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Even the losers get lucky sometimes: New products and the evolution of music quality since Napster[☆]

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ABSTRACT

Using comprehensive digital sales data by time and vintage on the US, Canada, and 15 European countries, we infer the evolution of music vintage quality, finding that vintage service flow has increased since 2000. We explain the result with unpredictability of music quality at the time of investment along with growing releases. Evidence shows (a) products with modest prospects at release, – from artists on independent labels and from new artists, – occupy a growing share of the top products; and (b) despite growth in the number of products, sales are growing more concentrated.

1. Introduction

The advent of digitization over the past few decades has been tumultuous for both the recorded music industry and the copyright system. With the appearance of Napster in 1999, revenue from recorded music began to fall in the US after rising for decades. In 2012 North American recorded music revenue was 75% below its 1998 level in real terms, and revenue in Europe was down by 70%. Industry observers have long viewed file sharing as the cause of the decline in revenue and have sought relief in the form of stronger copyright enforcement, including HADOPI in France as well as attempts to pass SOPA and PIPA in the US, among other reforms (Pfanner, 2013; Wortham and Sengupta, 2012).

In the research community the advent of file sharing launched a literature devoted to measuring the impact of file sharing on sales.[1] Because of spotty data availability as well as the lack of clean "experiments," the question is rather difficult to answer, so particular studies are generally not dispositive. But after a decade of research, a preponderance of the evidence indicates that file sharing indeed depresses sales. Moreover, it is likely that the sales displacement rate - perhaps 1:4 - in conjunction with large volume of unpaid consumption can explain most if not all of the decline in recorded music revenue (Liebowitz, 2011).

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[1] See Oberholzer-Gee and Strumpf (2007), Rob and Waldfogel (2006), Zentner (2006), Blackburn (2004), among others.

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While the impact of file sharing on revenue is an important question for sellers of recorded music, it is not by itself the only question of interest for public policy. The purpose of copyright is to provide rewards adequate to ensure continued supply of creative products, generating benefits for both producers and consumers. From this perspective, the correct barometer for the health of the copyright system is whether creators bring forth valuable new products. Because of high costs of bringing new products to market, lower revenue could reduce the number of products released, harming both sellers and buyers. Yet, recent technological changes - that one might collectively term "digitization" - have not only made it more difficult to generate revenue from a given set of products, but have also reduced the costs of bringing new products to market. It is therefore not clear a priori whether reduced revenue would undermined the flow of new creative products.

Ascertaining whether a creative economy brings forth the right number of products is, empirically at least, a daunting task. A more feasible if nevertheless challenging question is simply whether the flow and appeal of new products has declined or increased following digitization. Waldfogel (2012) proposes a method for inferring the evolution of music's appeal using data on the sales of music by calendar year and vintage of original release. In any given year, older music tends to sell less due to depreciation. Given data on sales by vintage (v) for multiple calendar years (t), one can ask whether different vintages sell more or less than others, after accounting for depreciation. That is, by regressing the log of the share of year t sales originally released at vintage v, or $\ln(s_{t,\,v})$, on age dummies and vintage dummies, one can recover an index of the appeal of each vintage - or "quality" - to consumers from the vintage coefficients.[2] Using this approach on fragmentary sales data and aggregate airplay data for the United States, Waldfogel (2012) finds that the quality of music in the eyes of US consumers has grown sharply since Napster. This is a provocative result: if correct, it casts significant doubt on whether the sales-displacing effect of unpaid consumption creates a problem that requires redress through stronger intellectual property protection, at least in order to maintain pre-Napster levels of creative output.

This paper offers two contributions. First, we revisit the question of how vintage quality has evolved using comprehensive song-level digital sales data on the US, Canada, and 15 European countries, 2006–2011. While this question has been posed before, it was analyzed using fragmentary data for only the US. Because the answer is potentially important for public policy, an assessment using authoritative and more comprehensive data is valuable. Our analysis confirms the growth in vintage quality documented earlier, indicating that quality has increased in the eyes of consumers around the world. Our results also show similar patterns for music from different origin regions, indicating that the quality increase arises from new products around the world.

We note that the goal of our paper is not to provide a measure of the optimal level of creative output. Nor are we trying to compare the post-digitization level of creative output to the welfare maximizing level of creative output. Rather, we ask how the appeal of music released in the post-digitization period compares to the appeal of music released before the advent of digitization. While our results show that music quality has increased in the eyes of consumers, it may well be that music quality would have been even higher in an optimal copyright regime, for example if costs had fallen without any corresponding reduction in revenue.

Our second contribution relates to the mechanism driving this substantial quality growth. The detailed nature of our data allows us to disaggregate the vintage share in year t ($s_{t,\,v}$) into the share per song and the number of songs, revealing that most of the growth in vintage service flow arises from growth in the number of products. Growth in the available number of products would be expected to generate additional service flow from recorded music, but we argue that the extent of the growth in benefit that consumers experience would depend on the ex ante predictability of products' appeal at the time of investment. If product quality were perfectly predictable, a reduction in the cost of bringing products to market would facilitate entry of a "long tail" of low-appeal products which could nevertheless collectively raise consumer surplus. If quality were unpredictable, on the other hand, then cost reduction would enable entry of products throughout the realized sales distribution, generating larger benefits for consumers.

These competing explanations have contrasting observable implications. Under ex ante perfect predictability the new products would appear in the left tail of the realized sales distribution, and sales concentration would fall. Under ex ante unpredictability, by contrast, we would see growing success of products which had low ex ante prospects at release. That is, a growing share of even the top-selling products would be those released with low ex ante prospects. Moreover, growth in entry would not necessarily reduce sales concentration since the new products might reside in the right tail of the distribution, attracting substantial sales. We find growth in sales concentration even as the number of products available to consumers rises substantially. We also explore a second implication of ex ante unpredictability, that products with modest ex ante appeal ("losers" in the expression of the paper's title) appear among ex post successes. Using artists on independent labels as well as new artists as markers of low ex ante prospects, we find substantial growth in the ex ante losers among the top-sellers. The evidence we present on mechanism may provide a reconciliation of the "long tail" perspective of Brynjolfsson et al. (2003) and Anderson (2006), who advance the welfare benefit of many small products, and Elberse (2013), who counters that demand has recently concentrated on blockbusters.

Finally, this paper is part of a response to a call for evidence to inform copyright policy in the wake of recent technological changes. Evidence-based rationales for

[2] We use the word "quality" throughout this paper to denote the service flow implied by consumption decisions. Despite the creative context, the word has no aesthetic connotations.