Discussion of "An Economist's Guide to Digital Music"

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Martin Peitz and Patrick Waelbroeck's "An Economist Guide to Digital Music" is an insightful exposition of the effects of digitization on the music industry. The authors survey an impressive body of market research, surveys and economic papers, and provide an original and precise analysis of the issues that the industry is facing due to digitization, including file sharing on peer-to-peer (P2P) networks or the introduction of digital rights management systems (DRM). Since the digitization of the music industry is a very good example of the impact that information and communication technologies can have at the industry level, it is of great interest for any economist to read this guide.

In this comment, I shall add a few additional points about the impact of the digitization of music on the record industry. In what follows, I start by discussing some consequences of digitization on the use and sale of music. Then, I analyze the specificities of the current "digital crisis", compared to crisis of the past.

1. Some Consequences of the Digitization of Music

The business of the music industry is the creation, management and sale of music recordings. As Peitz and Waebroeck argue, music becomes "digital" when a recording can be separated from the "physical carrier" (e.g., a cassette or a CD), transported and stored at a very low cost. Music has been digitized following the introduction of the MP3 compression format, and the roll-out of Internet access in developed countries.

The digitization of music affects the use and sale of recordings in two different ways. First, due to digitization, the physical carrier disappears. Second, the sound format is changing, from the old CD format to new compression formats (like MP3 or AAC). In what follows, I discuss some consequences of both evolutions.

Separation from the physical carrier. The disappearance of the physical carrier creates both threats (users can share music very easily) and opportunities (sellers can experiment new business models) for the music industry.

Sharing music. As Peitz and Waelbroeck argue, since the transmission of a music file on the Internet has become costless and very fast, possibilities of sharing music are substantially enhanced with digital music. P2P networks allow relatively anonymous forms of sharing. But more community-based forms of sharing are also possible, on private networks or connections, by physical means (CD-ROM, USB keys, etc.), on audio blogs, etc. One can expect that the "sampling effect" of sharing (the possibility to discover new artists or music) is more likely to occur with community-based sharing.

Music unbundling. With LPs, cassettes or CDs, the marginal cost of delivering a single was similar to the marginal cost of delivering the full album, and this marginal cost was probably greater than the average willingness to pay for a song. In the "traditional" music industry, record companies would sell singles (and lose money on sales of singles) because it was viewed as a promotional device for albums or artists (since charts were based on sales of singles). With digital music, as the marginal cost of delivering a single to the consumer through high bandwidth networks is almost zero, the sale of music singles, typically at $0.99, becomes of course profitable. This change provides record companies with new incentives to "unbundle" music, that is, to sell singles instead of albums. As Peitz and Waelbroeck's Guide shows, we can observe this strategy on many digital platforms, where music can be purchased "à la carte" (consumers pay a single fee for one song of their choice).

"Infinite" bundles of music. On the other hand, as the cost of delivering an additional music digital file is almost zero, it might also be beneficial to provide bundled offers, that is, bundles of songs, in particular if there is heterogeneity in the consumers' willingness to pay for songs. An extreme form of bundling ("infinite bundling") consists of charging a flat rate for access to the full catalog of music files (100,000s of songs) (see Zhu and MacQuarrie, 2003). Peitz and Waelbroeck show that we can observe this strategy too; on some platforms, a monthly subscription fee allows unlimited streaming and downloading of the songs available on the platform.

Change of sound format. A lot of empirical or theoretical studies – including this *Guide* – assume that the quality of MP3 is lower than the quality of CD. I think that this assumption is not correct. I believe that, today, new compression formats (like MP3, AAC and WMA) are replacing the CD format, because they are superior.

To make my point, I consider that the quality of a sound format has two main dimensions: sound quality and "portability". The two important features of the MP3 format (and of similar digital compression formats) are that (1) the sound quality can be determined at the recording stage, by increasing or decreasing the compression bit rate; (2) the lower the bit rate (i.e., the lower the sound quality), the higher the portability, as the size of the music files shrinks. For instance, compared to CD, the MP3 format at 128 kbps gives lower sound quality, but higher portability, since a single CD-ROM may contain 12 CD albums in MP3 format.

However, another important point to note is that when the MP3 format parameters are set such that there is no quality loss compared to CD, the size of the music files is between 38 and 80% of the original size.[1] Besides, it is possible to record music in MP3 format with higher sound quality than the CD format (for instance, it is possible to record music at 48 kHz with 32-bit coding). Therefore, I believe that the "overall quality" of the MP3 format is higher than the "overall quality" of the CD format; this is why MP3 (and other formats) are replacing the CD.

2. The Digital Crisis

It is widely acknowledged that the music industry is facing today, "one of its biggest challenges", as Peitz and Waelbroeck write. According to the authors, the sales of music have sharply declined between 2000 and 2003 both in units and in dollar amounts.

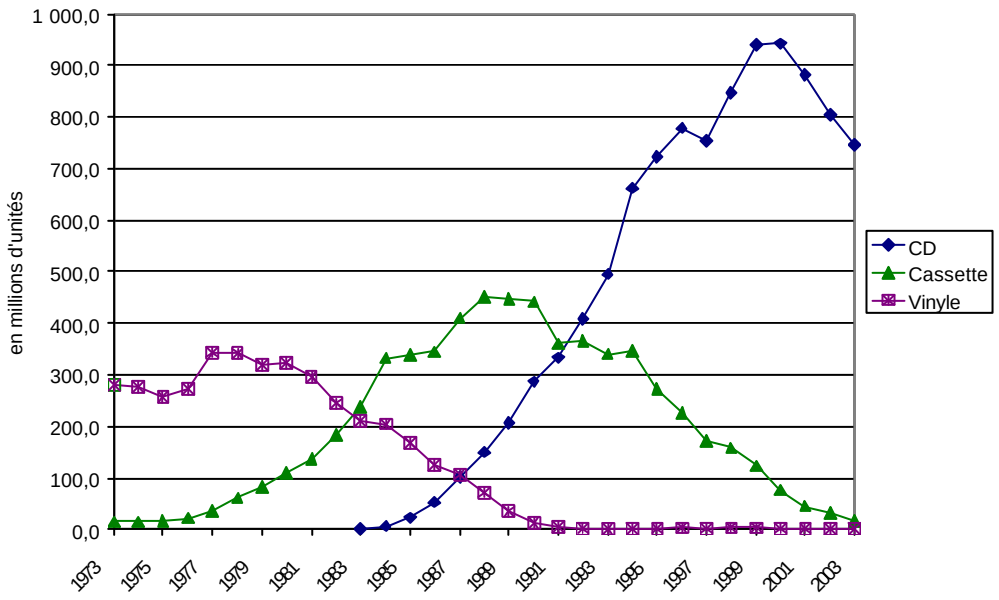
The effect of P2P downloads on CD sales. Can music downloads on P2P networks explain the drop in CD sales? Peitz and Waelbroeck provide a mixed answer. They claim that the initial downturn can be attributed to file sharing on P2P networks, but that subsequent drops cannot. Therefore, P2P is not the only reason which explains this "digital crisis". The

[1] See http://en.wikipedia.org/wiki/MP3 for a comparison of the MP3 and CD formats.

digitization of music affects the recording industry in many different ways, as shown in the *Guide*, and in the first section of this comment.

The specificities of the digital crisis. An historical perspective shows that it is not the first crisis that the recording industry has to face. In the past, technological changes often changed dramatically the organization of the industry, leading to the entry of new players or changes of business models. For instance, in the 1920s, radio was accused of being responsible for the drop in sales of phonograms. Later, it was again the case with the emergence of audio cassettes that allowed the copy of records. Compared to the other crisis that the recording industry went through, the "digital crisis" is peculiar because it is caused both by a major evolution of the music format and of the promotion process, while in the past, the industry always faced only one of these evolutions at a time.

The life cycle of the music format. The observation of sales by format over time suggests the existence of a life cycle for the music format. The figure below gives albums unit sales for three formats (vinyl, tape and CD) in the United States between 1973 and 2003. It shows that recording formats have a life cycle: they develop, reach a peak before they enter a period of decline. Vinyl technology reached its peak at the end of the seventies. Cassette reached its peak at the beginning of the nineties. If we follow this argument, CD technology began its decline around the year 2000.



Albums sales by format in the United States (in million units; source: RIAA)

The decline of a format can be caused by the development of a new one; for instance, cassettes quickly replaced vinyl and CD in the United States. However, there can be a delay between the decline of the old technology and the development of the new one. In this kind of situation, consumers' expectations can play a major role: when they make their decisions about music "standards", consumers can anticipate a technological evolution which has not yet taken place. In 2003, consumers could thereby anticipate that MP3 (or other formats, such as the SACD or the audio DVD) would substitute for CD.

New promotion tools. With the digitization of music and the development of the Internet, new ways of obtaining information about music have appeared. Consumers can sample new music or new artists by downloading music files on P2P networks, and share discoveries with friends and other music fans. They can also read customer reviews or advice on forums, blogs, or commercial sites. Online retailers like Amazon.com propose information push services, like personal "recommendations". These innovative ways of getting information about new music could improve the "match" between consumers' tastes and the music they purchase. But, whereas major record companies had some control over the promotion of music or artists through mass media, with the Internet, promotion might be controlled by other players, like online digital music platforms or retailers.

3. Conclusion

The digitization of the music industry is a major evolution, because it affects the industry in many different ways; in particular, a) the physical carrier disappears; b) the sound format is changing; c) new business models are possible; d) there are new ways of promoting new music or new artists.

Online music platforms (like iTunes, Musicmatch or Napster) will play a central role in the new digital music industry. Competition between digital music platforms will be influenced, in particular, as Peitz and Waelbroeck conclude, by the ability of each platform to make targeted offers to consumers. Hence, network effects could shape competition between music platforms: a larger catalogue of songs would provide more flexibility in providing targeted offers; a larger customer base would allow to collect more detailed consumer information, which would improve the "quality" or "accuracy" of targeted offers.

References

Zhu, Kevin and Bryan MacQuarrie, 2003, “The Economics of Digital Bundling: The Impact of Digitization and Bundling on the Music Industry”, Communications of the ACM, Vol. 46, No. 9, 264-270.