Store, One Year In: No iTunes Killer; Probably Won't Be. *All Things Digital*. Retrieved October 2, 2009, from <http://mediamemo.allthingsd.com/20081215/amazons-mp3-store-one-year-in-no-itunes-killer-probably-wont-be/>
- Kahney, L. (2003): Buck a Song, or Buccaneer? *Wired*. Retrieved May 6, 2009, from <http://www.wired.com/techbiz/media/news/2003/10/60901>
- Kalker, T. (2006). On Interoperability of DRM. Keynote Talk. *Proceedings of the ACM Workshop on Digital Rights Management 2006*, 45-46
- Katz, R., Allen, T. (1982). Investigating the Not Invented Here (NIH) Syndrome: A Look at the Performance, Tenure, and Communication Patterns of 50 R&D Project Groups. *R&D Management*, 12(1), 7-19
- Katz, M., Shapiro, C. (1985). Network Externalities, Competition, and Compatibility. *American Economic Review* 75(3), 424-440
- Katz, M., Shapiro, C. (1992). Product Introduction with Network Externalities. *The Journal of Industrial Economics* 40(1), 55-83
- Katz, E., Lazarsfeld, P. (2006). *Personal Influence*. Glencoe: Free Press.
- Kogut, B., Metiu, A. (2001). Open Source Software Development and Distributed Innovation. *Oxford Review of Economic Policy* 17(2), 248-264
- Kessler, R. (2006). *Crashkurs Musikmanagement*. PPV Medien
- Ketchen, D., Shook, C. (1996). The Application of Cluster Analysis in Strategic Management Research: An Analysis and Critique. *Strategic Management Journal* 17(6): 441-458
- Kiema, I. (2008). Commercial Piracy and Intellectual Property Policy. *Journal of Economic Behavior and Organization* 68(1), 304-318
- Kim, K., Park, H.-J., Suzuki, N. (1990). Reward Allocations in the United States, Japan, and Korea: A Comparison of Individualistic and Collectivistic Cultures. *Academy of Management Journal* 33(1), 188-198
- Kim, M. (2007). The Creative Commons and Copyright Protection in the Digital Era: Uses of Creative Commons Licenses. *Journal of Computer-Mediated Communication* 13(1), 187-209

- Kinokuni, H. (2003) Copy-protection Policies and Profitability. *Information Economics and Policy* 15(4), 521-536
- Kirk, J., Miller, M. (1986). *Reliability and Validity in Qualitative Research*. London: Sage
- Kirkman, B., Shapiro, D. (2001). The Impact of Cultural Values on Job Satisfaction and Organizational Commitment in Self-managing Work Teams: The Mediating Role of Employee Resistance. *Academy of Management Journal* 44(3), 557-69
- Kirkpatrick, M. (2006). Warner to License Music in YouTube Videos. *TechCrunch*. Retrieved April 15, 2009, from <http://www.techcrunch.com/2006/09/17/warner-music-to-license-music-to-youtube/>
- Kirn, P. (2007). Pandora's Founder on Decoding Taste and Promoting Indie Music. *CreateDigitalMusic*. Retrieved June 9, 2009, from <http://createdigitalmusic.com/2007/03/16/pandoras-founder-on-decoding-taste-and-promoting-indie-music/>
- Kiss, J. (2008): Elevator Pitch: Jamendo wants to be the "Wikipedia of music". *Guardian.co.uk*. Retrieved June 3, 2009, from <http://www.guardian.co.uk/media/pda/2008/mar/26/elevatorpitchjamendowantst>
- Kitch, E. (1977) The Nature and Function of the Patent System. *Journal of Law and Economics* 20(2), 265-290
- Klang, M. (2005). The Digital Commons: Using Licenses to Promote Creativity. *Proceedings of Ethicomp September 2005*
- Klein, B., Lerner, A., Murphy, K. (2002). Intellectual Property: Do We Need It? The Economics of Copyright 'Fair Use' in a Networked World. *American Economic Review* 92(2), 206-208
- Kleiner, D. (2007). Copyfarleft and Copyjustright. *Mute*. Retrieved January 6, 2008, from <http://www.metamute.org/en/Copyfarleft-and-Copyjustright>
- Kleiner, D., Richardson, J. (alias Anna Nimus) (2006). Copyright, Copyleft & the Creative Anti-Commons. Retrieved February 2, 2008, from http://subsol.c3.hu/subsol_2/contributors0/nimustext.html
- Kleinginna, P., Kleinginna, A. (1981). A Categorized List of Emotion Definitions, with Suggestions for a Consensual Definition. *Motivation and Emotion* 5(4), 345-379
- Kline, D. (2003). Sharing the Corporate Crown Jewels. *MIT Sloan Management Review* 44(3), 83-88
- Knab, C. (2001). Inside Record Labels: Organizing Things. Music Biz Academy. Retrieved May 3, 2009, from <http://www.musicbizacademy.com/knab/articles/insidelabels.htm>
- Knight, W. (2003). iTunes for Windows May Face New Piracy Threat. *NewScientist.com*. Retrieved September 17, 2007, from <http://www.newscientist.com/news/news.jsp?id%4ns99994289>
- Köhler, H., Biedermann, M. (2007). Das Netlabel Thinner. Auf dem Weg zum Tragfähigen Businessmodell. *Regioactive*. Retrieved October 1, 2009, from http://www.regioactive.de/story/5962/das_netlabel_thinner.html
- Koenig, J. (2004). Seven Open Source Business Strategies for Competitive Advantage. *IT Manager's Journal*. Retrieved September 10, 2007, from <http://management.itmanagersjournal.com/article.pl?sid=04/05/10/2052216>

- König, A., Enders, A., Hungenberg, H., Röhrig, M. (2006). How Can Music Majors Increase Their Success in the Market for Over-the-Air Downloads – The Case of Germany. *International Journal on Media Management* 8(4), 182-192
- König, H., Licht, G. (1995). Patents, R&D and Innovation: Evidence from the Mannheim Innovation Panel. *Ifo-Studien*
- Koestner, R., Ryan, R., Bernieri, F., Holt, K. (1984). Setting Limits on Children's Behavior: The Differential Effects of Controlling vs. Informational Styles on Intrinsic Motivation and Creativity. *Journal of Personality* 52(3), 233-248
- Kohli, R., Mahajan, V. (1991). A Reservation-Price Model for Optimal Pricing of Multiattribute Products in Conjoint Analysis. *Journal of Marketing Research* 28(3), 347-354
- Kontor New Media (2008). Indies Wollen DRM-freie iTunes-Songs Ohne Preiserhöhung. Retrieved October 2, 2009, from http://www.kontornewmedia.com/index.php?page=16&news_id=72
- Koranteng, J. (2008). Nokia Set For "Comes With Music" Launch. *Billboard*. Retrieved January 9, 2009, from http://www.billboard.biz/bbbiz/content_display/industry/e3i85d526d9b2781718b0bd0f55bb95558a
- Koster, A. (2008). The Emerging Music Business Model: Back to the Future? *Journal of Business Case Studies* 4(10), 17-22
- Kot, G. (2008): Reznor's One-week Take for 'Ghosts ': \$1.6 million. Chicago Tribune. Retrieved May 3, 2009, from http://leisureblogs.chicagotribune.com/turn_it_up/2008/03/reznors-one-wee.html
- Kovarsky, L. (2006). A Technological Theory of the Arms Race. *Indiana Law Journal* 81(3), 917-970
- Kremp, M. (2006): Draht Ade, Es Werde Licht. *Spiegel Online*. Retrieved May 14, 2008, from <http://www.spiegel.de/netzwelt/tech/0,1518,437606,00.html>
- Kremp, M. (2007). Apple Startet Musikverkauf ohne Kopierschutz. *Spiegel Online*. Retrieved May 14, 2008, from <http://www.spiegel.de/netzwelt/web/0,1518,475214,00.html>
- Krempl, S. (2004): Creative Commons als Geheimwaffe der Künstler im Copyright-Krieg. *Heise Online*. Retrieved May 15, 2008, from <http://www.heise.de/newsticker/WOS3-Creative-Commons-als-Geheimwaffe-der-Kuenstler-im-Copyright-Krieg--/meldung/48184>.
- Krempl, S. (2006). Geldverdienen mit Freier Musik Funktioniert. *Heise Online*. Retrieved May 15, 2008, from <http://www.heise.de/newsticker/WOS-4-Geldverdienen-mit-freier-Musik-funktioniert--/meldung/78229>
- Kretschmer, M. (2003). Digital Copyright: The End of an Era. *European Intellectual Property Review* 25(8), 333-341
- Kretschmer, M. (2005). Artists' Earnings and Copyright: A Review of British & German Music Industry Data in the Context of Digital Technologies. *First Monday* 10(1), 1-20
- Kretschmer, M., Klimis, G. and Choi, J. (1999a). Increasing Returns and Social Contagion in Cultural Industries. *British Journal of Management* 10(s1), 61-72
- Kretschmer, M., Klimis, G., Wallis, R. (1999b) The Changing Location of Intellectual Property Rights in Music. *Prometheus* 17(2), 163-186

- Kretschmer, M., Klimis, G., Wallis, R. (2001). Music in Electronic Markets: An Empirical Study. *New Media and Society* 3(4), 417-441
- Kreutz, H., Titscher, S. (1974). Die Konstruktion von Fragebögen. In van Koolwijk, J., Wieken-Mayser, M. (eds.). *Techniken der Empirischen Sozialforschung, Band 4: Erhebungsmethoden: Die Befragung*. München: Oldenburg-Verlag
- Kromer, E. (2008): *Wertschöpfung in der Musikindustrie. Zukünftige Erfolgsfaktoren bei der Vermarktung von Musik*. München: Fischer
- Krueger, A. (2005). The Economics of Real Superstars: The Market for Concerts in the Material World. *Journal of Labor Economics* 23(1), 1-30
- Kruglanski, A., Friedman, I., Zeevi, G. (1971). The Effects of Extrinsic Incentive on Some Qualitative Aspects of Task Performance. *Journal of Personality* 39, 606-617
- Kubacki, K., Croft, R. (2005). Paying the Piper: A Study of Musicians and the Music Business. *International Journal of Nonprofit and Voluntary Sector Marketing* 10(4), 225-237
- Künstlersozialkasse (2009). Durchschnittseinkommen Versicherte. Retrieved September 13, 2009, from http://www.kuenstlersozialkasse.de/wDeutsch/ksk_in_zahlen/statistik/durchschnittseinkommenversicherte.php
- Kulle, J. (1998). *Ökonomie der Musikindustrie. Eine Analyse der Körperlichen und Unkörperlichen Musikverwertung mit Hilfe von Tonträgern und Netzen*. Frankfurt am Main: Peter Lang
- Kusek, D., Leonhard, G. (2005). *The Future of Music. Manifesto for the Digital Music Revolution*. Boston: Berklee Press
- Kvale, S. (1988). Validity in the Qualitative Research Interview. In de Koning, A. (ed.), *Research Methodology in Psychology: The Qualitative Perspective*. Pittsburg: Duquesne University Press
- Lach, S., Schankerman, M. (2008). Incentives and Invention in Universities. *RAND Journal of Economics* 39(2), 403-433
- Laffont, J. (1989). *The Economics of Uncertainty and Information*. Cambridge: MIT Press
- Laing, D. (2004). Copyright, Politics and the International Music Industry. In Frith, S., Marshall, L. (eds.). *Music and Copyright*. Edinburgh: University Press, 70-88
- Lakhani, K., von Hippel, E. (2003). How Open Source Software Works: "Free" User-to-User Assistance. *Research Policy* 32(6), 923-943
- Lakhani, K., Wolf, R. (2005). Why Hackers Do What They Do: Understanding Motivation and Effort in Free/Open Source Software Projects. In Feller, J., Fitzgerald, B., Hissam, S., Lakhani, K. (eds.), *Perspectives on Free and Open Source Software*. Cambridge: The MIT Press, 3-21
- Lamberton, D. (1971). *The Economics of Information and Knowledge*. New York: Penguin
- Lamnek, S. (1993). *Qualitative Sozialforschung. Band 1: Methodologie*. Weinheim: Psychologie Verlags Union
- Lancaster, K. (1979). *Variety, Equity and Efficiency*. New York: Columbia University Press

- Landau, S., Stratulate, R., Twilleager, D. (2006). Consumers, Fans, and Control: What the Games Industry can Teach Hollywood about DRM. *Proceedings of the ACM Workshop On Digital Rights Management 2006*, 1-8
- Landes, W., Posner, R. (1989). An Economic Analysis of Copyright Law. *Journal of Legal Studies* 18(1), 325-363
- Landes, W., Posner, R. (2003). *The Economic Structure of Intellectual Property Law*. Cambridge: Harvard University Press
- Lang, M. (2003). Das Netz als Plattenladen. *Süddeutsche Zeitung*. March 25, 2003
- Langer, K. (2007). Europas Top-Arbeitgeber. Deutsche Konzerne bei Studenten weniger beliebt. *Spiegel Online*. Retrieved February 3, 2008, from <http://www.spiegel.de/unispiegel/jobundberuf/0,1518,521778,00.html>
- Langlois, R., Robertson, P. (1992). Networks and Innovation in a Modular System: Lessons from the Microcomputer and Stereo Component Industries. *Research Policy* 21(4), 297-313
- Laursen, K., Salter, A. (2005). My Precious: The Role of Appropriability Strategies in Shaping Innovative Performance. *DRUID Working Paper No. 05-02*
- Lazear, E. (1997). Incentives in Basic Research. *Journal of Labor Economics* 15(1), 167-197
- Lee, S. (1995): Re-examining The Concept of the “Independent” Record Company: The Case of Wax Trax! Records. *Popular Music* 14(1), 13-31
- Lehmkuhl, F., Remke, S. (2002). Musik. Teure Ab-Spielverderber. *Focus Magazin*. March 4, 2002
- Leonard-Barton, D. (1992). Core Capabilities and Core Rigidities: A Paradox in Managing New Product Development. *Strategic Management Journal* 13(5), 111-125
- Leonhard, G. (2008). *Music 2.0*. Retrieved July 3, 2009, from http://kotisivukone.fi/files/music20.kotisivukone.com/tiedostot/music20book_hires.pdf
- Lerner, J., Tirole, J. (2001). The Open Source Movement: Key Research Questions. *European Economic Review* 45(4-6), 819-826
- Lerner, J., Tirole, J. (2002). Some Simple Economics of Open Source. *Journal of Industrial Economics* 50(2), 197-234
- Lessig, L. (2002). *The Future of Ideas*. New York: Random House
- Lessig, L. (2004a). *Free Culture*. New York: The Penguin Press
- Lessig, L. (2004b). Free(ing) Culture for Remix. *Utah Law Review* 2004(4), 961-975
- Lessig, L. (2006), *Code Version 2.0*. New York: Basic Books
- Lettl, C., Herstatt, C., Gemuenden, H. (2006). Users’ Contributions to Radical Innovation: Evidence from Four Cases in the Field of Medical Equipment Technology. *R&D Management* 36(3), 251-272
- Lettl, C., Rost, K., von Wartburg, I. (2009). Why are Some Independent Inventors ‘Heroes’ and Others ‘Hobbyists’? The Moderating Role of Technological Diversity and Specialization. *Research Policy* 38(2), 243-254
- Levin A., Dato-on M., Rhee K. (2004). Money for Nothing and Hits for Free: The Ethics of Downloading Music from Peer-to-Peer Web Sites. *Journal of Marketing Theory and Practice* 12(1), 48-60

- Levin, R., Klevorick, A., Nelson, R., Winter, S. (1987). Appropriating the Returns from Industrial Research and Development. *Brookings Papers on Economic Activity* 1987(3), 783-820
- Levitt, B., March, J. (1988). Organizational Learning. *Annual Review of Sociology* 14(5), 319-340
- Lewis, G., Graham, G., Hardaker, G. (2005). Evaluating the Impact of the Internet on the Barriers to Entry in the Music Industry. *Supply Chain Management: An International Journal* 10(5), 349-356.
- Leyton, N. (2003). Fading Ways Music: Our Mission. Retrieved August 30, 2009, from <http://www.fadingwaysmusic.com/mission.html>
- Lichtman, D., Baker, S., Kraus, K. (2000). Strategic Disclosure in the Patent System. *Vanderbilt Law Review* 53, 2175-2217
- Lieberman, M., Montgomery, D. (1988). First-Mover Advantages. *Strategic Management Journal* 9, 41-58
- Liebesskind, J. (1996). Knowledge, Strategy, and the Theory of the Firm. *Strategic Management Journal* 17, 93-107
- Liebesskind, J. (1997). Keeping Organizational Secrets: Protective Institutional Mechanisms and their Costs. *Industrial and Corporate Change* 6(3), 623-663
- Liebowitz, S. (1985). Copying and Indirect Appropriability: Photocopying of Journals. *Journal of Political Economy* 93(5), 945-957
- Liebowitz, S. (2002). *Re-Thinking the Network Economy: the True Forces that Drive the Digital Marketplace*. New York: American Management Association
- Liebowitz, S. (2004). Will MP3 Downloads Annihilate the Record Industry? The Evidence so Far. *Advances in the Study of Entrepreneurship, Innovation, and Economic Growth* 15, 229-260
- Liebowitz, S. (2006). File Sharing: Creative Destruction or Just Plain Destruction? *Journal of Law and Economics* 49(1), 1-28
- Liebowitz, S. (2008). Testing File Sharing's Impact on Music Album Sales in Cities. *Management Science* 54(4), 852-859
- Liebowitz, S., Margolis, S. (1990). The Fable of the Keys. *Journal of Law and Economics* 33(1), 1-25
- Liebowitz, S., Margolis, S. (2005). 17 Famous Economists Weigh in on Copyright: The Role of Theory, Empirics, and Network Effects. *Harvard Journal of Law and Technology* 18(2), 435-457
- Liebowitz, S., Watt, R. (2006). How to Best Ensure Remuneration for Creators in the Market for Music? Copyright and its Alternatives. *Journal of Economic Surveys* 20(4), 513-545
- Lim, K. (2009). The Many Faces of Absorptive Capacity: Spillovers of Copper Interconnect Technology for Semiconductor Chips. *Industrial and Corporate Change*, forthcoming
- Lindenberg, S. (2001). Intrinsic Motivation in a New Light. *Kyklos* 54 (2-3), 317-342
- Linksvayer, M. (2005): Freesound. Retrieved May 13, 2009, from <http://creativecommons.org/interviews/2005/10/01/7018>

- Linksvayer, M. (2006): Midyear License Adoption Estimates. Retrieved May 13, 2009, from <http://creativecommons.org/weblog/entry/5936>
- Linksvayer, M. (2009): Wikipedia + CC BY-SA = Free Culture Win!, Retrieved September 30, 2009, from <http://creativecommons.org/weblog/entry/15411>
- Lischka, K. (2008). Apples Stammkunden zahlen bei iTunes-Kopierschutz drauf. *Spiegel Online*. Retrieved February 27, 2009, from <http://www.spiegel.de/netzwelt/web/0,1518,537503,00.html>
- Litfin, T. (2000). *Adoptionsfaktoren – Empirische Analyse am Beispiel eines innovativen Telekommunikationsdienstes*. Wiesbaden: Deutscher Universitäts Verlag
- Lopes P. (1992). Innovation and Diversity in the Popular Music Industry, 1969-1990. *American Sociological Review* 57(1), 56-71
- Madden M., Lenhart A. (2007). Music Downloading, File-sharing and Copyright. Retrieved July 20, 2007, from http://www.pewinternet.org/pdfs/PIP_Copyright_Memo.pdf
- Mabry, D. (1990). The Rise and Fall of Ace Records: A Case Study in the Independent Record Business. *The Business History Review* 64(3), 411-450
- MacCormack, A., Rusnak, J., Baldwin, C. (2006). Exploring the Structure of Complex Software Designs: An Empirical Study of Open Source and Proprietary Code. *Management Science*. 52(7), 1015-1030
- MacDonald, G. (1988). The Economics of Rising Stars. *American Economic Review* 78(1), 155-166
- Macdonald, S. (1986). The Distinctive Research of the Individual Inventor. *Research Policy* 15(4), 199-210
- Maffioletti, A., Ramello, G. (2004) Should We Put Them in Jail? Copyright Infringement, Penalties and Consumer Behaviour: Insights from Experimental Data. *Review of Economic Research on Copyright Issues* 1(2), 75-89
- Mahajan, V., Green, P., Goldberg, S. (1982). A Conjoint Model for Measuring Self- and Cross-Price Demand Relationships. *Journal of Marketing Research* 19(3), 334-342
- Manes, S. (2004). Let's Have Less of Lessig. *Forbes Magazine*. Retrieved June 19, 2008, from http://www.forbes.com/2004/04/02/cz_sm_0402manes_print.html
- Manning, F. (1994). Assessing the Impacts of Audio Home Copying Restrictions. *Quarterly Journal of Business and Economics* 33(1), 30-46
- Mansfield, E. (1985). How Rapidly Does New Industrial Technology Leak Out? *The Journal of Industrial Economics* 34(2), 217-223
- Mansfield, E. (1986). Patents and Innovation: An Empirical Study. *Management Science* 32(2), 173-181
- Mansfield, E., Schwartz, M., Wagner, S. (1981). Imitation Costs and Patents: An Empirical Study. *The Economic Journal* 91 (364), 907-918
- Markoff, J. (2007). Judge Says Unix Copyrights Rightfully Belong to Novell. *New York Times*. Retrieved October 3, 2009, from http://www.nytimes.com/2007/08/11/technology/11novell.html?_r=1

- Masnack, M. (2008a). Nine Inch Nails Sells Out Of \$300 Deluxe Edition In Under Two Days. *Techdirt*. Retrieved May 3, 2009, from <http://www.techdirt.com/articles/20080304/162842435.shtml>
- Masnack, M. (2008b). What Could A Google Exec Do If He Ran A Major Record Label? *Techdirt*. Retrieved July 20, 2009, from <http://www.techdirt.com/articles/20080401/235437721.shtml>
- Masnack, M. (2009): The Trent Reznor Case Study. Presentation at Midem 2009. Retrieved April 20, 2009, from <http://www.youtube.com/watch?v=Njuo1puB1lg>
- Matusow, J. (2005). Shared Source at Microsoft. In Feller, J., Fitzgerald, B., Hissam, S., Lakhani, K. (eds.), *Perspectives on Free and Open Source Software*. Cambridge: MIT Press, 329-346
- Maxwell, J. (1996). *Qualitative Research Design*. Thousand Oaks: Sage
- May, B., Singer, M. (2001). Unchained Melody. The Digitization of Music has Industry Execs in a Twist. *McKinsey Quarterly February 2001*
- Mayring, P. (2002). *Einführung in die Qualitative Sozialforschung*. Weinheim: Beltz Verlag
- Mayring, P. (2004). Qualitative Content Analysis. In Flick, U., von Kardoff, E., Steinke, I. (eds.), *A Companion to Qualitative Research*. London: Sage, 266-269
- McCullers, J., Martin, J. (1971). A Reexamination of the Role of Incentive in Children's Discrimination Learning. *Child Development* 42(3), 827-837
- McDonald, I. (2006): Creative Commons Licenses for Visual Artists: a Good Idea? *Australian Copyright Council*. Retrieved June 1, 2009, from http://www.copyright.org.au/pdf/acc/articles_pdf/a06n04.pdf/download
- McFadden (1973). Conditional Logit Analysis of Qualitative Choice Behaviour. In Zarempka, P. (ed.), *Frontiers in Econometrics*. New York, 105-142
- McGraw, K., McCullers, J. (1979). Evidence of a Detrimental Effect of Extrinsic Incentives on Breaking a Mental Set. *Journal of Experimental Social Psychology* 15, 285-294
- McLean, G. (2007): Caught in the Flesh. *The Observer*. Retrieved May 3, 2009, from <http://www.guardian.co.uk/music/2007/dec/09/popandrock.radiohead1>
- McLure, M., Faraj, S. (2000). 'It Is What One Does': Why People Participate and Help Others in Electronic Communities of Practice. *The Journal of Strategic Information Systems* 9(2-3), 55-173
- Mendonca, L., Sutton, R. (2008). Succeeding at Open-Source Innovation. An Interview with Mozilla's Mitchell Baker. *McKinsey Quarterly January 2008*
- Menger, P.-M. (2001). Artists as Workers: Theoretical and Methodological Challenges. *Poetics* 28(4), 241-254
- Merges, R., Menell, P., Lemley, M. (2000). *Intellectual Property in the New Technological Age*. New York: Aspen Law and Business Publishers
- Merton, R., Rossi, A. (1949). Contributions to the Theory of Reference Group Behavior. In Merton, R. (ed.), *Social Theory and Social Structure*. New York: Free Press, 225-275
- Microsoft (2001). Accessibility with Responsibility. Retrieved October 6, 2007, from <http://www.microsoft.com/presspass/features/2001/may01/05-03csm.msp>

- Miles, M., Huberman, A. (1994). *Qualitative Data Analysis*. Thousand Oaks: Sage
- Milligan, G., Cooper, M. (1985). An Examination of Procedures for Determining the Number of Clusters in a Data Set. *Psychometrika* 50(2), 159-179
- Mitchell, W. (1989). Whether and When? Probability and Timing of Incumbent's Entry into Emerging Industrial Subfields. *Administrative Science Quarterly* 34(2), 208-234
- Mitchell, W. (1992). Are More Good Things Better: Or will Technical and Market Capabilities Conflict When a Firm Expands? *Industrial and Corporate Change* 1(2), 327-346
- MMC (Monopolies and Merger Commission) (1996). *Performing Rights: A Report on the Supply in the UK of the Services of Administering Performing Rights and Film Synchronisation Rights*. London: HMSO
- Möller, E. (2007): The Case for Free Use: Reasons Not to Use a Creative Commons - NC License. Retrieved June 3, 2009, from <http://freedomdefined.org/Licenses/NC>
- Molteni, L, Ordanini, A. (2003). Consumption Patterns, Digital Technology and Music Downloading. *Long Range Planning* 36(4), 389-406
- Montagnani, M.-L., Borghi, M. (2007). Positive Copyright and Open Content Licenses: How to Make a Marriage Work by Empowering Authors to Disseminate Their Creations. *International Journal of Communications Law and Policy* 12
- Morrison, P. , Roberts, J., von Hippel, E. (2000). Determinants of User Innovation and Innovation Sharing in a Local Market. *Management Science* 46(12), 1513-1527
- Mossberg, W. (2003). Apple's New Service Beats Illegal Free Sites. *The Wall Street Journal*. April 30, 2003
- Moulin, R. (1987) *The French Art Market. A Sociological View*. New Brunswick: Rutgers University Press
- Mnookin, S. (2007). Universal's CEO Once Called iPod Users Thieves. Now He's Giving Songs Away. *Wired*. Retrieved February 21, 2009, from http://www.wired.com/entertainment/music/magazine/15-12/mf_morris?currentPage=all
- Muller, P., Pénin, J. (2006). Why Do Firms Disclose Knowledge and How Does It Matter? *Journal of Evolutionary Economics* 16(1-2), 85-108
- Mulligan, D., Han, J., Burstein, A. (2003) How DRM Based Content Delivery Systems Disrupt Expectations of "Personal Use". *Proceedings of the 2003 ACM Workshop on Digital Rights Management*, 77-89
- Music Business International (1999). *Special Report on Independents*. December, 11
- Nagu, S. (2007): Sharing ideas with a borderless community. *New Straits Times*. April 1st, 2007.
- Nascimento, F., Vanhonacker, W. (1988). Optimal Strategic Pricing of Reproducible Consumer Products. *Management Science* 34(8), 921-937
- Negroponte, N. (1995). *Being Digital*. New York: Alfred A. Knopf
- Negus, K. (1996) *Popular Music in Theory*. Cambridge: Polity Press
- Nelson, R., Winter, S. (1982). *An Evolutionary Theory of Economic Change*. Cambridge: The Belknap Press of Harvard University Press

- Noel, M., Schankerman, M. (2006). Strategic Patenting and Software Innovation. *CEPR Discussion Paper No. 5701*. Retrieved May 06, 2008, from <http://ssrn.com/abstract=922111>
- Nolde, D., Winckler, L. (2007). Ein Neues Zeitalter. Apple und EMI Wollen Musik Ohne Kopierschutz Verkaufen. *Die Welt*. April 3, 2007
- Novell (2009). SUSE Linux Enterprise Desktop 11. Retrieved August 27, 2009, from http://www.novell.com/news/press/pressroom/presskit/linux/review_guide.pdf
- Novos, I., Waldman, M. (1984). The Effects of Increased Copyright Protection: an Analytic Approach. *Journal of Political Economy* 92(2), 236-246
- Nuvolari, A. (2004). Collective Invention During the British Industrial Revolution: The Case of the Cornish Pumping Engine. *Cambridge Journal of Economics* 28(3), 347-363
- OpenAccessNow (2004). Open Access and Creative Common Sense. Retrieved September 3, 2007, from <http://www.biomedcentral.com/openaccess/archive/?page=features&issue=16>
- OpenBusiness (2006). UK Artists – Their Approaches To Copyright and Creative Commons. Retrieved October 8, 2008, from <http://www.openbusiness.cc/wp-content/uploads/2006/11/ACERreport.pdf>
- Oberholzer-Gee, F., Strumpf, K. (2007). The Effect of File Sharing on Record Sales: An Empirical Analysis. *Journal of Political Economy* 115(1), 1-42
- Obermeier, B. (2000). Plattenfirmen auf Schmusekurs. *Media und Marketing*. July 1, 2000
- O'Mahony, S. (2003). Guarding the Commons: How Community Managed Software Projects Protect their Work. *Research Policy* 32(7), 1179-1198
- Ordober, J., Willig, R. (1978). On the Optimal Provision of Journals Qua Sometimes Shared Goods. *American Economic Review* 68(3), 324-338
- Orlowski, A. (2005). This Commons Just Isn't Creative. *The Register*. Retrieved September 28, 2009, from http://www.theregister.co.uk/2005/08/29/creativity_computers_copyright_letters/
- Orlowski, A. (2007): Creative Commons Sued for Deception. *The Register*. Retrieved August 19, 2009, from http://www.theregister.co.uk/2007/09/24/creative_commons_deception/
- OSI (2001). The Open Source Definition (Version 1.9). Retrieved September 10, 2007, from <http://www.opensource.org/docs/definition.php>
- Osterloh, M., Rota, S. (2007). Open Source Software Development – Just Another Case of Collective Invention? *Research Policy* 36(2), 157-171
- Osterloh, M., Rota, S., von Wartburg, M. (2001). Open Source – New Rules in Software Development. *Working Paper*. Retrieved August 26, 2009, from <http://www.iou.unizh.ch/orga/downloads/OpenSourceAoM.pdf>
- Owen, B., Wildman, S. (1992). *Video Economics*. Cambridge: Harvard University Press
- P2PNet (2007). Seeing the Light on DRM. Retrieved February 3, 2008, from <http://ltdnetwork.com/press/p2pnet/20070124.htm>
- Paharia, N. (2004). Fading Ways Music, Indie Label, Announces 2004 Releases Will Be CC. Retrieved July 3, 2009, from <http://creativecommons.org/weblog/entry/3994>

- Paharia, N. (2005a). DJ Spooky and Roger McGuinn Interviews. Retrieved October 18, 2008, from <http://creativecommons.org/interviews/2005/10/01/7004>
- Paharia, N. (2005b). Opsound's Sal Randolph. Retrieved September 26, 2008, from <http://creativecommons.org/interviews/2005/10/01/7012>
- Paharia, N. (2005c). Fading Ways. Retrieved July 9, 2009, from <http://creativecommons.org/audio/fadingways>
- Parker, G., Van Alstyne, M. (2005). Two-Sided Network Effects: A Theory of Information Product Design. *Management Science* 51(19), 1494-1504
- Pasquinelli, M. (2008). *Animal Spirits: A Bestiary of the Commons*. Rotterdam: NAI Publishers
- Passman, D. (2006). *All You Need to Know About the Music Business*. New York: Free Press
- Passman, D., Herrmann, W. (2004). *Alles, Was Sie über das Musik-Business Wissen Müssen*. Stuttgart: Schäffer-Poeschel
- Patalong, F. (2005). Hinhalten, Kleinreden, Beschwichtigen. *Spiegel Online*. November 29, 2005
- Pawlo, M. (2004) What is the Meaning of Non-Commercial? In Bourcier D., Dulong De Rosnay, M. (eds), *International Commons at the Digital Age*. Paris: Romillat
- Peitz, M., Waelbroeck, P. (2006a). Piracy of Digital Products: A Review of the Theoretical Literature. *Information Economics and Policy* 18(4), 449-476
- Peitz, M., Waelbroeck, P. (2006b). Why the Music Industry May Gain from Free Downloading – the Role of Sampling. *International Journal of Industrial Organization* 24(5), 907-913
- Pénin, J. (2007). Open Knowledge Disclosure: An Overview of the Empirical Evidences and the Economic Motivations. *Journal of Economic Surveys* 21(2), 326-348
- Perry, T. (2007): Imagine There's No DRM... I Wonder if You Can. *IEEE Spectrum* July 2007
- Peterson, R. (1990). Why 1955? Explaining the Advent of Rock Music. *Popular Music* 9(1), 97-116
- Peterson, R., Berger, D. (1971). Entrepreneurship in Organizations. *Administrative Science Quarterly* 16(1), 97-107
- Peterson R., Berger D. (1975). Cycles in Symbolic Production: the Case of Popular Music. *American Sociological Review* 40(2), 158-173
- Petitcolas, F., Anderson, R., Kuhn, M. (1999). Information Hiding. A Survey. *Proceedings of the IEEE* 87(7):1062-1078
- Petri, H. (1991). *Motivation: Theory, Research and Application*. Belmont: Wadsworth
- Pfannenmüller, J. (2007). Goldgräber im Digitalen Klangraum. *Werben & Verkaufen*. August 15, 2007
- Phillips, D., Owens, D. (2004). The Commercialization of Innovative Cultural Products: The Emergence of Recorded Jazz, 1920 to 1929. *Poetics* 32, 281-295
- Phillips, J. (2007). License your work. *Creative Commons*. Retrieved December 2, 2009, from <http://creativecommons.org/page/4?s=readable>

- Picot, A., Fiedler, M. (2003). Impacts of DRM on Internet Based Innovation. In Becker, E., Buhse, W., Günnewig, D., Rump, N. (eds.), *Digital Rights Management*. Berlin: Springer, 288-300
- Picot (2005). Digital Rights Mangement – ein Einführender Überblick. In: Picot, A., Thielmann, H. (2005). *Distribution und Schutz Digitaler Medien durch Digital Rights Management*. Berlin: Springer, 1-14
- Pierson, M., Fischer, K., Ahrens, T. (2007). *Recht des Geistigen Eigentums. Patente, Marken, Urheberrecht, Design*. München: Beck-Verlag
- Pike, E. (2005): What You Need to Know About Creative Commons. The Australasian Performing Right Association (APRA). Retrieved August 8, 2008, from http://www.apra.com.au/writers/downloads/creative_commons.pdf
- Piller, F. (2003). Von Open Source zu Open Innovation. *Harvard Business Manager* 25(12), 114-115
- Piratenpartei (2009). Piratenpartei Deutschland: Unsere Ziele. Retrieved September 15, 2009, from <http://www.piratenpartei.de/navigation/politik/unsere-ziele>
- Pisano, G. (2006). Profiting from Innovation and the Intellectual Property Revolution. *Research Policy* 35(8), 1122-1130
- Png, I., Chen, Y. (2003). Information Goods Pricing and Copyright Enforcement: Welfare Analysis. *Information Systems Research* 14(1), 107-123
- Posner, R. (2003). *Economic Analysis of Law*. New York: Aspen Publishers
- Posner, R. (2005). Intellectual Property: The Law and Economics Approach. *Journal of Economic Perspectives* 19(2), 57-73
- Prahalad, C. (2004). The Cocreation of Value. *Journal of Marketing* 68(1), 23-35
- Prahalad, C., Ramaswamy, V. (2000). Co-opting Customer Competence. *Harvard Business Review* 78(1), 79-87
- Premkumar, P. (2003): Alternate Distribution Strategies for Digital Music. *Communications of the ACM* 46(9), 89-95
- Prodromou, E. (2005). Debian-legal Summary of Creative Commons 2.0 Licenses. Retrieved April 9, 2008, from <http://evan.prodromou.name/ccsummary/ccsummary.html>
- Qualcomm (2006). Qualcomm Business Model: A Formula for Innovation & Choice. Retrieved March 03, 2008, from http://www.qualcomm.com/about/gcrc/pdf/QCOM_Business_Model_092506.pdf
- Rabin, M. (1993). Incorporating Fairness into Game-Theory and Economics. *American Economic Review* 83(5), 1281-1302
- Rainie, H., Madden, M. (2004). The State of Music Downloading and File-sharing Online. Pew Internet & American Life Project. Retrieved October 2007, 13, from http://www.pewinternet.org/pdfs/PIP_Filesharing_April_04.pdf
- Ramello, G. (2005) Private Appropriability and Sharing of Knowledge: Convergence or Contradiction? The Opposite Tragedy of the Creative Commons. In Takeyama, L., Gordon, W., Liacos, P., Towse, R. (eds.), *Developments in the Economics of Copyright: Research and Analysis*. Cheltenham: Edward Elgar, 120-141
- Ramírez, R. (1999). Value Co-Production: Intellectual Origins and Implications for Practice and Research. *Strategic Management Journal* 20(1), 49-65

- Raustiala, K., Sprigman, C. (2006) The Piracy Paradox: Innovation and Intellectual Property in Fashion Design. *Virginia Law Review* 92(8), 1687-1777
- Raymond, E. (2001). *The Cathedral and the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary*. Sebastopol: O'Reilly
- Rechsteiner, S. (2009). iTunes Store hat 60% Marktanteil in der Schweiz. *Macprime*. Retrieved October 3, 2009, from <http://www.macprime.ch/news/article/itunes-store-hat-60-marktanteil-in-der-schweiz/>
- Redenz, S. (2008): Netlabel Who Care(d): 1bit Wonder. *Thinnerism*. Retrieved June 23, 2009, from <http://thinnerism.cc/2008/04/09/netlabel-who-cared-1bit-wonder/>
- Reinganum, J. (1983). Uncertain Innovation and the Persistence of Monopoly. *The American Economic Review* 73(4), 741-748
- Ryan, R., Deci, E. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *American Psychologist* 55(1), 68-78
- Regner, T., Barria, J. (2009). Do Consumers Pay Voluntarily? The Case of Online Music. *Journal of Economic Behavior and Organization* 71(2), 395-406
- Renner, T. (2004): *Kinder, der Tod ist gar nicht so schlimm! Über die Zukunft der Musik- und Medienindustrie*. Frankfurt am Main: Campus Verlag
- Revelt, D., Train, K. (1998). Mixed Logit with Repeated Choices: Households Choice of Mixed Logit with Repeated Choices: Households Choice of Appliance Efficiency Level. *Review of Economics and Statistics* 53(4), 647-657
- RIAA (Recording Industry Association of America) (2009): Gold & Platinum. Top-Selling Artists. Retrieved May 15, 2009, from <http://www.riaa.com/goldandplatinumdata.php?resultpage=3&table=tblTopArt&action=>
- Riggs, W., von Hippel, E. (1994). The Impact of Scientific and Commercial Values on the Sources of Scientific Instrument Innovation. *Research Policy* 23(4), 459-469
- Rivette, K., Kline, D. (2000) *Rembrandts in the Attic: Unlocking the Hidden Value of Patents*. Boston: Harvard Business School Press
- Reitzig, M., Henkel, J., Heath, C. (2007). On Sharks, Trolls, and their Patent Prey – Unrealistic Damage Awards and Firms' Strategies of 'Being Infringed'. *Research Policy* 36(1), 134-154
- Rob, R., Waldfogel, J. (2006). Piracy on the High C's: Music Downloading, Sales Displacement, and Social Welfare in a Sample of College Students. *Journal of Law and Economics* 49(1), 29-62
- Robinson, W., Fornell, C. (1985). Sources of Market Pioneer Advantages in Consumer Goods Industries. *Journal of Marketing Research* 22(3), 305-317
- Röttgers, J. (2004). Kontrollierter Rückbau. Plattenlabel Überdenken den Kopierschutz für Musik-CD. *Frankfurter Rundschau*. October 12, 2004
- Röttgers, J. (2006): 2007: 1.000 P2P-Klagen pro Monat. *Netzwelt*. Retrieved May 3, 2009, from <http://www.netzwelt.de/news/75006-2007-1-000-p2p-klagen-pro-monat.html>
- Rogers, E. (2003). *Diffusion of Innovations*. New York: Free Press
- Rose, K. (2009a). Digg Dialog. Trent Reznor. Retrieved September 27, 2009, from <http://revision3.com/diggdialog/trentreznor>

- Rose, K. (2009b). Nine Inch Nails iPhone App Extends Reznor's Innovative Run. *Wired*. Retrieved September 27, 2009, from <http://www.wired.com/underwire/2009/04/trent-reznor-wa/>
- Rosen, S. (1981). The Economics of Superstars. *The American Economic Review* 71(5), 845-858
- Rosenberg, N. (1983). *Inside the Black Box: Technology and Economics*. Cambridge: Cambridge University Press.
- Rosenblatt, B. (2008). 7digital Touts Higher Traffic for DRM-Free Music. *DRM Watch*. Retrieved July 3, 2009, from <http://www.drmwatch.com/ocr/article.php/3758171>
- Rosenblatt, E., Trippe, B., Mooney, S. (2002). *Digital Rights Management: Business and Technology*. New York: M&T Books
- Rosen, S. (1981). The Economics of Superstars. *American Economic Review* 71(5), 845-858
- Rossmann, G., Wilson, B. (1985). Numbers and Words: Combining Quantitative and Qualitative Methods in a Single Large-Scale Evaluation Study. *Evaluation Review* 9(5), 627-643
- Rossmann, J. (1931). The Motives of Inventors. *The Quarterly Journal of Economics* 45(3), 522-528
- Sakkab, N. (2002). Connect & Develop Complements Research & Develop at P&G. *Research Technology Management* 45(2), 38-45
- Sandoval, G. (2008). RIAA: DRM Not Dead and Likely Will Make Comeback. *CNet*. Retrieved February 27, 2009, from http://news.cnet.com/8301-10784_3-9939189-7.html
- Sattler, H. (2003). Appropriability of Product Innovations: an Empirical Analysis for Germany. *International Journal of Technology Management* 26(5-6), 502-516
- Scheele, B., Groeben, N. (1988). *Dialog-Konsens-Methoden zur Rekonstruktion Subjektiver Theorien*. Tübingen: Verlag Francke
- Schiff, A. (2007): Music by Donation. Some Data. Retrieved January 3, 2008, from <http://www.26econ.com/music-by-donation-some-data/>
- Schmalensee, R. (1984). Gaussian Demand and Commodity Bundling. *Journal of Business* 57(1), 211-230
- Schnell, R., Hill, P., Esser, E. (2005). *Methoden der Empirischen Sozialforschung*. München: Oldenburg-Verlage
- Schönert, U. (2004). "Toll Collect 2". Ein neues Internetangebot soll Illegalen Tauschbörsen Konkurrenz machen. *Stern*. April 15, 2004
- Schrader, S. (1991). Informal Technology Transfer between Firms: Cooperation through Information Trading. *Research Policy* 20(2), 153-170
- Schreier, E. (2000) Content out of Control. *The Forrester Report*
- Schuler, M. (2007). Beispiel Finetunes.net. Ohne Kopierschutz Geht's Auch. Retrieved February 14, 2008, from <http://www.marcus-schuler.com/2007/02/19/beispiel-fintunesnet-ohne-kopierschutz-gehts-auch/>
- Schulze, R. (1996). *Die Musikwirtschaft: Marktstrukturen und Wettbewerbsstrategien der Deutschen Musikindustrie*. Hamburg: Verlag Kammerer & Unverzagt

- Schumpeter, J. (1942) *Capitalism, Socialism and Democracy*. London: Allen and Unwin
- Schwab, M. (2007). Sony BMG. Streit über Kopierschutz in USA Beigelegt. *Frankfurter Rundschau*. February 01, 2007
- Schwartz, J. (2004). In Survey, Fewer Are Sharing Files (or Admitting It). *New York Times*. January 5, 2004
- Seabrook, J. (2003). The Money Note: Can the Record Business Survive? *The New Yorker* July 7, 2003, 42-55
- Seitz, G. (2000). Der Krieg um die Hits. *Bunte*. August 24, 2000
- Sen, R., Subramaniam, C., Nelson, M. (2008). Determinants of the Choice of Open Source Software License. *Journal of Management Information Systems* 25(3), 207-240
- Sengupta, S. (1998). Some Approaches to Complementary Product Strategy, *Journal of Product and Innovation Management* 15(4), 352-367
- Sethi, R., Somanathan, E. (2003). Understanding Reciprocity. *Journal of Econometric Behavior and Organization* 50(1), 1-27
- Sexton, L., Ames, L. (1977). *Anne Sexton: A Self-portrait in Letters*. Boston: Houghton-Mifflin
- Shah, S., Tripsas, M. (2004). When Do User-Innovators Start Firms? Towards A Theory of User Entrepreneurship. *University of Illinois Working Paper 04-0106*
- Shah, S. (2000). Sources and Patterns of Innovation in a Consumer Products Field: Innovations in Sporting Equipment. *MIT Sloan School of Management Working Paper No. 4105*
- Shah, S. (2006). Motivation, Governance, and the Viability of Hybrid Forms in Open Source Software Development. *Management Science* 52(7), 1000-1014
- Shankland, S. (2003). Novell to acquire SuSE Linux. *ZDNet* Retrieved June 26, 2009, from http://news.zdnet.com/2100-3513_22-132565.html
- Shapiro, C. (2001). Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard Setting. In Jaffe, A., Lerner, J., Stern, S. (eds.), *Innovation Policy and the Economy Vol. 1*. Cambridge: MIT Press, 119-154
- Shapiro, C., Varian, H. (1999). *Information Rules: A Strategic Guide to the Network Economy*. Cambridge: Harvard University Press
- Shaw A. (1974). *The Rockin' 50's*. New York: Hawthorne Books
- Shepard, A. (1987). Licensing to Enhance Demand for New Technologies. *RAND Journal of Economics* 18(3), 360-368
- Shy, O. (2001). *The Economics of Network Industries*. Cambridge: Cambridge University Press
- Shy, O. and Thisse, J.-F. (1999): A Strategic Approach to Software Protection. *Journal of Economics and Management Strategy* 8(2), 163-190
- Silk, A. (1990). Questionnaire Design and Development. In Corey, E. (ed.), *MBA Field Studies: A Guide for Students and Faculty*. Boston: Harvard Business School Publishing Division, 53-68

- Sim, E., Griffin, A., Raymond, L., Vojak, B. (2007). Exploring Differences between Inventors, Champions, Implementers and Innovators in Creating and Developing New Products in Large, Mature Firms. *Creativity and Innovation Management* 16(4), 422-436
- Simon, H. (1971). Designing Organizations for an Information-Rich World. In Greenberger, M. (ed.). *Computers, Communications, and the Public Interest*. Baltimore: John Hopkins Press, 37-53
- Singleton, S. (2007). Copy Protection and Games: Lessons for DRM Debates and Development. *Progress & Freedom Foundation Progress on Point Paper No. 14.2*
- Slater, D. (2005). People Like Us. Vicki Bennett. Retrieved March 23, 2009, from <http://creativecommons.org/interviews/2005/10/01/7008>
- Snow, C., Thomas, J. (1994). Field Research Methods in Strategic Management: Contributions to Theory Building and Testing. *Journal of Management Studies* 31(4), 457-480
- Sobel L. (2003). DRM as an Enabler of Business Models: ISPs as Digital Retailers. *Berkeley Technology Law Journal* 18(2), 666-696
- Soundclick (2009): Music Charts and Genres. Retrieved August 28, 2009, from <http://www.soundclick.com/>
- Sourceforge (2009). About Sourceforge. Retrieved July 4, 2009, from <http://sourceforge.net/about>
- Spellman, P. (2006). *Indie Power: A Business-Building Guide for Record Labels, Music Production Houses, and Merchant Musicians*. Boston: MBS Business Media
- Spencer, J. (2003). Firms' Knowledge-Sharing Strategies in the Global Innovation System: Empirical Evidence from the Flat Panel Display Industry. *Strategic Management Journal* 24(3), 217-233
- Spenger, G. (2003). Authentication, Identification Techniques, and Secure Containers – Baseline Technologies. In Becker, E., Buhse, W., Günnewig, D., Rump, N. (eds.), *Digital Rights Management*. Berlin: Springer, 62-80
- Spiegel Online (2004). Grüne Kritisieren Musikindustrie. March 15, 2004
- Spiegel Online (2006). Apple Wird Nicht Grüner. December 7, 2006
- Spinmeister (2008): Artist Spotlight Q & A. Calendar Girl. Retrieved May 1, 2009, from <http://ccmixter.org/freestylemix/artist-spotlight-q-a?topic=calendar-girl>
- Stallman, R. (2005): Fireworks in Montreal. Retrieved August 13, 2008, from <http://www.fsf.org/blogs/rms/entry-20050920.html>
- Stamelos, I., Angelis, L., Oikonomou, A., Bleris, G. (2002). Code Quality Analysis in Open Source Software Development. *Information Systems Journal* 12(1), 43-60
- Stark, E. (2006). Free Culture and the Internet: a New Semiotic Democracy. Retrieved July 5, 2008, from http://www.opendemocracy.net/arts-commons/semiotic_3662.jsp
- Statman, M. (1981). The Effect of Patent Expiration on the Market Position of Drugs. In Helms, R. (ed.), *Drugs and Health: Economic Issues and Policy Objectives*. Washington: American Enterprise Institute, 140-151
- Steckler, B. (1996). *Grundzüge des Gewerblichen Rechtsschutzes*. München: Verlag Franz Vahlen

- Stein, T., Engh, M., Jakob, H. (2005). Bedeutung des Fernsehens für die Musikindustrie. "Pop Idol". In Clement, M., Schusser, O. (eds.), *Ökonomie in der Musikindustrie*. Wiesbaden: Deutscher Universitäts-Verlag, 173-184
- Steinkrauß, N., Gemlin, H., Günnel, S. (2005). Wettbewerbsanalyse. In Clement, M., Schusser, O. (eds.), *Ökonomie in der Musikindustrie*. Wiesbaden: Deutscher Universitäts-Verlag, 27-44
- Stening, B., Everett, J. (1984) Response Styles in a Cross-cultural Managerial Study. *Journal of Social Psychology* 122(2), 151-156
- Stern (2000). Stumme Rocker. Erster Erfolg der Plattenindustrie im Kampf um einen CD-Kopierschutz. February 17, 2000
- Stern (2002). So Denken die Bosse. February 6, 2002
- Stereogum (2007). Universal Delays Remix.nin.com Launch. Reznor Tries To Avoid Getting "Splashed By Urine". Retrieved June 13, 2009, from http://stereogum.com/archives/universal-delays-remixnincom-launch-reznor-tries-t_007248.html
- Stier, W. (1999). *Empirische Forschungsmethoden*. Berlin: Springer.
- Stiglitz, J. (2000). The Contributions of the Economics of Information to Twentieth Century Economics. *Quarterly Journal of Economics* 115(4), 1441-1478
- Stratton J. (1982). Between Two Worlds: Art and Commercialism in the Record Industry. *The Sociological Review* 30(3), 267-285
- Straw, W. (1988). Music Video in Its Contexts: Popular Music and Post-Modernism in the 1980s. *Popular Music* 7(3), 247-266
- Strube, J., Buxmann, P., Pohl, G. (2008). Der Einfluss von Digital Rights Management auf die Zahlungsbereitschaften für Online-Musik – Untersuchung auf Basis einer Conjointanalyse. *Zeitschrift für Medienwirtschaft*
- Sucks, B. (2009): About Brad Sucks. Retrieved August 19, 2009, from <http://www.bradsucks.net/about/>
- Süddeutsche Zeitung (2007). Abschied mit Blues. EMI-Chef Eric Nicoli hat den Kampf um die Selbständigkeit des Musikkonzerns verloren. August 30, 2007
- Sundararajan, A (2004). Managing Digital Piracy: Pricing and Protection. *Information Systems Research* 25(3), 287-308
- Szymanski, D., Troy, L., Bharadwaj, S. (1995). Order of Entry and Business Performance: An Empirical Synthesis and Reexamination. *Journal of Marketing* 59(4), 17-33
- Takeyama, L. (1994). The Welfare Implications of Unauthorized Reproduction of Intellectual Property in the Presence of Network Externalities. *Journal of Industrial Economics* 42(2), 155-166
- Takeyama, L. (1997). The Intertemporal Consequences of Unauthorized Reproduction of Intellectual Property. *Journal of Law and Economics* 40(2), 511-522
- Tang, P. (2005). Digital Copyright and "New" Controversy: Is the Law Moulding Technology and Innovation? *Research Policy* 34(6), 852-871
- Taylor, C., Silberston, Z. (1973). *The Economic Impact of the Patent System: A Study of the British Patent System*. Cambridge: Cambridge University Press
- Teece, D. (1986). Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy. *Research Policy* 15(6), 285-305

- Teece, D. (2000). *Managing Intellectual Capital*. Oxford: Oxford University Press
- Teece, D., Pisano, G., Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal* 18(7), 509-533
- Terdiman, D. (2004). Mashup Artists Face the Music. *Wired*. Retrieved December 3, 2008, from <http://www.wired.com/entertainment/music/news/2004/05/63314>
- The Insight Research Corporation (2007). Content Protection Digital Rights Management Market Spending Exceeds \$9 Billion Over Five Years. Retrieved October 4, 2008, from http://www.insight-corp.com/pr/03_14_07.asp
- Théberge, P. (2004). Technology, Creative Practice and Copyright. In Frith, S., Marshall, L. (eds.), *Music and Copyright*. Edinburgh: University Press, 139-156
- Thibaut, J., Walker, L. (1976). *Procedural Justice: A Psychological Analysis*. Hillsdale: Erlbaum
- Thinner (2007): About Thinner. Frequently Asked Questions. Retrieved May 19, 2009, from http://www.thinner.cc/pages/about/about_faq.php
- Thompson, M. (1989): Was ist eigentlich Indie-Musik? *Spex* 3/89, 44/45
- Throsby, D. (1994). The Production and Consumption of the Arts: A View of Cultural Economics. *Journal of Economic Literature* 32(1), 1-29
- Throsby, D. (2007). Preferred Work Patterns of Creative Artists. *Journal of Economics and Finance* 31(3), 395-402
- Tonspion (2005): GEMA brems Newcomer aus. Jammin Inc über ihr Album unter Creative Commons-Lizenz. Retrieved November 19, 2008, from <http://www.tonspion.de/neues/neueste/244133>
- Toop, D. (1984). *The Rap Attack*. Boston: South End Press
- Tóth, P. (2006). Creative Humbug. Personal feelings about the Creative Commons licenses. In Böhle, K. (ed.): *Indicare Monitor. Volume 2*. Retrieved August 26, 2009, from http://www.indicare.org/tiki-download_file.php?fileId=178, 108-111
- Torvalds, L., Diamond, D. (2001). *Just for Fun*. London: Texere
- Towse, R. (2004). Copyright and Economics. In Frith, S., Marshall, L. (eds.), *Music and Copyright*. Edinburgh: University Press, 54-69
- Toynbee, J. (2004). Musicians. In Frith, S., Marshall, L. (eds.), *Music and Copyright*. Edinburgh: University Press, 123-138
- Tresp, J. (2002): Musik-Marktgrößen – Live-Veranstaltungsmarktgrößen. Präsentation auf dem Kongress “Musik als Wirtschaft”. Retrieved May 6, 2008, from <http://www.trenz.de/dateien/11872/Zahlen%20Herr%20Tresp.pdf>
- Tripsas, M. (1997). Unraveling the Process of Creative Destruction: Complementary Assets and Incumbent Survival in the Typesetter Industry. *Strategic Management Journal* 18, 119-142
- Tripsas, M. (2008). Customer Preference Discontinuities: a Trigger for Radical Technological Change. *Managerial and Decision Economics* 29(2-3), 79-97
- Tschmuck, P. (2003). *Kreativität und Innovation in der Musikindustrie*. Innsbruck: Studienverlag
- Tuomi, I. (2003). *Networks of Innovation: Change and Meaning in the Age of the Internet*. Oxford: Oxford University Press

- Tushman, M., Anderson, P. (1986). Technological Discontinuities and Organizational Environments. *Administrative Science Quarterly* 31(3), 439-465
- Tyler, T. (1990). *Why People Obey the Law*. New Haven: Yale University Press
- Tyrangiel, J. (2007): Radical Remix. *TIME*. Retrieved February 5, 2009, from <http://www.time.com/time/business/article/0,8599,1668161,00.html>
- Tyre, M., Orlikowski, W. (1994). Windows of Opportunity: Temporal Patterns of Technological Adaptation in Organizations. *Organization Science* 5(1), 98-118
- Ünlü, V., Hess, T. (2003): The Optimal Level of Technical Copyright Protection: A Gametheoretic Approach. *Working Paper*. Retrieved October 5, 2009, from http://www.wim.bwl.uni-muenchen.de/download/epub/ab_2003_09.pdf
- Ünlü, V., Hess, T. (2005). The Access-usage-control-matrix: A Heuristic Tool for Implementing a Selected Level of Technical Content Protection. *Proceedings of the Seventh International IEEE Conference on E-commerce Technology*, 512-517
- Ulhoi, J. (2004). Open Source Development: A Hybrid in Innovation and Management Theory. *Management Decision* 42(9) 1095-1114
- Utterback, J., Abernathy, W. (1975). A Dynamic Model of Process and Product Innovation. *Omega* 3(6), 639-656
- Urban, G., Carter, T., Gaskin, S., Mucha, Z. (1986). Market Share Rewards to Pioneering Brands: An Empirical Analysis and Strategic Implications. *Management Science* 32(6), 645-659
- Urban, G., von Hippel, E. (1988). Lead User Analysis for the Development of New Industrial Products. *Management Science* 34(5), 569-582
- Uzzi, B. (1997). Social Structures and Competition in Interfirm Networks: The Paradox of Embeddedness. *Administrative Science Quarterly* 42(1), 35-67
- Vaccaro, V., Cohn, D. (2004). The Evolution of Business Models and Marketing Strategies in the Music Industry. *The International Journal on Media Management* 6(1-2), 46-58
- Välimäki, M., Hietanen, H. (2004). The Challenges of Creative Commons Licensing. *Computer Law Review* 5(6), 172-177
- Vaidhyanathan, S. (2001). *Copyrights and Copywrongs*. New York: New York University Press
- Van Buskirk, E. (2006). Hilary Rosen: Singing a New Song? *Wired*. Retrieved January 24, 2008, from <http://www.wired.com/entertainment/music/commentary/listeningpost/2006/07/71338>
- Van Buskirk, E. (2007). Trent Reznor Escapes His Label's Clutches. *Wired*. Retrieved May 23, 2008, from http://www.wired.com/listening_post/2007/10/trent-reznor-es
- Van Wijk, J. (2002). Dealing with Piracy: Intellectual Asset Management in Music and Software. *European Management Journal* 20(6), 689-698
- VanderWerf, P. (1992). Explaining Downstream Innovation by Commodity Suppliers with Expected Innovation Benefit. *Research Policy* 21(4), 315-333
- Varchaver, N. (2001). The Patent King. *Fortune Magazine*. May 14, 2001
- Vargo, S., Lusch, R. (2004). Evolving to a New Dominant Logic for Marketing. *Journal of Marketing* 68(1), 1-17

- Varian, H. (1995). Pricing Information Goods. *Proceedings of Scholarship in the New Information Environment Symposium*, 1-7
- Varian, H. (2000a). Versioning Information Goods. In Varian, H., Kahin, B. (eds.), *Internet Publishing and Beyond: The Economics of Digital Information and Intellectual Property*. Cambridge: MIT Press, 190-202
- Varian, H. (2000b) Buying, Sharing and Renting Information Goods. *Journal of Industrial Economics* 48(4), 473-488
- Varian, H. (2001). Markets for Information Goods. In Okina, K., Inoue, T. (eds.), *Monetary Policy in a World of Knowledge-Based Growth, Quality Change and Uncertain Measurement*. Macmillan Press
- Varian, H. (2005). Copying and Copyright. *Journal of Economic Perspectives* 19(2), 121-138
- Venkatesh, V. (2000). Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model. *Information Systems Research* 11(4), 342-365
- Vogel, H. (2004). *Entertainment Industry Economics: A Guide for Financial Analysts*. Cambridge: Cambridge University Press
- von Hippel, E. (1987). Cooperation between Rivals: Informal Know-How Trading. *Research Policy* 16(6), 291-302
- von Hippel, E. (1976). The Dominant Role of Users in the Scientific Instrument Innovation Process. *Research Policy* 5(3), 212-239
- von Hippel, E. (1977). The Dominant Role of the User in Semiconductor and Electronic Subassembly Process Innovation. *IEEE Transactions on Engineering* 24(2), 60-71
- von Hippel, E. (1988). *The Sources of Innovation*. New York: Oxford University Press
- von Hippel, E. (2001). Innovation by User Communities: Learning from Open-Source Software. *MIT Sloan Management Review* 42(4), 82-86
- von Hippel, E., Katz, R. (2002). Shifting Innovation to Users Via Toolkits. *Management Science* 48(7), 821-833
- von Hippel, E., Tyre, M. (1995). How Learning by Doing Is Done: Problem Identification in Novel Process Equipment. *Research Policy* 24(1), 1-12
- von Hippel, E., von Krogh, G. (2003). Open Source Software and the “Private-collective” Innovation Model: Issues for Organization Science. *Organization Science* 14(2), 209-225
- von Hippel, E., von Krogh, G. (2006). Free Revealing and the Private-Collective Model for Innovation Incentives. *R&D Management* 36(3), 295-306
- von Krogh G., Spaeth S., Lakhani K. (2003) Community, Joining, and Specialization in Open Source Software Innovation: a Case Study. *Research Policy* 32(7), 1217-1241
- von Krogh, G., von Hippel, E. (2006). The Promise of Research on Open Source Software. *Management Science* 52(7), 975-983
- Vormehr, U. (2003) Independents. In Moser, R., Scheuermann, A. (eds.), *Handbuch der Musikwirtschaft*. München: Josef Keller Verlag
- VNUNet (2007a). EMI Stoppt DRM-infizierte Audio-CDs. January 8, 2007
- VNUNet (2007b). Sony: Der Musik-Kopierschutz ist Tot. February 22, 2007

- VUT (2006). VUT-Kampagne "Respect the Music – Copy Protection Free" Geht Online. Retrieved February 5, 2008, from <http://www.vut-online.de/cms/?p=268>
- Wally, S., Baum, R. (1994). Personal and Structural Determinants of the Pace of Strategic Decision Making. *Academy of Management Journal* 37(4), 932-956
- Walterscheid, E. (1994). To Promote the Progress of Science and Useful Arts: The Background and Origin of the Intellectual Property Clause of the United States Constitution. *Journal of Intellectual Property Law* 2(1)
- Watt, R. (2000). *Copyright and Economic Theory: Friends or Foes?* Cheltenham: Edward Elgar
- Watt, R. (2004). The Past and the Future of the Economics of Copyright. *Review of Economic Research on Copyright Issues* 1(1), 151-171
- Weatherall, K. (2006). Would You Ever Recommend a Creative Commons License? *Australian Intellectual Property Resources*
- Webb, W. (2002). Pick and Place: Linux Grabs the Embedded Market. *EDN*. Retrieved October 10, 2007, from <http://www.reed-electronics.com/ednmag/contents/images/253780.pdf>
- Weber, S. (2004). *The Success of Open Source*. Cambridge: Harvard University Press
- Weinstein, S., Wild, C. (2005). Lawrence Lessig's 'Bleak House': A Critique of 'Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity'. *International Review of Law Computers and Technology* 19(3), 363-375
- West, J. (2003). How Open is Open Enough? Melding Proprietary and Open Source Platform Strategies. *Research Policy* 32(7), 1259-1285
- West, J., Gallagher, S. (2006). Challenges of Open Innovation: The Paradox of Firm Investment in Open-Source Software. *R&D Management* 36(3), 319-331
- Wigand, R. (2003). Facing the Music: Value-Driven Electronic Markets, Networks and Value Webs in Economic Integration of Digital Products. In Becker, E., Buhse, W., Günnewig, D., Rump, N. (eds.), *Digital Rights Management*. Berlin: Springer, 250-270
- Wikipedia (2009a). Copyright Term Extension Act. Retrieved July 16, 2009, from http://en.wikipedia.org/wiki/Copyright_Term_Extension_Act
- Wikipedia (2009b). Sony BMG CD Copy Protection Scandal. Retrieved July 16, 2009, from http://en.wikipedia.org/wiki/Sony_BMG_CD_copy_protection_scandal
- Wilde, E., Schwerzmann, J. (2004). When Business Models Go Bad: The Music Industry's Future. *International Conference on E-Business and Telecommunication Networks 2004*. Retrieved November 8, 2008, from <http://dret.net/netdret/docs/wilde-music-icete2004.pdf>
- Williamson, J. (2008). The Music Industries. *Lecture at the University of Glasgow*. Retrieved May 3, 2009, from <http://www.scribd.com/doc/7697670/Live-Music-Industry>
- Williamson, O. (1979). Transaction Cost Economics: The Governance of Contractual Relations. *The Journal of Law and Economics* 22(2), 233-261
- Wilson, D. (2006). Independent Labels Distance Themselves from RIAA Policy. *Slyck*. Retrieved April 4, 2009, from <http://www.slyck.com/story1075.html>

- Winkler (2009). Musikdownloads – Der Einfluss von Nutzungsfreiheiten auf die Kaufentscheidung. Unpublished diploma thesis
- Wittink, D., Krishnamurthi, L., Nutter, J. (1982). Comparing Derived Importance Weights Across Attributes. *Journal of Consumer Research* 8(4), 471-474
- WMG (Warner Music Group) (2006). Earnings Call Transcript Q4 2006
- WMG (Warner Music Group) (2007). Amazon MP3 Adds Music Audio Downloads From Warner Music Group. Retrieved October 3, 2009, from http://www.wmg.com/newsdetails/id/8a0af812164b500b01171e0fd7b01f4e_new
- WMG (Warner Music Group) (2008). Annual Report 2008. Retrieved February 6, 2009, from http://library.corporate-ir.net/library/18/182/182480/items/321763/DDD96E70-D0DD-47EF-856A-A324466BE398_warner10K.pdf
- Wolfe, A. (2007). DRM Scorecard: Hackers Batting 1000, Industry Zero. *Information Week*. Retrieved November 6, 2007, from http://www.informationweek.com/blog/main/archives/2007/08/drm_scorecard_h.html
- Wolpert, S., Wolpert, J. (1986). *Economics of Information*. New York: Van Nostrand Reinhold
- Wong, M. (2007). User-Generated Content and the Open Source/Creative Common Movements: Has the Time Come for Users' Rights? *Working Paper*. Retrieved November 19, 2008, from <http://ssrn.com/abstract=1022395>
- Worren, N., Moore, K., Cardona, P. (2002). Modularity, Strategic Flexibility, and Firm Performance: a Study of the Home Appliance Industry. *Strategic Management Journal* 23(3), 1123-1140
- Yin, R. (2003). *Case Study Research: Design and Methods*. Thousand Oaks: Sage
- Yoon, K. (2002). The Optimal Level of Copyright Protection. *Information Economics and Policy* 14(3), 327-348
- Yoskowitz, A. (2008). iTunes gains market share, as does Amazon, Rhapsody. *Afterdawn*. Retrieved December 1, 2009, from <http://www.afterdawn.com/news/archive/15644.cfm>
- YouTube (2007). Trent Reznor: Steal it! – Recorded by Ryan. Retrieved June 23, 2009, from <http://www.youtube.com/watch?v=TJ5iHaV0dP4>
- Yu, J., Goos, P., Vandebroek, M. (2009): Efficient Conjoint Choice Designs in the Presence of Respondent Heterogeneity. *Marketing Science*, forthcoming
- Zeitlyn, D. (2003). Gift Economies in the Development of Open Source Software: Anthropological Reflections. *Research Policy* 32(7), 1287-1291
- Zentner, A. (2008). Online Sales, Internet Use, File Sharing, and the Decline of Retail Music Specialty Stores. *Information Economics and Policy* 20(3), 288-300
- Zentner, A. (2006). Measuring the Effect of File Sharing on Music Purchases. *Journal of Law and Economics* 49(1), 63-90
- Zhang, M. (2002). Stardom, Peer-to-Peer and the Socially Optimal Distribution of Music. *Working Paper*. mimeo, Sloan School of Management, MIT