

INTERNET TECHNOLOGY AND ITS ROLE IN THE PRICE OF CONCERT TICKETS



BY SARA FISHER ELLISON¹



¹ MIT, sellison@mit.edu. I gratefully acknowledge the outstanding assistance of William Hegelmeyer, Deekshita Kacham, Tingyi Lu, Krista Moody, and James Simon.

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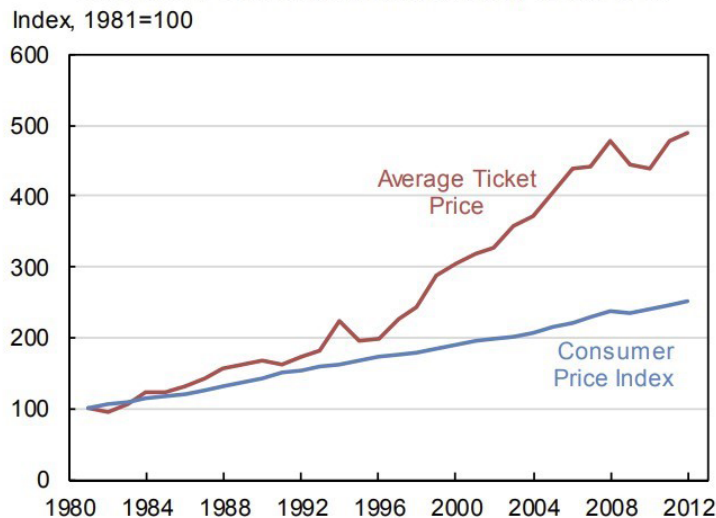
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I. INTRODUCTION

Rapid increases in the prices of concert tickets over the past couple of decades have not gone unnoticed, by the popular press,² by academic economists, and especially not by the concert-going public. In a 2013 address at the Rock and Roll Hall of Fame, economist Alan Krueger offered the following documentation:

Growth in Concert Ticket Prices, 1981-2012



Note: Data for 2003-2012 provided by Pollstar for top 100 North America tours by revenue. Earlier data from Krueger (2005). The average ticket price after 2003 is assumed to grow at the same rate as the average for the top 100 tours. Source: Pollstar; Krueger (2005); Bureau of Labor Statistics; CEA calculations.

(Ticket price increases, by the way, have continued to outstrip inflation since 2013.) Connolly & Krueger (2005) discussed a number of factors behind this marked increase, and other commentators have added their two cents. One of the leading explanations has been the demographic shift in the concert-going public: the “graying” of rock and roll. High-income 50- and 60-year-olds were rarely attending big-name rock and pop concerts in the 1970’s. Today, they are a large fraction of the rock-concert-going population. Some commentators have also pointed a finger to the consolidation in the markets for promoters, ticket brokers, ticket sales platforms, and venues. In fact, Live Nation, which merged with Ticketmaster in 2010, now controls 80 percent of the primary ticket market for musical events, is the largest concert promoter, and owns over 200 venues. Stub-Hub commands a dominant position in the secondary ticket market, controlling more than half of it, with Ticketmaster (Live Nation) being the second highest volume platform.³ Concentration in these markets has not always been so high: think about the thousands of ticket brokers and scalpers in the pre-internet era, none of whom had a dominant position in the secondary

² “Concerts Are More Expensive Than Ever, and Fans Keep Paying Up,” Bloomberg.com, September 10, 2019. “Why are Concert Tickets So F***** Expensive?,” MELMagazine.com, 2020.

³ “The Ticket Monopoly is Worse Than Ever (Thanks, Obama),” The New Republic, May 15, 2018.

market. Exertion of market power in any of these markets could lead to higher ticket prices. Finally, a technology-based explanation has been proffered by many, probably Connolly & Krueger's preferred explanation: a shift from using live performances as a loss-leader for record sales to the opposite, using recordings to advertise live performances.⁴ (As we will note below, this shift did not occur exogenously but was rather driven by technological advances.)

This short paper will offer two other possible, technology-driven, explanations, both of which focus on the role of internet technology in ticket purchasing. First, though, let me start with a brief chronology.

II. A SHORT HISTORY OF TECHNOLOGY AND THE MUSIC INDUSTRY

The structure of the music industry has been materially shaped by the state of technology over the past two centuries. The first economic revolution occurred when technology allowed the commercialization of recorded music. Although a few musical recordings existed as early as the 1860's, Edison is believed to have made the first attempt at commercialization in 1888, selling toys with recorded lullabies.⁵ As technology improved and networks of playback devices proliferated — first phonographs, then record, tape, and CD players — the structure of the industry responded. Technology gave artists the possibility of making significant revenue off of recordings, which were also relatively easy for artists to produce at large scale. The live-performance-based model which had always existed gave way to one where sales of recordings were the primary source of revenue for many artists.⁶

Recordings and live performances could function as complementary goods for at least some fans. For instance, an album purchase could introduce a fan to some new music that she would like to hear live, resulting in the purchase of concert tickets. Or, alternatively, a fan could purchase a concert ticket for his favorite band and then feel compelled to buy the new album to acquaint himself with the music that will be played at the concert. Because of this complementarity, live performances persisted, but often as an advertising vehicle for the recorded music. As such, simple loss leaders models would predict low ticket prices, perhaps even below marginal cost. Mortimer, Nosko & Sorensen (2012) provide empirical evidence of this complementarity.⁷

More recently, we have experienced another sea change in how music is produced, recorded, listened to, stored, and shared, driven by a new wave of technological innovations. In the late 1980s, a German consortium, Fraunhofer-Gesellschaft, set out to develop a file format that would allow for compression of audio files for efficient storage and transfer over phone lines. They received a patent in 1989 for what would become known as the MP3 file format and introduced it in 1994.⁸ In addition to vastly decreasing the cost of storing and sharing music, the format also made it difficult or impossible for artists to control the use of their recordings, or, as a result, be able to monetize them in any substantial way.⁹ For instance, this technology enabled websites such as Napster to introduce online music sharing outside of the constraints of the copyright system. At its peak, Napster users were downloading 14,000 copies of songs every minute and not paying any royalties.¹⁰ It was run out of business by a series of copyright infringement lawsuits, but the barn door was open. Even with Napster gone, illegal piracy of music has persisted (although at smaller volume).¹¹

The ease with which songs could be shared or downloaded has disciplined the price that legal downloading and streaming services such as iTunes and Pandora could charge. As a result, many artists have turned to live performances as the basis of their revenue model — in some sense reverting to the pre-modern economic model — but with other new technologies mediating the market for tickets now. Instead of

4 Connolly, Marie & Alan Krueger (2005), Chapter 20 Rockonomics: The Economics of Popular Music. Handbook on the Economics of Art and Culture, pp. 667-719.

5 The attempt was not commercially successful, in part because the technology did not yet exist to make multiple copies of a single recording. A different recording of a different performance had to be made for each toy. "Early Talking Doll Recording Discovered," www.nps.gov.

6 See Wikström (2009), *The Music Industry: Music in the Cloud*, Polity Press.

7 Mortimer, Julie Holland, Chris Nosko & Alan Sorensen (2012), "Supply Responses to Digital Distribution: Recorded Music and Live Performances," *Information Economics and Policy*, 24 (1).

8 "MP3," Wikipedia.org. <https://en.wikipedia.org/wiki/MP3>.

9 Again, see Wikström (2009), *The Music Industry: Music in the Cloud*, Polity Press. See, also, Shiller & Waldfogel (2011) for an analysis of alternative pricing strategies for digital format recordings. Shiller, Benjamin, and Joel Waldfogel (2011), "Music for a Song: An Empirical Look at Uniform Pricing and Its Alternatives" *The Journal of Industrial Economics*.

10 "Napster Turns 20: How It Changed the Music Industry," bbc.com, May 31, 2019.

11 "Music Piracy," Wikipedia.com.

purchasing tickets at a single physical location, typically the venue, we now not only transact online but also learn about upcoming events, read reviews, and perform searches and comparisons, both across events and across types of tickets within an event.

The music industry has been extensively studied by the economics profession. I cannot hope to offer an exhaustive list, but I mention a few of the more interesting and important analyses, which I have not cited elsewhere, here. Oberholzer-Gee & Strumpf (2007) estimate the effect of the erosion of copyright protections on record sales,¹² and Waldfogel (2012) goes a bit further to examine the effect of that erosion on music innovation and quality.¹³ Leslie & Sorensen (2014) analyze a model of the interaction between primary and secondary ticket markets for rock concerts and estimate that the secondary market does improve allocative efficiency but also incentivizes costly rent-seeking, which partially offsets the increased efficiency.¹⁴ Finally, Krueger's 2019 book, entitled *Rockonomics*, is a comprehensive look at many economic aspects of the popular music industry.¹⁵

III. ADD-ON PRICING AND OBFUSCATION

At the turn of the millennium, online retail was widely heralded for its potential to be a powerful price search and comparison tool. Consumers could, with a few clicks of a mouse, compare products from different vendors, inducing strong competition and low margins. This potential was never realized in many markets, and Ellison & Ellison (2009) argued that online technologies can also aid vendors and make it cheaper and more effective for them to thwart price search through various obfuscation strategies. We looked specifically at the practice of add-on pricing — firms offering upgraded versions or accessories, or even hiding various required fees, so that price search for the base item becomes less effective. We showed that in the market for online computer components, obfuscation strategies were employed and were effective in raising margins and profits, relative to Bertrand-like competition that obtained for easily-searched-for products.¹⁶

The online market for concert tickets differs from the market we initially studied in a few ways. First, tickets to concerts are much more differentiated than generic computer memory modules — a front row ticket to Taylor Swift in the Meadowlands is not the same as a ticket for Darlene Love in the second balcony of Medford's Chevalier Theater (although I would enjoy both, I imagine). Second, there is an active secondary market in concert tickets. Third, the market structure and role of the purchasing platform differs in the two cases. For computer components, we studied a market segment characterized by many small vendors who listed their products on an independent price search engine. In the primary ticket market, the dominant price search engine, Ticketmaster, is also vertically integrated into venues and concert promotion. Although these differences are all important (and worthy of deeper study), we would not expect them to eliminate the incentives that sellers have to obfuscate, and we would also expect similar tools to be available to them as are used in other online markets.

Because tickets are a differentiated product, we might expect the incentives to obfuscate could be dampened but not eliminated. The main difference we might expect between the market for tickets and the one studied in Ellison and Ellison (2009) is that an independent price search engine might have an incentive to mitigate obfuscation, so that its service remains valuable.¹⁷ A vertically-integrated platform may not have such an incentive, and may, in fact, want to facilitate and engage in obfuscation. In other words, the fact that Ticketmaster is engaged in other related markets could give them strong incentives to allow and encourage obfuscation on their platform.

Finding examples is not difficult. Tickets bundled with amenities such as backstage experiences, selfies with the artists, VIP parking, private bars and restrooms, and exclusive concert swag are proliferating.¹⁸ Furthermore, many major ticketing platforms add extra fees onto the purchase price, which are not disclosed in the initial stages of the purchase, where price comparisons between different seats, shows, or

12 Oberholzer-Gee, Felix, & Koleman Strumpf (2007), "The Effect of File Sharing on Record Sales: An Empirical Analysis," *Journal of Political Economy*, 115 (1).

13 Waldfogel, Joel (2012). "Copyright Protection, Technological Change, and the Quality of New Products: Evidence from Recorded Music since Napster," *The Journal of Law Economics*, 55 (4).

14 Leslie, Phillip & Alan Sorensen (2014), "Resale and Rent-Seeking: An Application to Ticket Markets," *Review of Economic Studies*, 81.

15 Krueger, Alan (2019), *Rockonomics*, Penguin Random House.

16 Ellison & Ellison (2018) provide a broader and more policy-focused discussion of the issue of price obfuscation. Ellison, Glenn, & Sara Fisher Ellison (2018), "Search and Obfuscation in a Technologically Changing Retail Environment: Some Thoughts on Implications and Policy," *Innovation Policy and the Economy*, University of Chicago Press, vol. 18(1), pages 1-25.

17 Ellison, Glenn, & Sara Fisher Ellison (2009), "Search, Obfuscation, and Price Elasticities on the Internet," *Econometrica*, 77 (2).

18 "A Front Row Seat To Go? Rock Fans Pay for Perks," *The New York Times*, May 22, 2010.

platforms are most easily made. Here is a typical example from a leading ticketing platform, where the fees announced only at checkout increase the ticket price by 20 percent.

Total	\$601.59 ^
Tickets	
Verified Resale Tickets: \$251.00 x 2	\$502.00
Fees	
Service Fee: \$48.32 x 2	\$96.64
Order Processing Fee	\$2.95
Delivery	
Go Mobile	Free
Cancel Order	
*All Sales Final - No Refunds or Exchanges	
<input type="checkbox"/> I have read and agree to the current Terms of Use .	
Place Order	

The welfare consequences of obfuscation practices like hidden fees and add-on pricing are clear: they are employed to raise profits and they will hurt consumers to the extent that they are effective. Even if consumers are willing to pay extra for premium services bundled with their tickets, the fact that those bundles exist makes price search less effective and raises ticket prices in equilibrium.

In 2013, we received interesting insight into the effects of price obfuscation when StubHub decided to unilaterally switch to an all-in pricing model for their tickets. In other words, all required fees were included in the posted price from the beginning of the transaction. They abandoned the experiment after less than two years when their analytics indicated that they had lost significant revenue from their unilateral transparency.¹⁹ Blake et al (2018) provide yet more evidence on the equilibrium effects of price obfuscation in this market.²⁰

IV. VARIETY AND MATCH QUALITY

As I noted in the previous section, concert tickets are a highly differentiated product. That fact could lead to a dampening of the incentives to obfuscate, since the ability to search prices and make comparisons is less likely to lead to product substitutions in a differentiated product market. This differentiation brings another internet technology into clearer relief, though. That is the internet's ability to facilitate high-quality matches between consumer and product.

Let me illustrate with a personal anecdote. In the pre-internet era, I lived in a neighborhood outside of Boston called Davis Square. On my way to and from the subway every day, I passed two music venues, The Somerville Theater and a club called Johnny D's Uptown. I would see what acts were being advertised on their marquees and would occasionally stop in to buy tickets to a show. I often did not know much about the shows—perhaps something about an advertising poster out front piqued my interest. Or maybe I had read about one of the acts in *The Boston Globe*. Not surprisingly, some shows ended up matching my preferences well and others did not.²¹ During the time I lived in Davis Square, I

¹⁹ "StubHub Gets Out of All-in Pricing," *The Wall Street Journal*, August 31, 2015.

²⁰ Blake, Thomas & Sarah Moshary, Kane Sweeney, Steven Tadelis (2018), "Price Salience and Product Choice," NBER Working Paper No. w25186.

²¹ Seeing the then "Dixie Chicks" at a 300-person bar was definitely a high-quality match.

mostly saw shows at those two venues. Now, of course, the schedules for music venues all over the Boston area are at my fingertips, just a few clicks away. I am also on certain email lists, alerting me to shows of potential interest that are coming to town. And finally, it is simple for me to read reviews, listen to music clips, and otherwise research musical acts that might interest me. Those technologies should lead to a better match quality between my preferences and the shows to which I buy tickets. In the presence of this better match quality, I could be paying higher prices for tickets but still enjoy increased welfare.²²

This basic idea — that the internet can facilitate high-value matches between buyer and seller that would have been difficult to consummate otherwise — is studied in Ellison & Ellison (2019), in the context of the used book market.²³ We note there that: 1) the internet can provide efficient price comparison information, which can put downward pressure on prices; and 2) the internet can facilitate these high-value matches, resulting in consumers having higher willingness to pay, putting upward pressure on prices. It is an empirical question which effect will dominate. In fact, we find that the prices of used books online are typically significantly higher than the same titles in the same condition found in brick and mortar stores, with the effects varying over the distribution of prices. It is important to emphasize that the welfare consequences of high prices in such a setting can be very different from what we might often assume: both sellers and buyers can benefit because the internet is facilitating a more efficient allocation of tickets to buyers given their preferences.

There is good reason to believe that such an effect could be at work in the market for concert tickets. My anecdote, as well as reader introspection about ticket purchasing, might be somewhat persuasive, but we can also draw close parallels between the structure of the market for used books and the secondhand market for concert tickets. Different tickets to the same event are analogous to different copies of the same title — within events, tickets should be quite close substitutes, across events not as much. Furthermore, there are parallels in the two market structures: there are many owners of tickets and used books that would like to resell, many potential buyers, and a few platforms that exist to help facilitate the matches between them. Also, in the secondary market for tickets, similar to that for used books, there are a small number of dominant platforms. Here, the two biggest platforms are StubHub and Ticketmaster. Ticketmaster is, in addition, a large player in the primary market, the promotion market, and the market for venues. (Note that the used book market used to have a number of platforms, but consolidation has resulted in a small number of dominant platforms, led by Amazon, which, like Ticketmaster, is integrated into other related markets.)

Another feature of the used book market that is echoed (imperfectly) in the market for concert tickets is the fixed supply. The fixed supply of used copies of a particular title is an important factor driving the price of the products up as more high-value customers arrive. A similar, but not as extreme phenomenon, happens for concerts. In the short run, concert venues and dates are set, and capacity is fixed. In the longer run, though, promoters could have flexibility on these dimensions.

Note that I have discussed this benign explanation for rising prices — that the internet is facilitating better and more efficient matches — mostly in the context of the secondary market because of its similarity to the used book market. There is reason to believe that higher value matches could also be a driving factor in price increases in the primary market, although further analysis could make that argument more convincing.

Finally, let me mention one factor that differentiates concert tickets from used books and computer memory modules, the fact that they are highly perishable and that their value goes to zero after the event occurs. This characteristic of the ticket market has led to interesting studies of pricing dynamics as events approach (for instance Sweeting (2012).²⁴ It should not, however, mitigate the effects that we have discussed here. If anything, the time sensitivity of the purchase should exacerbate these effects, making obfuscation techniques more effective and enhancing the benefits from fast, efficient means to locate high-value matches.

²² It is easy to believe that consumers' information about music that would match their preferences would be far from complete. Hendricks & Sorensen (2009) provide evidence of this incomplete information while studying the skewness of music purchases. Hendricks, Ken & Alan Sorensen (2009), "Information and the Skewness of Music Sales" *Journal of Political Economy*, 117 (2).

²³ Ellison, Glenn, & Sara Fisher Ellison (2019), "Match Quality, Search, and the Internet Market for Used Books," mimeo.

²⁴ Sweeting, Andrew (2012), "Price Dynamics in Perishable Goods Markets: The Case of Secondary Markets for Major League Baseball Tickets," *Journal of Political Economy*, 120 (6).

V. CONCLUSION

It is undeniable that many factors have fed into the marked increase in concert ticket prices that we have seen in recent years. There are a number of causes that have been highlighted by others, but my goal was to underscore two technology-driven factors that might be underappreciated, price obfuscation and improved match-quality. Both have been studied and documented in the context of e-commerce more broadly and likely played important roles in the market for concert tickets as that market moved online. It is important to emphasize that those two explanations offer very different welfare implications. Price obfuscation is employed to raise prices in equilibrium and, as a result, harms consumers. Improved match quality between the ticket and the purchaser's preferences can result in higher equilibrium prices but where both parties are actually better off.

The economic fortunes of artists, producers, promoters, ticket brokers, and consumers of live and recorded music are inextricably tied to the technologies that mediate the industry. Although I do not foresee that fact changing, the technologies themselves are evolving rapidly, laying the groundwork for more seismic shifts in the industry. Technology to tie tickets to a particular purchaser, thereby shutting down the secondary market, has started to gain traction.²⁵ And the pandemic of 2020 has hastened the implementation of technologies that seek to provide something like a live concert experience but with remote delivery over the internet.²⁶ These, and other technologies that we cannot yet foresee, will likely shape the industry, and the economic fortunes of market participants for decades (or centuries) to come.

²⁵ Organizers of sporting events have, perhaps, been more enthusiastic than concert promoters in embracing mobile ticketing, with the Miami Heat, for instance, going to mobile-only in 2017. See "Miami Heat Become First NBA Team With Mobile-Only Entry," ESPN.com, August 10, 2017.

²⁶ London-based ticket broker DICE, has been a leader in embracing both technologies, selling exclusively electronic tickets and, now, pivoting forcefully into live-streams. In a different approach to providing a pandemic-inspired alternative to live shows, start-up Oda has introduced purpose-built handmade wooden speakers coupled with subscriptions to exclusive live events to be narrowcast over them.

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