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WILLINGNESS TO PAY FOR DIGITAL MUSIC: THE CASE OF LITHUANIA

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Abstract

This paper aims to investigate Lithuanian students' willingness to pay (WTP) for digital music and factors that determine it. Web-based survey data employed in our analysis was collected from respondents studying in 19 Lithuanian higher education institutions. The findings suggest that 76% of Lithuanian students express non-zero WTP, which for those students is equal to 0.30 EUR on average. Regression analysis showed that people with higher moral norms are willing to pay more for digital music. As well, a person's income and high ethic norms contribute to explaining the person's choice whether to pay or not for downloading music from the Internet. In addition, further analysis of student attitudes towards p2p file sharing indicates that Lithuanian students tend not to care if p2p file sharing is legal or illegal and do not regard it as stealing. Also, people are found to strongly agree that p2p file sharing is an integral part of the Internet. Despite that people are found to still use the Internet if p2p file sharing was unavailable.
Keywords: willingness to pay, WTP, digital music, p2p file sharing, peer-to-peer, students

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Definition of Terms

CD	Compact disc
CV	Contingent valuation method
DVD	Digital versatile disc
EUR	The euro
IT	Information technology
Kbps	Kilobit per second
LTL	Lithuanian litas
Mp3	Motion Picture Expers Group - 1 Audio Layer 3
P2P	Peer-to-peer
RIAA	Recording Industry Association of America
SPSS	Statistical analysis program
STATA	Statistical analysis program
TRIPS	The Agreement on Trade Related Aspects of Intellectual Property Rights
US	United States of America
USD	United States dollar
Torrent	A peer-to-peer file sharing protocol used for changing large amounts of data
WTO	World Trade Organization
WTP	Willingness to pay

1 Introduction

Launching the first peer-to-peer (p2p) file sharing application, Napster, in 1999 revolutionized the music market. Since then the possibility to share music via the Internet for free has been a hot topic of debate. Music artists, distributors and stores are calculating multi-billion losses each year (International Federation of the Phonographic Industry (IFPI), 2006) and the music industry, building on the argument that music piracy slows down economic activity, seeks for a higher level of legal enforcement. Despite that, the number of online p2p communities has been growing at increasing rate (Gu, Huang, Duan & Whinston, 2007) which indicates that more and more people accept the participation in illegal music market as a norm.

Naturally, one may ask why a rational consumer should pay for a good that he can get for free. Following such logic, a fee-based music market should not survive. However, the examples of Amazon.com and iTunes, online music shops generating fair profits, seem to tell a different story. Still, these companies themselves could hardly compete with free-of-charge p2p file sharing and thus the success of these online music stores can also be attributed to increased indirect costs for file-sharers that are caused by laws which make copyright violations illegal and actions which anti-piracy organizations take in order to deter people from engaging in illegal file sharing.

However, if legal enforcement of copyright law is weak (International Intellectual Property Alliance, 2008) and actions of anti-piracy organizations are not seen as a threat, p2p music file sharing becomes a common phenomenon which currently seems to be the situation in Lithuania. To make things worse, the representatives of music industry, building on the argument that the piracy level in the country is too high and that it is pointless to compete with “the free”, take the position that there are no perspectives in making online business, and thus in many cases do not sell their production in digital form online (Kalinauskas, Paršonis, Savukynas & Simanavičius, 2010). As a result, there is almost no variety either in legal digital music goods (which nowadays are preferred to other music formats offered by Lithuanian music industry, e.g. CDs) or in online services where these goods could be obtained; therefore, consumers are forced to turn to illegal ways of satisfying their needs (Kalinauskas et al, 2010). In such a way the prosperity of p2p music file sharing is reinforced even more.

Even though the piracy rates in Lithuania are high (International Intellectual Property Alliance, 2008), the arguments that Lithuanians would not choose to pay for digital music because they are used too much to getting it for free (Kalinauskas et al, 2010; Technologijos.lt, 2009) are based on an unwarranted beliefs: no serious research has been done to justify these assumptions about Lithuanian consumers' preferences. Despite this, most music copyright owners (artists, record companies and distributors), on whom the current Lithuanian music market structure mainly depends, seem to rely on such arguments (Sergijenko, 2009; Kalinauskas et al, 2010). Therefore, our study seeks to fill this gap. In order to do that, two research questions are raised:

1. *How much money would Lithuanian students be willing to pay to acquire digital music legally?*

2. *What are the determinants that affect Lithuanian students' willingness to pay for digital music?*

University students show a higher interest in technology and copyright goods, and tend to interact with each other more often (Byman & Geller, 2001). It makes this market segment particularly interesting to study. In addition, it is easier to collect data from a relatively homogenous environment (Assane & Chiang, 2007a; Gopal & Sanders, 1998).

The answer to the first research question will help to estimate the possible demand for digital music expressed by students: (1) the part of students that would choose legal alternatives if they were available as well as (2) the price they would be willing to pay. The obtained results will be a suggestive indicator of whether there are any business opportunities in the Lithuanian market regarding the online sales of digital music.

The second research question is proposed to investigate what are the main factors: (1) that make people choose legal music market instead of downloading music free of charge via p2p connections; and (2) that influence their decision of how much to pay for acquiring music legally. Understanding people's attitudes towards p2p file sharing versus paid alternatives and finding the factors influencing their willingness to pay (WTP) is the first step towards creating schemes of how to increase people's willingness to pay for digital music.

Since there is no previous research done in Lithuania on the topic, the academic evidence collected in other countries (mainly in the USA because anti-piracy organisations are very active there and thus a lot of research measuring their effectiveness has been carried out) was used as a basis for our study. Although the main concept to be investigated in our study is willingness to pay (WTP) for digital music, it is also closely related to the music piracy issue. Therefore, in order to develop a theoretical framework, an extensive review of

previous academic research related to WTP as well as to music piracy was made. It reveals that students' WTP can be explained by economic incentives, personal risk perception for being caught and punished, morality (innate law conformity), peer effects, individual ethics standards and other personal characteristics.

In the empirical part of the study a web-based survey method is employed. The main analysis is based on the methodology developed by Assane and Chiang (2009) and Ballemare and Holmberg (2009) who also tried to estimate and investigate students' WTP for digital music. Additionally, in order to get some supplementary insights, the analysis of Lithuanian students' attitudes towards both legal and illegal music markets is made. By receiving responses from 19 higher education institutions in Lithuania, our study eliminates the limitation faced by previous studies coming from investigating the students from only either 1 or 2 universities, making our results more generalisable for the whole student body of the country than in previous works.

The rest of the paper is organized as follows. Section 2 provides a brief background about the situation of music piracy and legal alternatives available in the world and in Lithuania. Section 3 presents the review of literature on the topic. Section 4 introduces the theoretical model. Section 5 discusses the methodology used. A review of empirical results and their interpretation is provided in Section 6. Section 7 concludes and discusses the possible limitations of the study.

2 Background of the Research

2.1 Music Sales and Piracy

According to the 1976 Copyright Act, the owners of copyright (in our case, artists, record companies or music distributors) have an exclusive right to "reproduce the work in copies" or/and "distribute copies or phonorecords of the work to the public by sale or other transfer of ownership" (U.S. Copyright Office, 2008). Music can be sold physically or online. Nowadays physical sales typically are sales of music written in compact discs (CD) and digital versatile discs (DVD) while online sales do not take any physical form; it is just the buying of songs from websites that offer such services. Customers are usually charged some amount of money per song, per album downloaded or some fee that allows downloading files from the website for a particular period of time. Our study concentrates on online music distribution.

The violation of intellectual property rights is called piracy. There are two main types of music piracy: physical piracy (otherwise called street piracy) and online piracy (also called

digital music piracy). The first one can be defined as production of counterfeit CDs and selling them without the permission of the artist (Recording Industry Association of America (RIAA), 2009) while digital music piracy is uploading/downloading music to/from the Internet without any payment or notice to the copyright owner of the piece of music. Most of the illegal music is file-shared via peer-to-peer connections using online-based p2p applications: the users just download music files straight from one user's computer hard-drive to another. The activities of both, online companies, which launch these applications, and their users, who share music files for free, fall under the heading of piracy. However, this work intends to investigate the issue from the user perspective. Even though physical music piracy is also an important issue, our study focuses only on online music piracy.

2.2 Copyright Protection Internationally

The Recording Industry Association of America is the most powerful and well-known anti-piracy organisation in the world. Its members are record companies that produce and sell about 85% of legitimate sound recordings sold in the U.S. (RIAA, 2009). The main concern of RIAA is to "foster business and legal climate" that supports its members. Even though RIAA states that in order to fight piracy they use a combination of education, innovation and legal enforcement, the latter activity has recently received most of the attention. Many individuals, who used to share large amounts of illegal music files via p2p networks such as KaZaA, Grokster, iMesh, and Gnutella, were taken to court and punished with fines which on average amounted to 2,912 USD (Assane & Chiang, 2007a). However, RIAA recently decided to stop prosecuting individuals for violating copyright laws and started looking for new ways to deter people from piracy (RIAA, 2009). RIAA explains that the new programme achieved what it was designed for: to educate the public about copyright law, the consequences of breaking the law and to increase public awareness of all the legal sites (e.g. Amazon.com, BearShare, YouTube, iTunes, emusic, mp3.com). Yet, the real effectiveness of this legal enforcement is hard to measure.

The Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS Agreement) is the most comprehensive multilateral agreement on intellectual property to date. It sets the minimum standards of protection and general principles applicable to all intellectual property rights enforcement procedures in all member countries that have signed the agreement. The agreement has to be signed by all the countries joining the World Trade Organisation (WTO), which currently consists of 153 member countries (World Trade Organization, 2009). Lithuania joined the WTO on 31 May 2001.

By signing the TRIPS Agreement, a country accepts an obligation to adjust its national copyright law so that it meets at least the minimum intellectual property protection requirements. Each country is also obliged to enforce its copyright law. To make sure that intellectual property rights are protected, national bodies, similar to RIAA, are usually established.

2.3 Copyright Protection in Lithuania

There are two organisations protecting intellectual property rights in Lithuania: LATGA-A and LANVA. LATGA-A (Intellectual Property Protection Association of Lithuania) was established in 1990 by creative work authors and artists. Its main tasks are administering and protecting copyrights, collecting and distributing the rewards for using authorised works and fostering the legal usage of copyrighted Lithuanian works in Lithuania and abroad as well as foreign works in Lithuania (LATGA, 2009). However, LATGA-A is mainly concerned about the commercial usage of authorised works, and it is not their objective to trace and punish end users of unauthorised works.

LANVA is the anti-piracy association of Lithuania established on 27 November 2006 by the largest music, video and game producers in Lithuania. Its main objectives and tasks include copyright protection, implementation of anti-piracy programmes online and pursuing educational activities with regard to protection of intellectual property rights (LANVA, 2009). Both organisations base their activities on the Intellectual Property and Related Rights Protection Law and other related laws and acts of the Republic of Lithuania.

Considering online music piracy only, despite the official objectives the president of LANVA acknowledges that the effort to fight piracy is based mostly on closing websites or networks that help to share illegal files (last year anti-piracy organizations in Lithuania managed to close five p2p networks (Technologijos.lt, 2009)). However, no other major actions to inform people about the negative aspects of breaking copyright law have been taken by the organization.

No sound legal enforcement aimed at end online users has taken place in Lithuania until November 2009 when LANVA together with Microsoft sued the owner of Linkomanija.net (the most well-known torrent system provider in Lithuania) for illegally sharing Microsoft software. Also, one of the users of Linkomanija.net has been taken to court and accused of downloading and publicly sharing the same software without the right to distribute it, while another 105 users have been identified and, depending on the outcome of the first trial, might have also been sued (Povilaitis & Račiukaitis, 2010). The case of

Linkomanija.net has attracted much attention and is still being widely discussed in media. However, the court has not given a verdict yet therefore it is still uncertain whether the accused people will be found guilty and how large the fines will be.

2.4 Legal Alternatives for Piracy

There are many companies around the world that offer legal alternatives for acquiring music online. Still, for some individuals it might be difficult to figure out what is legal and what is not. Therefore, such organizations as BirdTrax help people to find information about legal files, websites or networks (Illinois State University, 2010).

People can choose various online music distributors and service providers depending on their payment systems, music collections, prices, etc. Among the most well-known music service providers are iTunes and Amazon.com. The price range for most songs in these stores varies from 0.79 USD (0.59 EUR) to 0.99 USD (0.74 EUR) per song and usually around 9.99 USD (7.49 EUR) per music album (iTunes, 2010; Amazon.com, 2010). In addition, there are companies such as Napster that charge a monthly subscription fee for using their services. In addition, there are legal alternatives that allow people to listen to music free of charge, for instance, Youtube and Last.fm. However, these alternatives do not allow you to keep songs on your computer and in most cases you need access to the Internet in order to listen to the music. To summarize, there are many legal options that people who like listening to music can choose from.

2.5 Legal Alternatives in Lithuania

To start with, there are not many Lithuanian websites that provide the option to purchase music online. Furthermore, the legality of these websites is often questionable since no organization provides a list of legal music sellers in Lithuania. One of the most well known legal websites selling music online is the portal Muzika (Muzika, 2010). The price per song on average is 5 LTL (1.45 EUR) and 50 LTL (14.5 EUR) per album, which is around twice as expensive as on iTunes or Amazon.com. Another portal, Music.lt, allows people to listen to music online for free (Music.lt, 2010). Therefore, there are some alternatives that Lithuanians can choose from. Of course, Lithuanians are not limited to using services provided only by Lithuanian companies. However, there are some reasons why people could prefer using Lithuanian alternatives. Among them are geographical constraints implemented by the owners of foreign online music shops. For example, only in April 2009 did Apple include Lithuania in the list of countries that can access services offered by the online music

shop iTunes (AINA, 2009). Naturally, foreign online music shops do not offer much Lithuanian music. Even in the absence of these limitations, limited knowledge about the payment systems used in other countries as well as the language barrier may deter Lithuanians from using music services provided by foreign companies.

3 Literature Review

There is a growing number of studies related to the pricing of digital goods and investigating the determinants of copyright piracy. Music and software industries are among the mostly researched (Varian, 2005). Despite the increasing literature on copyright piracy, various researchers offer different conclusions – some suggest that a person's income plays the main role in the decision to resort to piracy, some emphasize the importance of moral norms, etc. Even though we focus on an individual's willingness to pay for music (not on piracy), the person's expressed willingness to pay comprises of two decisions: (1) whether to pay or not and, if the answer is positive, (2) how much to pay. The first decision can be well related to the legal side of the issue, therefore, we believe that presenting a wider view of studies that focus on the issue of piracy may help to identify the factors that explain a person's WTP. Therefore, we firstly review studies focusing on the determinants of copyright piracy and continue with researches that have attempted to estimate the willingness to pay for digital music.

To start with, some of the first researchers that tried to find a solution for music piracy were Cohen and Cornwell (1989) and Cheng, Sims and Teegen (1997). Their studies concluded that copyright law enforcement and economic factors should be taken into account when dealing with the problem. However, later studies suggested that the impact of legal enforcement on piracy might be twofold: on the one hand, legal enforcement deters people from violating the law (Yoon, 2002), but on the other hand, it is not necessarily always effective (Stolpe, 2000).

Some researchers decided to look at the issue from a broader perspective and tried to relate a country's legal system to its level of digital goods piracy. On one side, people tend to pirate less in countries with "strong policies on copyright enforcement" (Gopal & Sanders, 1998). Also the strength of institutions and the government's ability to enforce laws are found to deter people from violating copyrights (Marron & Steel, 2000). On the other side, some researchers tried to understand if the piracy of digital goods could bring any benefits and if enforcement is really that necessary. There is evidence that copyright protection is not always efficient since it reduces demand for legal goods (Shy & Thisse, 1999; Gayer & Shy, 2003).

In addition, other researchers emphasized the importance of network effects that piracy has on the whole music industry. The evidence suggests that better enforcement of copyright laws and higher prevention of digital piracy might severely punish musicians by reducing network effects (Gayer & Shy, 2005). Peitz and Waelbroeck (2003) further argued that because of network externalities digital goods tend to be more valuable as more people can acquire them (either legally or illegally). The solution here could be selective enforcement strategy which would be aimed to increase "the market share of legal music sales" (Ben-Shahar & Jacob, 2004). Thus even if a higher level of enforcement helps to prevent individuals from participating in p2p file sharing it is still unclear if stronger measures should be taken.

On the individual level a significant part of research has been devoted to investigate if an individual's risk perception has any effect on his decision to engage in file sharing and to break copyright law. On one hand, risk perception is innate in nature. In other words, the way people understand risk and behave is inborn. However, people tend to be sensitive to various risk factors, such as increased litigation (Assane & Chiang, 2007a). For example, Chiou, Huang and Lee (2005) found that higher probability of being persecuted and greater penalties have a significant effect on high school students' decision to pirate in Taiwan. Ballemare and Holmberg (2009) suggested that increased threat of being caught reduces incentives to pirate. Still, improved enforcement may not always prevent people from breaking the law as accepting risks is not always considered to be irrational. People tend to make cost-benefit analyses and weigh the possible benefits of illegal file sharing against the likely consequences (Becker, 1968).

In addition, an individual's risk perception is highly influenced by the behaviour of peers: the more people break the law, the lower the risk of being caught is perceived to be (Becker, 1968). The argument is supported by Assane and Chiang (2002) who find that class standing is highly related to college students' decision to pirate software. Finally, some researchers tried to attribute risk tolerance to gender differences. The results showed that male students are more likely to violate copyright law and have larger collections of music acquired via file sharing while women have higher risk perception and tend to consider enforcement actions and economic incentives more often than men (Assane & Chiang, 2007b). Having considered all the arguments above, the ways individuals perceive risk seem to influence their decisions to engage in file sharing activities violating copyright laws. Although one's perception of risk is largely inborn, it can also be shaped by the environment and the behaviour of peers.

Some actions taken by individuals can be associated with their ethics and moral norms. A number of researchers have tried to understand what role these factors play on a person's decision to engage in digital goods piracy. Gopal, Sanders, Bhattacharjee, Agrawal and Wagner (2004) developed a behavioural model to show that a person's ethical norms and the awareness of the implications of piracy are important factors influencing one's decision to pirate music (however, the authors did not account for economic variables in their study). In addition, governments sometimes try to remind individuals of what is ethical and how they are supposed to behave. Nevertheless, there is evidence that legal and educational campaigns have no deterrent effect on an individual's decision to engage in file sharing activities that are against copyright law (d'Astou, Colbert & Montpetit, 2005; Gopal et al, 2004). Another recently performed study shows that people do not necessarily behave in the same way as they would recommend others to act in similar situations (Altchuller & Benbunan-Fich, 2009). In other words, the authors suggest that although an individual perceives pirating music as unethical and advises others not to do that, he may still engage in piracy. To conclude, researchers have found some evidence that an individual's moral norms affect his behaviour. However, people seem to not consider piracy of digital goods to be unethical and the effectiveness of different methods of raising people's awareness about the issue is largely debatable.

Considering economic factors, many researchers have tried to relate country's income to its national level of piracy. Statistically, wealthier and more economically developed countries tend to report lower piracy rates of digital goods (Marron & Steel, 2000; Silva & Ramello, 2000). One of the prevailing explanations is that richer countries are thought to be able to enforce copyright laws better. Nevertheless, Zentner (2005) presented some contradictory evidence on how the piracy level depends on the wealth of the country. He argued that richer countries typically have greater Internet penetration and larger Internet capacities which are found to decrease demand for legal music.

In addition, the lower level of piracy can also be attributed to cultural differences, namely that individualistic countries engage in file sharing less often while collectivistic countries suffer from piracy more (Marron & Steel, 2000). However, the latter countries also tend to be poorer. Also, there is evidence that the level of piracy in a country can be largely explained by "cultural differences in the values placed on copyright law" (Moores, 2003). Thus even though it seems that richer countries should have lower piracy rates, the relationship between a county's wealth and its level of piracy is not straightforward as cultural differences may also be important factors.

Furthermore, the effect of music piracy on artists and music sellers is also largely discussed in the literature. Music artists and distributors are mainly concerned about the demand for legal music and the revenues they receive. The general opinion regarding the matter is that piracy is a dominant factor reducing legal music sales (Zentner, 2004; Liebowitz, 2006). However, there are papers demonstrating that the case latter is not necessarily true. For example, Oberholzer-Gee and Strumpf (2007) found support for the argument that usage of p2p networks has no significant influence on music sales. Therefore, the effect of piracy on demand for legal substitutes is also ambiguous.

Researchers have offered various explanations for why piracy may have a positive effect on the demand for legal music. To start with, Shy (2001) showed that extensive file sharing of illegal downloads has a positive effect on a person's willingness to pay for digital goods. Similarly, individuals who share files tend to buy more music legally (Stevans & Sessions, 2005; Zentner, 2006). Despite the latter finding the demand for legal music on an aggregate level suffers from pirating (Zentner, 2006). In addition, people might like to try things before buying them. This argument is partly confirmed by Gopal et al (2006) who found that a reduction of cost for sampling increases digital music sales. Next to that, file sharing has helped some artists to gain popularity, as some of the music downloaded illegally would hardly be bought otherwise (Rafael & Waldfogal, 2006). Finally, network effects also play an important role in making digital goods popular. The more people buy a song or get it illegally, the more valuable the digital good becomes (Peitz & Waelbroeck, 2003). Thus there is much evidence that piracy might even help to boost legal music sales.

In addition, Boldrin and Levine (2002) pointed out many drawbacks of having copyright laws in general. The idea that both political parties, artists, and society in general could benefit from abandoning copyright laws made researchers think of theoretical options how this could work. One of the solutions was offered by Condry (2004). He argued that there are four main reasons why individuals share files: (a) people do not want to spend money, (b) they do not like buying blindly – people want to try some good before they buy it, (c) to find goods that are not available otherwise, and (d) to find goods that have no copyright. Having considered all four, only (a) might be seen as a threat for the market. Thus Condry (2004) suggested that, theoretically, all it takes is that people would at least support the artists they really like (by paying for their records). This theoretical suggestion has recently been put in practice by the music group Radiohead: the group allowed its fans to pay as much as they wanted (from zero to 99 EUR) for downloading the album "In Rainbows"

(Pareles, 2007). The album's success illustrates that people sometimes are actually willing to pay to support the group they like.

The subject of willingness to pay for digital music is a relatively new topic. Although researchers cannot agree what effect the rates of piracy have on sales of legal music there is evidence that individuals would be willing to pay more for music and would buy more digital songs if piracy did not exist at all (Fetscherin & Lattermann, 2007). However, an interesting thing to investigate is the reasons why some individuals pay for digital music while illegal ways of getting it exist. Some researchers have tried to find out if the same factors that influence a person's decision to pirate digital goods could also be applied to determine the amount individuals are willing to pay for legal music. Other scholars have attempted to explain the success of online music stores by focussing on their characteristics.

To start with, Bellemare and Holmberg (2009) found that WTP for music has a significant negative effect on the likelihood that the respondent's last acquired song was pirated. They controlled for the probability of being taken to court and the size of the fine that also turned out to significantly affect the individual's decision to pirate music. Finally, receiving an iTunes gift card decreased the likelihood of pirating. However, their findings can hardly be generalized as all their survey respondents were college students from the same university in the U.S.

Another research regarding willingness to pay for music was carried out by Assane and Chiang (2007a). The researchers argued that students are sensitive to the price of music. This means that, holding other things equal, individuals should choose the cheapest solutions available to acquire music, namely illegal file sharing. However, this has not been the case in recent years as online music stores proved to be successful among students. Although some part their success can be attributed to increased awareness of the issue of piracy or to the higher number of prosecution cases, the authors suggest that willingness to pay a higher price can also be related to improved convenience. This means that some people are indifferent between paying an amount of money (up to some level) for music and downloading the music for free. But what may matter for them is the time spent while searching for a song, the quantity of music and artists available, the ease of access, etc. Thus if online music shops improved even more and gave more incentives for people to pay for music, illegal file sharing and piracy might become a thing of the past. However, these suggestions are only theoretical since the authors do not provide any evidence to support their statements.

Finally, Assane and Chiang (2009) have recently announced a paper explaining the reasons of willingness to pay for digital music among U.S. students. This time the authors

suggested that economic factors (namely a person's income) and risk perception have a significant effect on an individual's decision to pay for music instead of illegally downloading it for free. The researchers also pointed out that ethics also play an important role and are worth considering in further papers. Still, it was noted that there might be other factors that influence the demand for legal music, such as the convenience of the shop or the number of online music shops; however, no evidence was reported.

4 Theoretical Framework

Having reviewed the existing literature on music piracy and willingness to pay for digital music, we have constructed a theoretical framework that will be used as a basis for the empirical part of our research. In our research we assume that consumers are indifferent between legal and illegal versions of digital music in terms of utility that they receive when consuming music. We support the statement with the following arguments. Firstly, the difference in quality of legal songs and illegal substitutes nowadays has become so small that only audio engineers can recognize it (Ballemare & Holmberg, 2009). When the Internet was not so popular people used to make duplicate tapes or compact discs instead of buying legal alternatives - such copying took relatively much time and the quality of music would become poorer. But as technology advanced and Internet usage became more widespread, the difference between legal and illegal versions became almost unobservable. In addition, the prevailing format of both legal and illegal versions of digital songs downloadable from the Internet is the same (namely, mp3) (New York Times, 2010). The prevailing standard bit rate (which can be related to the quality of digital music files) for mp3 files is 128 kbps (Furchgott, 2007). Most online music stores as well as most of the software that is used for transforming CD files into mp3 offer the same (128 kbps) or an even higher bit rate (Furchgott, 2007).

Secondly, even though not necessarily all the shared recordings have good quality, poor quality music files are not shared widely as consumers delete them after trying, and thus stop from spreading them to the whole network (Ballemare & Holmberg, 2009). This is because most consumers of music have a preference for better quality songs and people who acquire music illegally are not an exception. Therefore, we expect that lower quality music will not be kept or offered to other file-sharers when better quality music is available. Considered these reasons, we expect that the difference in quality of legally purchased and illegally acquired music should be negligible, meaning that the perceived utility of listening to legally and illegally acquired digital music can be assumed to be the same.

Despite the perceived utility being the same, consumption of illegal music may possibly have additional costs for the consumer. Firstly, people who acquire music illegally may be accused of violating copyrights and taken to court. Secondly, if they are found guilty they may need to pay some penalty. It is worth mentioning here that Lithuanian copyright law enforcement against online music piracy is very weak and piracy rates are high (International Intellectual Property Alliance, 2008). In addition, the lack of lawsuits and no sound cases when someone was actually fined should further support the conviction that p2p file sharing in Lithuania is risk-free. However, copyright laws are established in Lithuania, thus a hazard that it is just a matter of time before they are enforced remains. Furthermore, the recent (and broadly covered in media) case of the owner of the most well-known Lithuanian website, which helps people to share files via p2p networks, being accused of violating software copyrights (for more details see Background) may have increased people's awareness about the probability of being prosecuted and fined. Therefore, the subjectively perceived risk of being taken to court and the expected penalty may still be attributed to an individual's decision to buy songs legally and may affect his willingness to pay.

Meanwhile, peer effects can mitigate an individual's risk perception. If more people in a person's surroundings engage in illegal file sharing activities, the person unintentionally perceives it as a safety guarantee and starts doing the same. This effect should be especially observable among students who belong to the group of people that are expected to have the highest proportion of file-sharers to non-file-sharers in comparison to other groups. Therefore, peer effects may account for some variation in a person's decision to engage in free-of-charge music file sharing as well as his willingness to pay for music.

To go further, individuals have different moral norms and thus may feel uncomfortable involving themselves into activities that are considered to be against the law. By implementing some legislation the state shows its position regarding the matter and sends a signal to society about what should be treated as wrong and intolerable. On the one hand, anti-piracy laws may deter some people from pirating and increase WTP for legal goods. On the other hand, not all people see the government's position as a moral standard that they should follow. Therefore, a person's attitude towards file sharing via p2p is not necessarily in line with what the government promotes as morally acceptable. Keeping the level of law enforcement constant, a person's decision to buy songs legally and his willingness to pay for music may be driven by his inborn or developed moral norms and conformity to law.

Moreover, one's income may also affect one's decision whether to buy some song or to try to download it for free. Depending on the level of income, the price asked per song may

be relatively small for some people while substantially too expensive for others. This means that individual may be indifferent between paying some amount for a song and getting it for free if the price asked can be considered negligible in comparison to his income. Thus disposable income may help to explain the extent to which individuals engage in legal or illegal markets as well as the amount of money the people are willing to pay for a song.

Finally, ethics may also affect a person's decision to choose one market or another. Ethics is different from morality since it focuses not on an individual's propensity to follow laws but rather emphasizes the importance of what a person believes is right and how one should act to follow his own principles. While high morality people are expected to abandon music file sharing because it is forbidden by the law, others may choose to buy music just because they value the effort that artists, music stores and music distributors put into their work and find it unfair not to pay for these efforts. Thus an individual's perception of what is fair and ethical may influence the decision of whether to buy songs or to try to download them for free.

Considering all the arguments above, we expect an individual to be willing to pay more for digital music as well as to prefer legal alternatives of acquiring music if: (1) his perceived risk perception of engaging in illegal file sharing is higher; (2) the proportion of p2p file-sharers to non file-sharers among his peers is lower; (3) the person has high moral norms; and if (4) the individual has higher disposable income. Also, we expect an individual to choose the legal music market if (5) he has high ethical standards. The empirical part of this study is designed to evaluate the extent to which each of the above described factors influences Lithuanian students' willingness to pay for legal digital music.

5 Research Methodology

5.1 Data Collection

5.1.1 The Choice of Method

The most effective demand curve estimation and analyses are achieved by using actual sales data. However, this approach is possible only for highly marketed goods. Even though music markets exists, all the sales numbers reflect music CDs sales data meanwhile our study aims at analyzing online music sales. Due to unavailability of such data, a consumer survey methodological approach was chosen and employed. Furthermore, having in mind the previously discussed possible obstacles for Lithuanian students to use online music stores, inferences about students' willingness to pay for digital music cannot be made

by analysing their actual purchasing behaviour. Therefore, the hypothetical demand curve estimation method is to be employed in this case. This method is better known as the Contingent Valuation method, thereafter abbreviated as the CV method.

This method is called *contingent* due to its hypothetical approach: the questions of the survey are formed in such a way that they would give the respondent a possibility to hypothetically buy the good (Alberini & Kahn, 2006). In such a way the respondent evaluates the good in monetary terms based on the information and context supplied about the good in the survey. Although due to its hypothetical approach the CV method is most widely used for evaluating public goods such as environmental nonmarket resources (and other similar nonmarket goods), it can be used for both types of goods – non-tradable and tradable in existing marketplaces (Ahmed & Gotoh, 2006). If the good is known to respondents as such, then their willingness to pay is contingent on the features attributed to the good and the suggested way of acquiring it.

5.1.2 Survey Construction

The surveys that are designed to employ the CV method usually have three parts. In this section each part is shortly introduced and discussed from the theoretical point of view, which is later followed by a discussion of how these theoretical guidelines are applied for the construction of the questionnaire that aims to reveal students' willingness to pay for digital music.

I. Firstly, the survey usually introduces the respondent to the good that is being valued and the hypothetical situation under which the good can be obtained. This part of the questionnaire is usually referred to as *scenario*. Depending on the situation, the scenario can include a description of the good, the circumstances under which the good is sold, available substitutes, and the way of paying for the good (Cameron & Carson, 2005). The main purpose of using scenarios under the CV method is to familiarize the respondent with a good, which he has never experienced, or which does not have a conventional mechanism of purchasing it (Carson, 2001). In our case, it is highly improbable that there is a student who has not listened to digital music. Also, having in mind the previously stated and well grounded assumption of the equal perceived utility level from listening to music played from both a CD and a personal computer, it can be assumed that respondents are familiar enough with the good to exclude its description from scenario construction. Yet, there are several things that the respondent should not have doubts about:

- the particular good under consideration is music obtained via downloading it from the Internet, not via acquiring a CD;
- the online shop the respondent is supposed to imagine himself buying the song from is hypothetical, not one of those he already knows, implying that he does not have to limit himself with the price range used by existing online music shops;
- the song purchased from the suggested hypothetical online music store is legal; the music pricing scheme in this particular case assumes setting a price for each obtained song.

II. The scenario part is followed by the question(s) that aim to determine the respondent's WTP for the previously described good. Here the variety of choices of CV method application starts. Depending on the theoretical and methodological constructions, different forms of the CV method are used. According to Cameron and Carson (2005), there are nine methods that can be considered to evaluate WTP. Since the main purpose of this study is not a detailed analysis of the CV method, each of these nine techniques is not discussed in this paper. The discussion is limited to two main dimensions within which these nine methods can be arranged.

1. *If there is one question aiming to determine WTP, or more.* Researchers do not have a common opinion on this question. On the one hand, series of questions are considered to help people search for the real amount step by step (Hoehn & Randall, 1983). On the other hand, iterated questions can increase various biases, e.g. the respondent may choose larger amounts not because he is willing to pay more but rather because he is pushed by follow-up questions (Cameron & Carson, 2005). Following the recent research aimed at estimating WTP for digital music practice (Assane & Chiang, 2009; Bellemare & Holmberg, 2009), the research survey design applied here includes only one question about the person's willingness to pay.

2. *If the actual willingness to pay is asked or just a discrete indicator (where the respondent simply accepts or rejects a suggested price of the good) is obtained.* Put in simple words, this is a dilemma of using a closed- versus open-ended question. Although a general consensus among researchers is not reached, Kealy and Turner (1993) showed that while WTP measured using open-ended and closed-ended questions differed significantly for strictly public goods, both questioning methods led to the same WTP value for private goods. The results were explained by the fact that private goods are more concrete than public goods and that people are more familiar

with private goods themselves as well as with their payment schemes. Under such argumentation, digital music would fall the under private good label, implying that the chosen type of questioning should not influence the results. However, in order to prevent influencing the respondent's decision upon a WTP value by providing pre-cut prices or price-intervals, the open-ended question type is chosen to be employed.

At this point in the construction of the survey for measuring students' WTP for digital music construction, it should be mentioned that following the general rule of survey preciseness and preventing the survey form becoming unnecessarily wordy, it was decided to integrate the scenario part into the question about the respondent's willingness to pay. The decision was based on the following reasoning. Since respondents, i.e. students, are already familiar with the product described, i.e. digital music, the main body of the scenario becomes unnecessary. The four facts that need to be mentioned can be stated concisely and without adding any uncertainty to the situation described. In such a way the scenario as a separate part of a survey disappears but the formation of the hypothetical situation remains. We believe that such a survey design makes it more appealing to students who are growing increasingly tired of filling in various surveys. By making the survey more attractive we expect to achieve a higher answer rate as well as higher quality of the answers.

III. Finally, questions related to the personal characteristics of a respondent are included in the survey. This part of the survey includes all the questions that help to reveal the personal attributes that determine the person's willingness to pay for digital music. Taking into account the theoretical framework developed above, these questions are designed to measure the respondent's risk perception, the level of moral and ethical norms, and the level of disposable income and peer effects. Next to these key questions, some questions about the respondent's demographics are included in order to control for sample representativeness of the population.

Some of the survey questions are partly adopted from the questionnaire originally developed by Assane and Chiang (2007a). The rest of the questions are designed by us. The survey questions corresponding to this study (both in English and Lithuanian) can be found in Appendix A.

5.1.3 Pretesting of the Questionnaire

The original questionnaire was developed in English and translated into Lithuanian. Therefore a pretesting of the questionnaire was of high importance. In order to do this, 18

randomly chosen students from various Lithuanian universities were asked to try to fill the questionnaire in as well as to carefully look through the questions and indentify any ambiguities in them. The students were provided choice options and were also asked to detect any strange or unclear wording. Some useful suggestions regarding vocabulary and question phrasing were received. Also, after some smart insights from the respondents, some of the statements in question 7, where respondents are asked to evaluate some statements about music file sharing and Internet usage according to a degree of personal acceptance, were rephrased. Furthermore, respondents indicated that asking students for their average disposable income is not the best option since it is very difficult for them to estimate it due to the high variability of their income from month to month. Taking these notifications into account, it was decided to use another proxy used in the literature for measuring students' wealth, i.e. employment status (Assane & Chiang, 2009).

5.1.4 Sampling

As mentioned before, the population to be investigated is Lithuanian students. The definition of a student, in our case, includes students studying for a Bachelor as well as for a Master Degree in either full time or expanded studies. In the beginning of the academic year 2008/2009, which is the most recent data provided by the Lithuanian Statistics Department (2010), there were about 210 thousand students in Lithuania studying in 49 higher education institutions.

Due to economic reasons a cluster sampling technique has been considered at first. Under this technique a sample of students from one university is assumed to be representative of the population. Yet, in order to be able to generalize the results, two preconditions should be satisfied (Singleton & Straits, 1999). First, elements (i.e. students) in a cluster (i.e. university) should be as heterogeneous as possible. This requirement could be fulfilled by choosing a large university such as Vilnius University where students of various majors can be found. The second condition asks for a high degree of homogeneity among clusters, which is quite questionable in our case. Our study aims at investigating the importance of such individual characteristics as moral and ethical norms that, given the tendency of different universities to attract students possessing different values, can vary among universities. As a result, findings drawn from one university could not be generalised to the whole Lithuanian student population. Therefore, it was decided to employ a simple random sampling technique including as many Lithuanian universities as possible.

5.1.5 Survey Distribution

It was decided to distribute the survey electronically: to place the survey on the Internet and then ask representatives of all the universities to distribute the web-link among their students via internal mail box systems, by posting it on their home pages or by any other means. Using such distribution channels not only assures that the survey reaches the vast majority of the students but also communicates to students that the survey is a part of a serious academic research effort. The latter fact should increase the incentives of students to fill in the survey responsibly rather than ignore it or tick random answers.

Usually Internet-based surveying is not sufficient on its own because it exposes the sample to pre-selection bias coming from the fact that people who due to some reasons do not use computers or the Internet are excluded from the sample. In our case, however, this is not a problem since we are interested only in those students who do use the Internet. Nevertheless, even if the survey reaches all the students we are interested in, some selection bias may still occur. Since we are not able to control, which students participate in the study because students themselves decide if they want to participate in the study, a self-selection bias might be present. There are several possible reasons why particular groups of students might choose not to fill the survey in:

- Students who are working may feel too busy to spend a few minutes for participating in the study; therefore, the sample might miss some working students.
- There is a probability that students who choose not to fill in the survey are less responsible and possess lower moral and ethical norms, which are features of interest in our study.

The alternative of distributing the survey among university students using a hard-copy approach was also considered. However, due to unavailability of student lists it is difficult to fully randomise among the respondents and the results would still be affected by the same self-selection biases:

- Students who are working tend to skip classes; therefore, even the distribution of hard copy surveys in the universities would not fully eliminate the threat of underrepresentation of this group of students in our sample.
- A hard-copy survey may not reach less responsible people (who are more likely to ignore the online survey) either since they have a tendency to skip classes as well as working students, or because they might refuse to complete the hard-copy survey.

Even though the timing of the study would have allowed us to distribute the hard copies of the survey during the final exams of the first semester (usually all the students come to sit an exam), it would have been difficult to arrange survey distribution during the exams with the university administration and lecturers. Also, the probability of students filling the surveys in carelessly would have increased a lot (students do not want to bother themselves with non-exam material when they are just about to take an exam).

To conclude, taking into consideration the clear advantage of time and resource savings as well as the possibility to collect more responses, the web-based survey approach was chosen. Nevertheless, some possible self-selection biases have to be taken into account when making inferences about the obtained results.

5.2 Econometric Specification

In order to investigate the relationships between WTP for downloading digital music and the factors described in the previous section, the following model is employed:

$$WTP = \beta X + \varepsilon, \qquad (1)$$

where *WTP* stands for a respondent's willingness to pay for a single song expressed in Lithuanian litas (LTL), X presents a vector of explanatory variables, β is a vector of unknown parameter coefficients, and ε stands for the error term. X comprises the main variables of interest as well as some control variables. All the variables of interest stand for individual characteristics that are expected to explain the individual demand curve for digital music. Key explanatory variables can be divided into 5 groups: *threat, peer effects, morality, income* and *ethics*. The 6th group comprises control variables that proxy for a person's *demographics*. In the following sections each of the variable groups is presented in turn. Afterwards the regression estimation technique is presented.

5.2.1 Definitions and Construction of Regression Variables

Threat can be defined as the subjective probability of facing extra costs for participating in the illegal music market. The variables CAUGHT and FINE are used as proxies for these extra costs. The proxies are standard in recent research in the field of music piracy and willingness to pay for music (Assane & Chiang, 2007b; 2009; Bellemare & Holmberg, 2009). The variable CAUGHT is constructed by asking respondents how many people of a 100-person sample can actually be taken to court for sharing copyrighted files via p2p networks. FINE represents the logarithm of the amount of money that the respondent thinks a file-sharer will be fined on average if he is found guilty for violating copyright law.

The logarithmic specification of this variable helps to address an outlier effect. Even though in Lithuania legal enforcement regarding online music piracy is considered to be weak and thus p2p file sharing may be thought to be close to risk-free, we believe that there are people who still consider it risky (for a more thorough discussion please return to Background and Theoretical Framework). Therefore, we consider the two variables mentioned above to be important for our analysis.

Peer effects. The actions of peers can also affect a person's actions. We believe that this effect should be especially strong among IT students. We expect them to have the highest proportion of file-sharers to non-file-sharers in comparison to other majors. It is because people studying subjects related to information technologies are more likely to use computers extensively, which implies that they are better acknowledged with the technical side of file sharing and can better evaluate the probability of being caught and maybe even reduce that probability. Thus peer effects are represented by a binary variable IT which is equal to 1 if a student's major is related to Computer Sciences and 0 otherwise.

Morality. CAUGHT and FINE variables capture the effect of a straightforward threat; yet, as it was argued above, even if a person does not believe that he can be punished for his actions, his conscience may not allow him to do things that are considered being against the law. The level of personal morality is measured by the frequency of occasions a person considers cheating during exams. Variable CHEAT is composed from a scale of values from 1 to 5 (1 corresponding for no cheating on exam, 5 – for cheating always). Although this variable may also proxy for overall individual risk tolerance since cheating in exams is also subject to punishments, cheating during exams is a frequent phenomenon in Lithuanian universities and cases of severe punishments (e.g. expulsion from the university) are very rare (LSAS, 2008), implying that honest behaviour during exams depends on personal attitudes to a large extent.

Income is represented by the variable INCOME. As argued by Assane and Chiang (2009b), usually this variable is best proxied by a continuous scale of average monthly disposable income. Yet, it was also noted that it is difficult for students to approximate this number due to the high variability of their income (due to non-constant sources of funding such as parent support, scholarships, grants etc), which is consistent with pre-testing results. Therefore, the constant level of a student's wealth is better captured by an indicator of the student's job status. Thus INCOME gains values 0, 1 or 2 if he does not work at all, works part-time or works full-time, respectively.

Ethics. While the morality proxy catches the effect of the overall person's morality level and likelihood of obeying laws just because it is what a good citizen should do, our ethics variables represent personal attitudes towards the music piracy issue. FAIR is a binary variable equal to one if the respondent agrees that music file sharing is unfair to artists and/or music recording companies and/or music stores, and equal to 0 if a person does not see music piracy as unfair. The second variable, CLOSE, is also a binary variable which equals one if the student agrees that websites supporting digital piracy should be closed, and equals zero otherwise.

Demographic variables that are used as controls are AGE and MALE. The first one represents the student's age while the binary variable MALE controls for the student's gender and equals 1 if the student is male, and 0 otherwise.

All in all, we expect a person to pay for digital music more as well as to express positive WTP if (1) the individual perceives a higher probability of being caught and taken to court; (2) expects larger fines if found guilty; (3) the individual does not study an IT-related major; (4) if he considers cheating during exams less often; and (5) if he has a better employment status (unemployed being worst and working full-time being the best). In addition, we anticipate people to have non-zero WTP if (6) they believe that illegal file sharing is unfair to copyright owners; and (7) if they believe that websites promoting illegal file sharing should be closed.

The summary of variable definitions can be found in Appendix B.

5.2.2 Regression Estimation Model

As mentioned before, when asked how much on average they would be willing to pay for a digital song downloaded from the Internet legally, respondents are exposed to making two decisions: to pay or not to pay for music, and if yes, then how much to pay. Expecting that a large proportion of students would not consider paying anything, and that there may be people who would simply protest against the scenario suggested, we anticipate our WTP estimate to be biased towards zero. In order to overcome this bias, a two-step Heckman model is to be employed. The first step is the selection equation:

$$d = X\alpha + u, \qquad (2)$$

which accounts for the probability that WTP is a positive number and is estimated using a probit model. X is a vector of all the explanatory and control variables, u is the error term. Parameter d can receive values of either 0 or 1. If d=0, then WTP = 0; if d=1, then WTP

is positive and equal to the actual non-zero amount of reported WTP. Step two is the main equation:

$$WTP=X\beta+\varepsilon, \qquad (3)$$

where term X is again a vector of all explanatory and control variables, but this time the vector also includes an inverse Mills ratio which accounts for the probability of WTP being positive (Heckman, 1976, 1979). This model is based on the assumption that the error terms of equations, u and ε, are correlated and follow a joint bivariate normal distribution. Therefore, information incorporated in equation (2) accounts for part of the variation in the dependent variable, WTP, in equation (3). The inverse Mills ratio captures this effect.

The problem that we may face is that the factors affecting a person's decision to purchase music are the same determinants that influence the amount the person in willing to pay. Therefore, we expect high collinearity between the inverse Mills ratio and the regressors due to lack of source of identification (Vella, 1998). In order to overcome the issue, ethical variables (CLOSE and FAIR) are used in Equation (2) but excluded from Equation (3). The reasoning behind this is that these variables should influence a person's decision in which market, legal or illegal, to participate but they should not influence the amount the respondents are willing to pay for a song.

All of the above described regression analyses are performed using statistical software STATA 10.0.

6 Results

6.1 Data Description and Summary

6.1.1 Basic Statistics

The survey was active for two weeks, from January 25 till February 8, 2010. Administration representatives from all 49 higher education institutions were asked to distribute the Internet link to the online survey. In total 556 students from 19 Lithuanian higher education institutions responded to the request. There were 11 respondents from foreign universities that were eliminated from the sample. Also, since our questionnaire included some open-ended questions (questions 3, 5, 11, 12, 15, 17, 19 in Appendix A), there were some respondents that filled the survey irresponsibly: despite being asked to indicate a number as the answer some respondents expressed their personal opinion regarding the issue. Others inserted meaningless symbols (most probably in order to be able to submit the survey because the system did not allow leaving empty spaces in any of the obligatory questions).

After careful data inspection 471 responses were found as sufficiently complete for further analysis.

Women were more active while filling in the survey. They represent 70% of our sample (while in the beginning of academic year 2008/2009, which is the most recent data available in Lithuanian Statistics Department (2010) women represented 59% of all Lithuanian students). Respondents were on average 21 year-old. The sample included students from all majors: the smallest proportion was represented by Science and Math (or related) students, 3.2 % (as opposed to 2.7% in the population), the largest – by students of Social Sciences (or related), 53.1 (as opposed to 58.3% in the population).

6.1.2 P2P Music File sharing vs. Purchasing Music

Our survey showed that 95% of the respondents listen to music at least a few times per day (Chart 1 in Appendix C shows the full distribution of respondents according to their stated frequency of listening to music on a typical day), implying that almost all Lithuanian students are concerned with music acquisition. There are several sources where students can get music from, however we are concerned mostly with two – downloading for free via p2p connections and purchasing from online music shops. The table below shows how often each option was chosen by students according to our survey results[1].

	Daily	2-3/week	Once/week	Once/Month	Rarely	Never
Physical music shops	-	0.4%	0.2%	3.4%	50.1%	45.9%
Online music shops	-	0.6%	1.1%	2.8%	10.2%	85.4%
P2P file sharing	13.2%	25.7%	23.1%	23.1%	11.7%	3.2%

Table 1. Frequency of acquiring music from different sources *Source: compiled by authors*

As expected, Lithuanian students show a strong preference towards p2p file sharing as opposed to other alternatives and use p2p file sharing services extensively. 62% of all respondents download music via p2p connections at least once a week, most of the respondents (26%) claim to be downloading music using such file sharing methods a few times per week, while only 3% have never used such services. It is not surprising that on average 78% of an individual's total music collection consists of music obtained through using p2p file sharing. It is well seen from the table that students very rarely or never choose the purchasing option. Even when a student decides to buy music, he is more likely to go to a

[1] The original question is formulated as follows: "How often do you purchase or obtain at least one song from the following sources?"

physical music shop rather than to purchase music online. 85% of respondents claimed having never bought a song from online music shops, which supports the choice of using the hypothetical approach when formulating the question about students' willingness to pay for music.

6.1.3 Regression Variables

Turning to the data needed for the regression analysis we start with the dependent variable, WTP for music (expressed as an amount of money per song). Even though before data refinement some clear outliers were observable (the highest value was 17.12 LTL (4.96 EUR)), after eliminating the irresponsibly completed questionnaires described above, the WTP ranges from 0 to 5.00 LTL (1.45 EUR). Since there are 22 respondents who claimed their WTP being equal to 5.00 LTL (1.45 EUR), we do not consider this number to be an outlier (For WTP distribution see chart in Appendix D). The average willingness to pay per song is 0.79 LTL (0.23 EUR), which is significantly lower than the price charged per song in legal online music shops in Lithuania.

Out of 471 students, 70 students have part-time jobs while 38 students work full day. The perceived probability of being caught is almost 23% while the expected fine for violating copyrights is 11,128 LTL (3,226 EUR), on average. 69% of the respondents believe that file sharing is unfair towards music artists and/or recording companies and/or music stores, yet only 23% of them think that websites promoting free-of-charge music file sharing should be closed.

Summary statistics (mean and standard deviation) of each of the variables used in regression analysis can be found in Appendix B.

6.2 Empirical Findings

6.2.1 Willingness to Pay

We start the analysis of collected data by answering to the first research question: "*How much money would Lithuanian students be willing to pay to acquire digital music legally?"*

The obtained results are presented in the WTP distribution chart (Appendix D). As demonstrated above, currently students extensively use a free alternative for acquiring music – p2p music file sharing. Yet, 76% of the respondents expressed non-zero willingness to pay for digital music. Although the WTP range is quite broad, from 0 to 5.00 LTL (1.45 EUR), the average WTP which is equal to 0.79 LTL (0.23 EUR) is much lower than the price asked

in either Lithuanian or foreign online music shops (where prices range from 0.59 EUR to 1.45 EUR as was mentioned in the Background section). Even if considering only the respondents who expressed non-zero WTP, the average WTP, equal to 1.04 LTL (0.30 EUR), is lower than the before mentioned prices asked in the most well known websites selling digital music. Assuming that our sample is representative of the whole population, the median value of 0.50 LTL (0.14 EUR) (which is the same regardless of taking all the respondents or only those with non-zero WTP) indicates that at least half of the students would not pay more than this amount if they had an option to buy digital music online.

6.2.2 Determinants of WTP

Empirical results are reported in the table in Appendix E. The first column indicates the coefficient estimates of the *main* equation, while the second column shows the results of the *selection* equation. It is also worth mentioning that in our findings we consider the 10% significance level as satisfactory.

Considering the model itself, the results indicate the inverse Mills ratio to be negative but insignificant. It may mean that unobserved variables that affect the decision to pay for music and the amount people are willing to pay do not significantly correlate with each other. Still, the Wald test is significant at a 10% significance level, which indicates a fairly good fit of the model.

In the *main* equation, the coefficients on threat variables CAUGHT and FINE that are constructed to measure the subjective probability of facing extra costs for participating in the illegal music market are insignificant in our regression. This means that the perceived probability of being taken to court as well as the size of the perceived penalty for engaging in illegal p2p file sharing activities do not determine the amount of money one would be willing to pay per legally acquired song. Thus, keeping all other things constant, the personal risk perception of Lithuanian students cannot be attributed to their expressed WTP for digital music.

Regression results also suggest that students of IT related majors are not necessarily willing to pay less for legal music. The coefficient for the variable IT, which is constructed to capture peer effects, is found to be insignificant. This means that peer effects do not determine the amount of money one would be willing to pay for digital music. One of the possible explanations may be that since p2p file sharing is very popular among Lithuanian students, it is difficult to belong to a group of people that would use p2p networks more than other people.

Meanwhile, overall law conformity and personal moral norms that are captured by the variable CHEAT play an important role in determining the personal demand curve for digital music in Lithuania. The coefficient on CHEAT is found to be significantly negative even at a 1% significance level, which indicates that a person considering cheating on exams more frequently possesses lower willingness to pay and vice-versa. Thus the amount of money a Lithuanian student would consider spending per legal song is largely explained by his degree of morality.

Next to that, we find that better economic situation of a student does not necessarily increase his WTP. We find the coefficient on the economic variable INCOME (which is proxied by one's employment status) to be insignificant. It indicates that keeping all other factors constant the WTP expressed by students does not statistically depend on whether they are unemployed, have part-time or full-time jobs. The economic situation is not found to be a significant determinant of the amount of money students would spend to acquire legal music.

Finally, two control variables MALE and AGE were added to our main equation. From the regression analysis we find that male students express a lower WTP for digital music. The coefficient for the variable MALE is statistically significant (at a 5% significance level). According to our results, females are expected to spend 0.47 LTL (0.14 EUR) more per legally acquired song, all the other variables held constant. The second control variable is found to be insignificant. This means that there are no significant relationship between a student's age and his willingness to pay for digital music.

6.2.3 Determinants of Zero vs. Positive WTP

Continuing with the selection equation, the coefficients on threat variables CAUGHT and FINE are found to be insignificant. This indicates that the perceived higher probability of being caught and/or of a larger possible penalty do not necessarily evoke higher probability of a person expressing non-zero WTP. In short, individual risk perception does not determine whether a person has positive or zero WTP. Furthermore, we find the coefficient on the variable IT to be insignificant. This suggests that people who are expected to have the largest proportion of friends around them engaging in file sharing do not necessarily express zero willingness to pay for digital music. Thus peer effects also cannot explain a person's choice whether to pay for music or not.

The coefficient on the variable CHEAT is found to be insignificant, meaning that students who consider cheating during exams less often would not necessarily choose to pay for digital music. Even though higher willingness to pay in the *main* equation was found to be

attributable to higher moral norms, findings in the selection equation indicate that people who have a high degree of morality do not necessarily express non-zero willingness to pay for digital music, i.e. a person's moral norms is not a factor determining his decision whether to pay for digital music or not.

Further on, the results suggest that the economic variable INCOME explains if a person has positive or zero WTP for digital music. According to our findings, the probability that an individual is willing to pay at least something for digital music is higher by 20.2% if the person's employment status is one level higher (unemployed being the lowest level, working part-time – the average level and having a full-time job – the highest level). The result is significant at a 10% significance level. Thus a person's decision to express positive WTP is found to be explained by economic factors.

Turning to the ethics variables FAIR and CLOSE that were added only to the selection equation, the coefficient on the first variable is found to be positive and significant (at a 5% significance level). It indicates that the probability that an individual would express positive WTP for digital music is 28.5% higher if the person believes that file sharing is unfair to copyright owners. Yet, the coefficient on the second variable is found to be insignificant. This indicates that individuals who believe that websites promoting illegal file sharing should be closed do not necessarily express positive WTP for digital music. Thus the effect of ethic variables is ambiguous.

Finally, our findings suggest that gender differences can be attributed to whether a person is willing to pay for music or not. The coefficient on the control variable MALE is found to be positive and significant at a 5% significance level. It shows that keeping all other factors constant males are more likely to choose to pay for music in comparison to females. The probability that a male student expresses positive WTP for digital music is 33% higher than the equivalent probability for a female student. The other control variable AGE is found to be insignificant. Putting the results of both equations together unambiguously shows that there is no relationship between a person's age and his willingness to pay for digital music.

To summarize, we find that Lithuanian students on average express non-zero willingness to pay for digital music even when free alternatives exist (and are extensively used). We also conclude that students' willingness to pay is not explained by their risk perception. Yet, it is found that fairness and employment status are important factors explaining whether Lithuanian students have positive or zero WTP while the degree of morality is found to be a factor determining the amount one is willing to pay per legally

purchased song. Also, the student's gender explains his expressed positive or zero WTP for digital music as well as the amount one would be willing to pay per song.

6.3 Analysis of Lithuanian Students' Attitudes towards P2P Music File Sharing

Even though Lithuanian students use p2p music file sharing services very extensively (as opposed to a very weak demand for an alternative of online music shops) a large part of them (76%) still expresses non-zero willingness to pay with quite a big variation. In addition, not all the variables that we anticipated to be important were found to be determinants of WTP for digital music. Therefore, in order to create some additional value to the parties related to the issue of sales of digital music, we see it beneficial to take a more detailed look at how Lithuanian students conceptualize p2p music file sharing.

6.3.1 Grouping of Students

Common logics suggest that people, who use music file sharing more extensively as opposed to those who choose to pay for music, should exhibit different attitudes towards music file sharing and anti-piracy laws. Therefore, the analysis of these attitudes is based on a division of all the respondents into different groups (clusters) according to their propensity to use different digital music acquiring sources, namely p2p connections versus online music shops. Student clustering as well as further analysis in this part is performed using statistical software SPSS 17.0. In total three groups that summarize Lithuanian students' usage of p2p file sharing services and will be used in further analysis were identified:

I. Since there is not much variation in the extent of using online shops as the sources for acquiring music, all the people that buy music from online shops on a regular basis as well as those who do that less frequently fall into the group named *Purchasers*. Yet, it should be pointed out here that purchasing music and getting it for free by using p2p file sharing services are not complete alternatives. There is no statistically significant negative correlation between music buyers and p2p music file-sharers, i.e. if a person buys music from online shops more often, it does not necessarily mean that he downloads music via p2p connections less often. In fact, 61% of the *Purchasers* are found to use p2p music file sharing services extensively – once in a few days or in a week. 17% of the students belonging to this group do that once a month. On average, 71.5% of their music collection has been obtained via p2p connections. The sample contains 69 such *Purchasers* that make up 15% of the total sample.

II. Most of the respondents (250 individuals, i.e. 53%) fall into the *Average sharers* group. These people have never bought music from online music shops. Most of them (75%) download music via p2p connections either once a week or once a month. The group does not include any people that use p2p connections more extensively than that. The part of the total music collection obtained via p2p connections for the group does not differ much from the previous group and makes up on average 74%.

III. The last group, which also contains a large proportion of the sample (152 individuals, 32% of the sample) is found to be extremely keen on p2p music file sharing since none of them has tried buying from online music shops and all of them download music via p2p connections either every day or once in a few days. Therefore this group is called *Sharing enthusiasts.* The proportion of the music collection obtained by p2p file sharing is the largest for this group, i.e. on average 86.5%.

Each group is summarized in Appendix F.

6.3.2 Analysis of Attitudes

In order to test if these groups exhibit different traits regarding the question/statement at hand, an analysis of variance (ANOVA) test is performed. As the groups are not of equal size, to identify which group has a statistically significantly (at a 5% level) different mean compared to the other groups, a post-hoc Sheffe's test is used. Test results are reported in Appendix F. Due to space constraints exact mean differences and p-values computed with the Sheffe's test regarding each question/statement are not reported. If certain clusters are found as not exhibiting a significantly different mean (at a 5% significance level) regarding a statement/question, they are assigned to the same homogeneity group; if the p-value reveals a statistically significant difference the cluster is assigned to a different group (in Appendix F different homogeneity groups are indicated by different Roman numerals). Firstly the group differences regarding WTP are tested. As might have been expected, *Sharing enthusiasts* on average expressed the smallest amount of money that they would be willing to pay for a song – 0.54 LTL or 0.16 EUR. However, the ANOVA tests showed that this finding may be just a coincidence caused by the sample at hand: tests indicated that it is statistically likely that *Sharing enthusiasts* and *Average sharers* may have the same average WTP. Meanwhile *Purchasers* demonstrated a statistically significantly different WTP, which is the highest among all the groups (1.38 LTL or 0.40 EUR).

Before continuing with attitudinal questions, it has to be pointed out that even though all the students tend to put high importance on listening to music, some statistically significant differences in music listening patterns of different clusters are observed. ANOVA with post-hoc tests showed that *Sharing enthusiasts* listen to music most often (57% of them listen to music either all day or virtually all day long) while others two tend to put a lower preference on listening to music. The majority of *Average sharers* (62%) and *Purchasers* (58%) listen to music sporadically throughout a day. In order to compare the differences, please see Chart 2 in Appendix C or the table in Appendix F.

Even though the distribution of respondents between different clusters might be attributable to differences in habits and needs, some differences among clusters are also found regarding the attitudes towards p2p music file sharing. They are explained by the cluster analysis of five attitudinal statements about p2p music file sharing regarding its importance in students' life as well as the legal and moral sides of this activity. Each of the statements is discussed in turn. Here it has to be noted that each of the attitudinal statements had to be evaluated on a 5 point scale according to how much the respondent agreed to the statement (1- totally disagree, 5- totally agree), therefore values lower than 3 are interpreted as expressing disagreement and values higher than 3 – agreement to the statement. The complete set of mean values and test results is given in Appendix F.

- *P2P music file sharing helps me to follow music tendencies.* All the groups expressed the opinion that p2p file sharing is the way for students to follow music tendencies. While *Average sharers* and *Purchasers* obtained mean values of 3.27 and 3.53, respectively, *Sharing enthusiasts* defended their extensive usage of p2p connections by exhibiting the highest level of agreement to this statement – 4.03 (the mean difference comparing to other groups is statistically significant).
- *P2P file sharing is an integral part of the Internet.* All the groups strongly agreed that p2p file sharing is an integral part of the Internet, showing that they put high importance on this service. *Purchasers* obtained a mean value of 3.96 while *Average sharers'* agreement level to the statement had the mean value of 4.16. As might have been expected, the strongest agreement to the statement was expressed by *Sharing enthusiasts* (mean 4.45).
- *I would hardly use the Internet if p2p file sharing were not possible.* Even though all the students perceive p2p file sharing services as an integral part of the Internet, this part does not seem to be the most important. Such inferences come from the

students' expressed disagreement to the before mentioned statement: means range from 2.05 for *Average sharers* and 2.18 for *Purchasers* to 2.69 for *Sharing enthusiasts*. Having in mind the results obtained for the previous statement, it comes to no surprise that the mildest level of disagreement is demonstrated by *Sharing enthusiasts.*

- *P2P music file sharing is the same as stealing*. This rather categorical statement is the official position taken by the RIAA (RIAA, 2009). The test showed that none of the groups differ from others regarding this statement. Regardless of the group, students tend to disagree with this statement (means range from 2.17 for *Sharing enthusiasts* to 2.52 for *Purchasers*), which is quite natural having in mind the extensive file sharing via p2p connections demonstrated by Lithuanian students. However, the disagreement is not categorical (the values are higher than 2), which indicates that students do not regard music file sharing without any remuneration for artists as totally moral and socially acceptable.
- *I do not care if p2p music file sharing is legal or illegal*. Students' disagreement to this statement would mean that even though they do not regard p2p file sharing as stealing something makes them care about the legal side of this issue. However, none of the groups expressed a disagreement to this statement. Although at first it may seem that *Purchasers* tend to disagree with the statement (mean 2.81), t-test showed that the difference between this mean and the middle value of the scale (3) is not statistically significant. *Average sharers* also seem to have chosen the neutral position regarding this statement because their expressed mean value of 3.11 is also not statistically different from 3. Meanwhile, *Sharing enthusiasts* expressed the opinion that they actually do not care if p2p file sharing is legal or illegal (mean 3.40).

6.4 Discussion of the Results

The results of this research study are of special interest to copyright owners. The results are particularly suggestive for two main parties, namely businesses and anti-piracy organizations. Therefore, it was decided to comment on the possible implications of the results dividing the discussion into two parts, where some insights regarding each of the parties are made.

6.4.1 Implications for Businesses

First of all, our findings suggest that most Lithuanian students expressed positive WTP for digital music if they had a possibility to choose an online service providing legal digital music instead of utilizing p2p file sharing services. This suggests that since there is very little competition in selling digital music online in Lithuania, the existing shops should face a higher demand; however, it is not the case in Lithuania (otherwise, copyright owners would allow to distribute their production online and the number of online shops would be increasing as well). Our findings suggest that this contradiction could be explained by the relatively high digital music prices offered in existing online music stores.

The price per song charged by Lithuanian businesses is significantly higher than prices in the most well known foreign online music stores. Also, the prices were found to be substantially above the amount of money Lithuanian students would be willing to spend per song on average. It suggests that reducing prices would attract more customers and music businesses could better compete with p2p file sharing than they do now. Furthermore, according to economic theory, the marginal costs of selling an additional digital song online are equal to zero, thus break-even depends only on the quantity sold. However, as it is not the purpose of his study, the collected data does not allow suggesting the exact price which could maximize revenues and profits. To summarize, our findings indicate that online music shops would have more potential to compete with p2p file sharing if the prices were adjusted.

In addition, it is found that students with higher income tend to express non-zero WTP for digital music. Therefore, finding a way to target richer people could also improve online music sales. Naturally, targeting people with higher income would logically include an intention to increase the prices. However, our results indicate that such tactics should be carefully weighted since people earning more are not necessarily willing to pay higher prices for digital music.

In order to attract more customers while p2p services are present it is helpful to look for the reasons why people choose p2p file sharing and improve the services of online shops accordingly. In this case, our findings suggest that the majority of people choose to download music using p2p file sharing because it helps to follow music tendencies. Following music trends is found to be especially important for people who engage in file sharing very often. This finding could also be turned into a strategy to attract more clients to online music shops.

6.4.2 Implications for Anti-piracy Organizations

Our research includes an analysis of factors that could increase legal sales. Based on our findings anti-piracy organizations would be able to better evaluate and increase the effectiveness of their activities.

Usually the most prevalent method of fighting piracy is litigation. Not surprisingly, Lithuanian anti-piracy organizations have also recently started using such tactics. However, our findings suggest that this method is ineffective since an individual's risk perception can neither explain his decision to buy songs legally or to obtain them illegally, nor the variation in WTP. Instead, we would advise anti-piracy organizations to concentrate on improving people's morality, which is found to be a determinant of WTP. This could be done by increasing awareness of the importance of laws. While moral norms are mostly developed in childhood and it is difficult to change the perception of grown-ups, it might be worthwhile to teach children about why copyright laws should be followed. In addition, personal attitudes about fairness of p2p file sharing towards copyright owners are also found to be related to the decision whether to choose the legal or illegal market. Therefore, our findings suggest that anti-piracy organizations should change their current focus and consider other alternative initiatives instead.

Before considering new strategies that could possibly be implemented, it is also important to understand what influence the extensive and hardly controlled p2p file sharing has had on people's attitudes towards file sharing activities. Our findings suggest that it is common for Lithuanian students to regard p2p file sharing as a complementary service to the Internet. This statement is especially supported by those who engage in file sharing most extensively. Therefore, any actions aimed at limiting people's usage of such services should be carefully considered because they may result in a heavy opposition by students. In addition, students demonstrate a tendency of caring about the actual legality of their actions and not associating file sharing with stealing, which might be the result of a lack of legal actions against p2p file-sharers in Lithuania. Unawareness of the possible penalties for illegal actions and little to no stress regarding the legal side of such behaviour makes it easier for people to accept p2p file sharing as a norm and enjoy using p2p file sharing services similarly to the services of a public library.

6.5 Possible Limitations

Even though the choice of applying a hypothetical approach in order to measure WTP for digital music is well justified in our situation, it is still the main source of possible biases

in the results obtained. Specifically, we are unable to make sure that respondents express their actual economic preferences when indicating their WTP. Usually hypothetical WTP exceeds the actual WTP (Belzer & Theroux, 1995). The fact that consumers (which are represented by the survey respondents) are familiar with the good (a digital music song) helps us to reduce the part of sample variance caused by uncertainty. However, we were unable to ensure that respondents take into account opportunity costs of buying music and their budget constraints. Another reason for an overestimated WTP is people‘s tendency to present themselves as being more ethical and socially responsible than they actually are. In addition, we relied on only one paying mechanism (price per song), while other methods (weekly, monthly subscriptions etc.) might have given other estimates of WTP. All these limitations could be addressed in further research; meanwhile, due to these limitations we cannot deny the possibility that our estimated WTP is different from what it would be under real circumstances.

Another source of possible limitations is the chosen data collection method. In the Data Collection section certain reasons are given for why a web-based survey method was chosen. Yet, we agree that more or different methods used to collect data might have given additional value. Even though all of the 49 higher education institutions received the request to distribute the survey among their students, we only received answers from students representing 19 such institutions, which gives some doubt for whether the results can be safely generalized to the whole population of Lithuanian students.

7 Conclusion

The main objectives of this research study are to investigate Lithuanian students’ willingness to pay for digital music and the factors that determine it. Empirical findings are obtained by employing a survey-based regression model. In addition, to create extra value for the parties interested in the issue, the findings are further supplemented by an analysis of Lithuanian students’ attitudes towards free of charge but illegal usage of p2p file sharing.

Empirical findings suggest that around 76% of Lithuanian students express positive WTP for digital music. Among those with non-zero WTP, the average price which they would be willing to pay to acquire a song legally is 1.04 LTL (0.30 EUR). In comparison, existing online music shops in foreign countries and Lithuania charge much higher prices (from 0.59 EUR to 1.45 EUR). Thus by offering more competitive prices businesses could attract a larger number of students, which increases the potential of online music business.

We also find that higher WTP for digital music can be attributed to high moral norms. However, the rest of the results regarding WTP are not in line with our expectations. We find that the amount of money Lithuanian students would be willing to pay per song to acquire it legally does not necessarily depend on the individual's risk perception. Peer effects and a person's disposable income are also found unable to explain variation in WTP. All things considered, the findings indicate that parties interested in selling music online for higher prices should concentrate on increasing people's awareness of the importance of laws.

Turning to a person's decision whether to pay for digital music or not, Lithuanian students who earn higher disposable income are more likely to express non-zero WTP. Similarly, a person's ethical norms (namely, considerations about fairness) can explain his preference of legal alternatives. However, the results reveal that risk perception does not explain a student's choice between the legal and the illegal markets. Also, peer effects, moral norms and ethics (namely, considerations about closing illegal websites) are found not to be determinant of positive WTP. The findings suggest that businesses would increase demand for legal music if they managed to target students with higher income. Also, more educational campaigns related to ethics and fairness could increase the demand for legal music.

The analysis of students' attitudes towards p2p file sharing revealed that Lithuanian students tend not to care about the legality of their actions. This is especially true for those students who engage in file sharing more often and have never bought music online. In addition, Lithuanian students tend to disagree that sharing files and breaking copyright law is the same as stealing. The results further indicate that people strongly agree that p2p file sharing is a complementary service to the Internet. Despite the finding that p2p file sharing is considered an integral part of the Internet, p2p services are not the most important part of the Internet since students would not stop using the Internet if p2p file sharing was not available. These findings indicate that the low level of legal enforcement and high piracy rates in recent years have let people accept p2p file sharing as a norm and use it as a public library.

Finally, our findings suggest that Lithuanian students consider p2p file sharing as a tool for following music tendencies. While this means that online music shops are considered to be inferior in terms of music tendencies, in a broader sense it could also be seen as an indicator that online music shops need to improve in general if they want to compete with free of charge p2p file sharing.

All in all, the obtained results give grounds for the belief that fee-based digital music sales have potential even in the presence of free of charge p2p music file sharing. Nevertheless, further research is needed in order to investigate how exactly these business

opportunities could be exploited. It would be valuable to conduct a study focusing on the features that could make an online music shop superior to illegal file sharing. Finally, we see it as beneficial to expand the scope of such studies to other demographic segments in order to apply the findings to the whole digital music market in Lithuania.

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9 Appendices

Appendix A

Questionnaire (in English)

We are students at Stockholm School of Economics in Riga and we are currently writing our Bachelor Thesis that aims at estimating students' willingness to pay for digital music and to investigate Lithuanian students' attitudes towards downloading music from the Internet. Please, help us to gather more information by filling in a short survey below. The survey is absolutely anonymous and your answers will be used only for our Bachelor paper and only in aggregate form. Please, note that this survey is ONLY FOR STUDENTS and that it is voluntary, thus gives no reward. If you have any additional inquiries, do not hesitate to contact Jolita Jakavičiūtė via e-mail jjakaviciute@sseriga.edu.lv.

1. **How regularly do you listen to music during a day?*[2]**
   - € all day long
   - € almost all day long
   - € not regularly, sporadically throughout the day
   - € only when it is played in the background
   - € rarely or never
2. **How often do you purchase or obtain at least one song from the following sources?** *Please tick the most appropriate box in each line.**

	Daily	2-3 times /week	Once/ week	Once/ Month	Rarely	Never
Physical music shop						
Online music shop						
Using p2p file sharing						
Friends						
Other						

3. **If an Internet music shop provided you with a service to download any song legally for some price, what price (if any) would you agree to pay per song, on average?*** *Please specify an approximate amount in LTL: _____*
4. **How long it has been since you last acquired music using file sharing services?**
   - € I did it today
   - € No more than a week passed
   - € No more than a month passed
   - € No more than half a year passed
   - € Passed more than half a year *or* I have never done that
5. **What proportion of all the music in your collection is acquired for free via file sharing?*** *Please write the number (from 0 to 100) here: _____%*

[2] The questions marked with * have been adopted from the survey developed by Assane and Chiang (2007a).

6. **If you have downloaded music using file sharing services, why did you find file sharing superior to other ways of acquiring music?***

   Please evaluate each reason by ticking on appropriate number in a scale from 1 to 5 (1 –totally disagree, 5 – totally agree).

It helps to save time	1	2	3	4	5
It helps to save money	1	2	3	4	5
It is easier to find songs	1	2	3	4	5

7. **If you have downloaded music using file sharing services, please evaluate the statements below according to how acceptable you find them by ticking an appropriate number in each line** *(1 – totally disagree, 5 – totally agree)***.**

File sharing helps me to follow music trends	1	2	3	4	5
File sharing is beneficial for my education	1	2	3	4	5
Music file sharing is almost the same as stealing	1	2	3	4	5
I do not care if music file sharing is legal or illegal	1	2	3	4	5
File sharing reduces profit for music artists	1	2	3	4	5
File sharing reduces profit for recording companies	1	2	3	4	5
File sharing reduces profit for music stores	1	2	3	4	5
File sharing is integral part of Internet	1	2	3	4	5
I would hardly use internet if file sharing was not available	1	2	3	4	5

8. **Do you believe that acquiring music via file sharing is unfair to:***

   (Tick all that apply)

   € artists?
   € music distributors?
   € music shops?
   € I do not see anything unfair

9. **Do you think that punishing individuals engaging in illegal file sharing is a fair policy?**

   € Yes € No

10. **Do you agree that Internet sites that promote illegal file sharing should be closed?***

    € Yes € No

11. **LANVA (Lithuanian anti-piracy organization) has recently begun prosecuting people for file sharing copyrighted files. Considering a group of 100 average file-sharers, how many, in your opinion, would actually be taken to court, on average?***

    Please write a number between 0 and 100 _____

12. **If music industry is successful in its litigation against individuals, what in your opinion will be the amount of money (if any) that individuals who were found guilty would need to pay in fines, on average?***

    Please specify an amount in LTL: _____

13. **If you take an exam, how often do you consider a possibility to cheat?***

    € Always
    € Usually
    € Sometimes
    € Rarely
    € Never

14. What is your field of study?

- € Medicine (or related)
- € Science, Math (or related)
- € Computer Science (or related)
- € Technologic, Engineering (or related)
- € Social Science (Social Science, Law, Economics, Business, Education, or related)
- € Humane Studies (Philology, History, Philosophy, or related)
- € Art (or related)
- € Other

15. Please specify the name of higher education institution that you currently study at:

_____

16. What degree will you receive after graduation?

- € Bachelor
- € Master
- € Other

17. When do you expect to graduate?

Please specify the year: _____

18. Do you have a job?*

- € Yes, I work full-time
- € Yes, I work part-time
- € No

19. What is your age?

Please, specify: _____

20. What is your gender?

€ Male € Female

Questionnaire (in Lithuanian)

Mes esame Stokholmo aukštosios ekonomikos mokyklos Rygoje studentai ir šiuo metu rašome savo bakalaurinį darbą, kurio tikslas yra apytiksliai apskaičiuoti, kiek studentai sutiktų mokėti už skaitmeninę muziką bei ištirti studentų keitimosi muzikiniais įrašais internetu ypatumus. Prašome užpildyti trumpą klausimyną. Apklausa yra anonimiška, surinkti duomenys bus naudojami tik apibendrintoje formoje ir tik mūsų bakalauriniame darbe. Dalyvavimas apklausoje yra savanoriškas: apklausos autoriai nežada piniginio ar kitokio atlygio. APKLAUSA SKIRTA TIK STUDENTAMS. Jeigu kyla kokių nors klausimų, rašykite Jolitai Jakavičiūtei el. paštu, jjakaviciute@sseriga.edu.lv

1. **Kaip dažnai paprastai klausotės muzikos?***
   - € Praktiškai visą dieną
   - € Beveik visą dieną, su ilgesnėmis pertraukomis
   - € Nereguliariai, kartą ar kelis kartus per dieną
   - € Beveik neklausau. Tik tada, kai skamba kur nors fone
   - € Retai arba beveik niekada
2. **Kaip dažnai įsigyjate muzikos iš žemiau pateiktų šaltinių?** *Pažymėkite labiausiai tinkantį langelį kiekvienoje eilutėje.**

	Kasdien	2/3 kartus per savaitę	Kartą per savaitę	Kartą per mėnesį	Retai	Niekada
Muzikos prekių parduotuvių						
Muzikos prekių parduotuvių internete						
Naudojantis failų keitimosi programomis						
Kopijuojant iš draugų						
Kitų šaltinių						

3. **Jei naudotumėtės paslauga, leidžiančia parsisiųsti muzikos legaliai už tam tikrą mokestį, kokią pinigų sumą vidutiniškai sutiktumėte (jei išvis sutiktumėte) mokėti už dainą?***
   Nurodykite apytikslę sumą litais: _____
4. **Kada paskutinį kartą parsisiuntėte muzikos įrašų internetu, naudojantis failų keitimosi programomis?**
   - € Šiandien
   - € Pastarąją savaitę
   - € Pastarąjį mėnesį
   - € Pastarąjį pusmetį
   - € Daugiau nei prieš pusę metų arba niekada
5. **Kokią dalį Jūsų VISOS turimos muzikos kolekcijos sudaro muzikos įrašai, kuriuos parsisiuntėte nemokamai internetu naudojantis failų keitimosi programomis?***
   Nurodykite apytikslį kiekį procentais (nuo 0 iki 100): _____%

6. **Jei kada nors siuntėtės muzikos internetu, naudojantis failų keitimosi programomis, kodėl rinkotės/renkatės būtent tokį muzikos įsigyjimo būdą?***

Nurodykite žemiau pateiktų veiksnių svarbumą skalėje nuo 1 iki 5 (1-visiškai nesutinku, 5 – visiškai sutinku).

Taupau laiką	1 2 3 4 5
Taupau pinigus	1 2 3 4 5
Taip lengviau rasti norimas dainas	1 2 3 4 5

7. **Jei kadanors siuntėtės muzikos naudojantis failų keitimosi programomis, prašome įvertinti žemiau pateiktus teiginius.**

Pažymėkite tinkamiausią skaičių skalėje nuo 1 iki 5 (1 – visiškai nesutinku, 5 – visiškai sutinku).

Muzikos failų keitimasis internetu man padeda sekti muzikos tendencijas	1 2 3 4 5
Muzikos failų keitimasis internetu yra naudingas mano išprusimui	1 2 3 4 5
Muzikos failų keitimasis internetu yra tas pats, kas vagystė	1 2 3 4 5
Man nerūpi, ar muzikos failų keitimasis internetu yra legalu, ar nelegalu	1 2 3 4 5
Muzikos failų keitimasis internetu mažina atlikėjų pelnus	1 2 3 4 5
Muzikos failų keitimasis internetu mažina įrašų studijų pelnus	1 2 3 4 5
Muzikos failų keitimasis internetu mažina muzikos parduotuvių pelnus	1 2 3 4 5
Failų keitimasis yra sudėtinė interneto dalis	1 2 3 4 5
Aš beveik nenaudočiau interneto, jei neegzistuotų failų keitimosi programos	1 2 3 4 5

8. **Jūsų nuomone, ar muzikos įrašų kopijavimas ar naudojimasis failų keitimosi programomis yra neteisinga:***

(Pažymėkite visus tinkančius atsakymus)

- € Atlikėjų atžvilgiu?
- € Muzikos platintojų atžvilgiu?
- € Muzikos parduotuvių atžvilgiu?
- € Nematau nieko neteisingo

9. **Ar sutinkate, kad teisinga bausti asmenis, kurie nelegaliai keičiasi muzikiniais įrašais?***

€Taip €Ne

10. **Ar manote, kad internetiniai puslapiai, leidžiantys nemokamai parsisiųsti muzikos įrašų be atlikėjų leidimo turėtų būti uždaryti?***

€Taip €Ne

11. Lietuvos antipiratinės veiklos asociacija (LANVA) ir kitos antipiratinės organizacijos neseniai pradėjo siekti bylinėjimosi su asmenimis, kurie keičiasi ar kitaip platina failus, pažeidžiančius autorines teises. Imant 100 vidutinių žmonių, kurie platina ir keičiasi failais, kiek iš jų, Jūsų nuomone, vidutiniškai bus patraukti baudžiamojon atsakomybėn?*

Nurodykite skaičių nuo 0 iki 100: _____

12. Jei muzikos industrijai pavyktų laimėti bylą prieš asmenį dėl autorinių teisių pažeidimo, kaip manote, kokio vidutiniškai dydžio piniginė bauda būtų skirta (jei išvis būtų skirta) už tokį nusikaltimą?*

Nurodykite apytikslę sumą litais: _____

13. Ar prieš laikant egzaminą dažnai svarstote galimybę nusirašyti?*

- € Visada
- € Dažnai
- € Kartais
- € Retai
- € Niekada

14. Kokia Jūsų studijų kryptis?

- € Biomedicinos mokslai (medicina ir sveikata, gyvybės mokslai, žemės ūkis, veterinarija ar pan.)
- € Gamtos mokslai, matematika ir pan.
- € Informacinės technologijos, kompiuterių mokslai ir pan.
- € Technologijos mokslai (inžinerija, technologijos ar pan.)
- € Socialiniai mokslai (socialinės studijos, teisės studijos, verslas ir vadyba, ekonomika, švietimas ir ugdymas ar pan.)
- € Humanitarinai mokslai (filologija, istorija, filosofija ar pan.)
- € Menai
- € Kita

15. Prašome nurodyti tikslų aukštojo mokslo įstaigos, kurioje studijuojate, pavadinimą

_____

16. Kokį laipsnį įgysite pabaiges (-usi) savo dabartines studijas?

- € Bakalauro
- € Magistro
- € Kitą

17. Kada planuojate baigti savo dabartinę studijų programą?

Prašome nurodyti metus: _____

18. Ar dirbate?*

- € Taip, visą darbo dieną
- € Taip, ne pilną darbo dieną
- € Ne

19. Jūsų amžius:

Prašome nurodyti metus: _____

20. Jūsų lytis

€ Vyras € Moteris

Appendix B

Variable Definitions

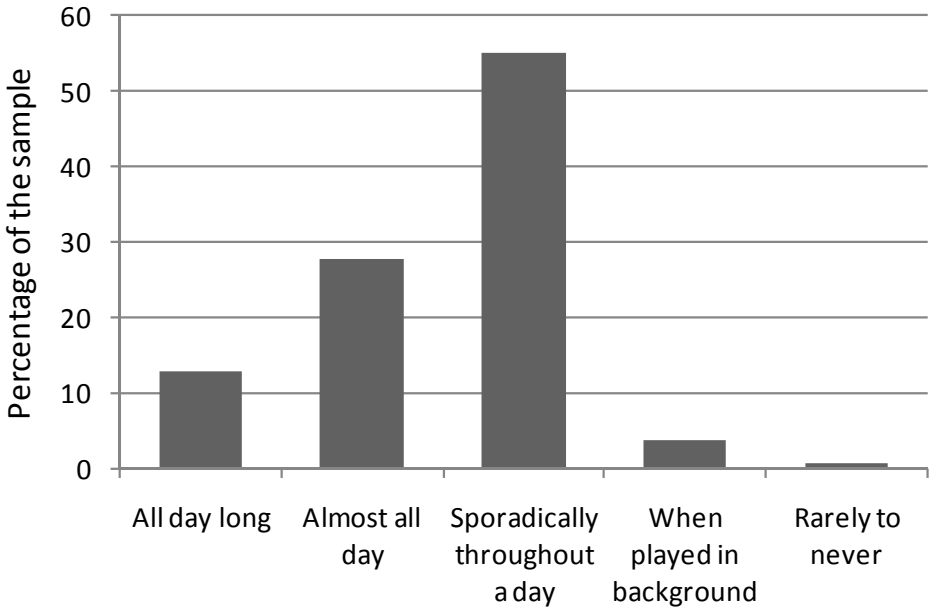
Variable	Description	Mean (Standard deviation)
Dependent variable		
WTP	Willingness to pay for a digital music song (expressed in LTL)	0.785 (1.164)
Threat		
Caught	Perceived probability (in %) of being caught violating copyrights and being taken to court	22.898 (32.603)
Fine	Perceived amount of money (in LTL) to be required to pay on average if person is proven guilty for violating copyrights	11,128.42 (57,300.92)
Peer effects		
IT	1=student's major is IT related	0.055 (0.229)
Morality		
Cheat	The frequency of occasions when a student considers cheating during the exam (the higher indicator value, the more frequent cheating is reported)	2.182 (1.126)
Economic variable		
Income	=0, if no job; =1, if part-time job; =2, if full-time job	0.306 (0.608)
Ethics variables		
Fair	1=if student believes that music file sharing is unfair to music artists/distributors/stores	0.694 (0.461)
Close	1=if student agrees that the websites which support digital music file sharing for free without artists' permission should be closed down	0.132 (0.338)
Demographic variables		
Age	Age of a student (in years)	20.942 (2.333)
Male	1=if student is a male	0.295 (0.457)

Source: compiled by the authors

Appendix C

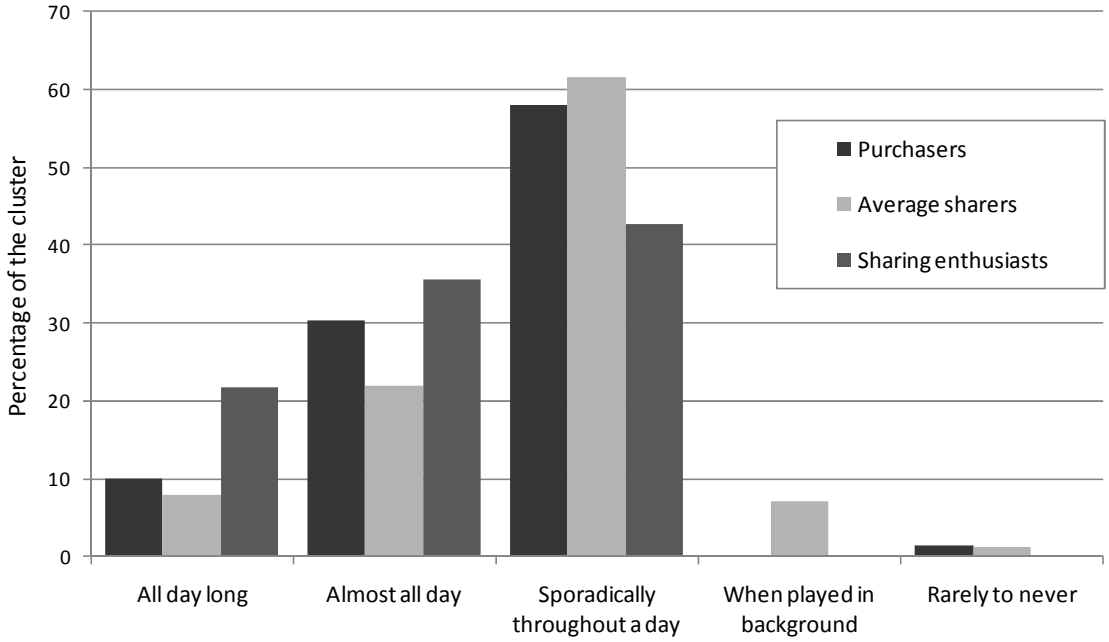
Frequency of Listening to Music

Chart 1. The Whole Sample (N = 471)



Source: created by the authors

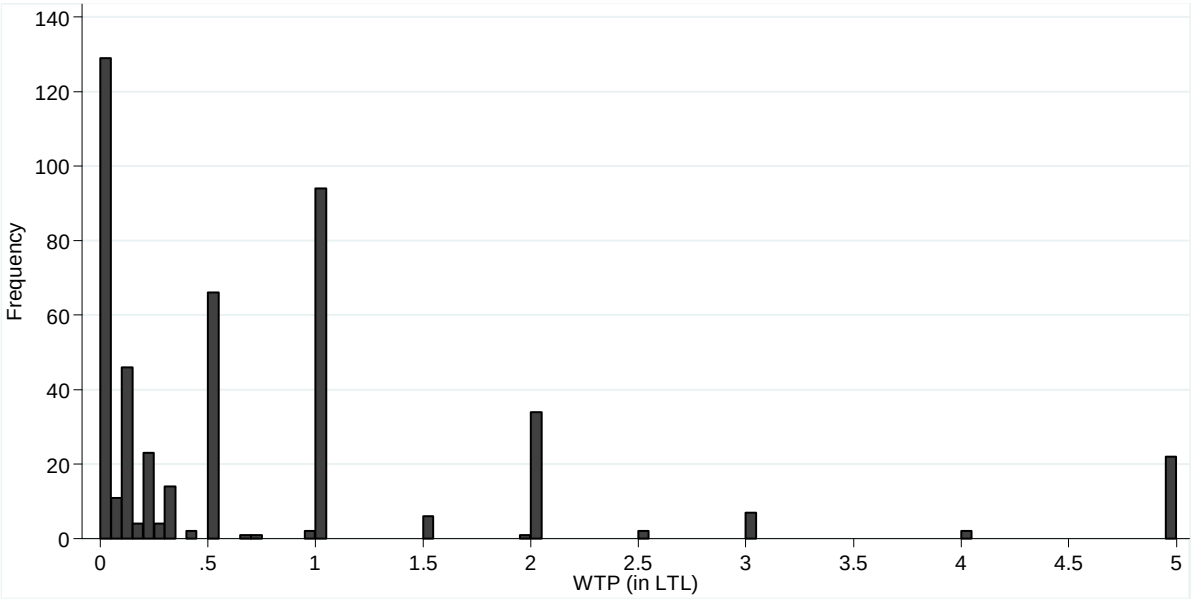
Chart 2. Cluster Differences



Source: created by the authors

Appendix D

WTP Distribution as Revealed by Sample (N = 471)



Source: created by the authors

Appendix E

Two-step Heckman Estimates for the Regression Analysis of WTP

Reporting Marginal Effects

The table reports the results (marginal effects) of Two-step Heckman selection model where the dependent variable (WTP_i) is student's *i* average willingness to pay per song. For precise definitions of all the independent variables please see Appendix B. Standard errors are reported between parentheses. *, ** and *** denote significance at 10, 5 and 1 percent levels, respectively.

Dependent Variable: *WTP*	**Main equation**	**Selection equation**
Caught	0.001 (0.002)	-0.001 (0.002)
Fine	0.007 (0.036)	-0.014 (0.031)
IT	0.363 (0.372)	-0.269 (0.274)
Cheat	-0.125***(0.068)	-0.022 (0.057)
Income	0.157 (0.151)	0.202 *(0.122)
Male	-0.465** (0.209)	0.330 **(0.152)
Age	0.011 (0.036)	-0.034 (0.032)
Fair		0.285 **(0.141)
Close		0.283 (0.218)
Intercept	1.630 (0.783)**	1.226 *(0.718)
Inverse mills ratio (λ)	-1.335 (0.927)	
Rho	-0.893	
Sigma	1.495	
Wald test	22.51*	
N	471	

Source: compiled by the authors

Appendix F

Summary of Cluster Groups and Test Results for the Analysis of Students' Attitudes towards P2P Music-File sharing

Roman numerals in the parentheses indicate the homogeneous groups within which the means fall (as suggested by post-hoc Sheffe's test). Same numerals for different clusters indicate that these clusters do not exhibit statistically significantly (at 5% level) means regarding question/statement at hand. Higher numeral indicates a relatively higher mean comparing to other groups.

* indicates that the difference between the mean and the middle value of the evaluation scale, i.e. 3, is statistically significant at 5% significance level.

	Purchasers	**Average sharers**	**Sharing enthusiasts**
GROUP CHARACTERISTICS			
Cluster size (individuals, percentage of the sample)	69 (15%)	250 (53%)	152 (32%)
Frequency of buying music online	At least rarely	Never	Never
Frequency of using p2p connections	2-3/week (35%), once/week (26%), once/month (17%)	Once a week (36%), once a month (39%), rarely (20%)	Every day (36%), 2-3/week (64%)
Part of music collection obtained via p2p connections (average)	71.5% (I)	74% (I)	86.5% (II)
Frequency of listening to music on a typical day	Sporadically (58%), almost all day (30%)	Sporadically (62%), almost all day (22%)	All day (22%), almost all day (36%), Sporadically (43%)
WILLINGNESS TO PAY			
WTP	1.38 LTL (II) (0.40 EUR)	0.77 LTL (I) (0.22 EUR)	0.54 LTL (I) (0.16 EUR)
ATTITUDINAL STATEMENTS			
P2P music file sharing help to follow music tendencies	3.53* (I)	3.27* (I)	4.03* (II)
P2P file sharing is a part of the Internet	3.96* (I)	4.16* (I, II)	4.45* (II)
Would hardly use the Internet if p2p file sharing were not possible	2.18* (I)	2.05* (I)	2.69* (II)
P2P music file sharing is the same as stealing	2.52* (I)	2.42* (I)	2.17* (I)
Not care if p2p music file sharing is legal or illegal	2.81 (I)	3.11 (I, II)	3.40* (II)

Source: compiled by the authors