Why Rock Stars Do Not Raise Their Ticket Prices

Hae Won Byun *

Korea Insurance Research Institute

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Abstract

This paper investigates the reason that promoters and bands choose their concert ticket price such that ticket resale is profitable. Here, I model the ticket price decision of a promoter and an artist based on two potential explanations: the artist's future profit and merchandising profit. This model suggests that when artists or promoters consider their future profit as well as their current profit, or they consider merchandising revenue as well as ticket revenue, they may charge a price lower than the price which maximizes only their static ticket profit. In order to test the credibility of these potential explanations, I estimate a ticket supply equation with Pollstar Boxoffice historical data. The estimation results suggest that both the future profit of an artist and merchandising profit are credible explanations as to why promoters and bands set the ticket price lower than the static ticket profit maximizing price.

*Department of Management and Strategy Research, Korea Insurance Research Institute, 35-4 Yoido, Youngdeungpo, Seoul, Republic of Korea hw.byun@kiri.or.kr. I am deeply grateful to Joris Pinkse, Edward Coulson, Mark Roberts, Edward Green, and Kalyan Chatterjee for their insightful guidance and constant encouragement. Financial support for this research is provided by the College of Liberal Arts, the Pennsylvania State University. Any remaining errors are mine.

1 Introduction

Popular music concert tickets ordinarily resell at prices well above their face values. For example, $39.50 tickets for Nickelback, a popular rock band, concerts are traded at around $120 in the resale ticket market.[1] This fact may imply that most promoters and bands are not optimizing their profits. This paper investigates the reason that ticket prices are chosen such that ticket resale is profitable. I model the ticket price decision of a promoter and an artist, where they may consider the artist's future profit, their merchandising profit, or both, in addition to their static ticket profit. This model suggests that when artists and promoters consider their future profits or merchandising profits as well as their current ticket profits, they may charge a lower price than the price which maximizes only their static ticket profit. In order to test the credibility of these potential explanations, I estimate a supply side ticket price equation with Pollstar U.S. Boxoffice historical data between March 1981 and January 2007. The estimation results suggest that both the potential future profit of an artist and merchandising profit are credible explanations.

This paper extends the existing literature, which suggests several reasons for the existence of the ticket resale market. These include the possible existence of other sources of revenue, such as complementary concessions sales (Happel and Jennings [1995] and Marburger [1997]), and the interrelation between current and future ticket demand (Diamond [1982] and Swofford [1999]).[2]

[1]These are for open air seats of Nickelback's concert on July 13, 2007, at Tweeter Center for the Performing Arts in Mansfield, MA.

[2]While all of these studies consider the supply side, there are other studies which focus on the nature of the ticket demand: the variance in the timing of realization of demand over consumers (Courty [2003a]), interdependence among consumers (Becker [1991], DeSerpa [1994]), and consumers' views on fairness (Kahneman et al. [1986]). However, since the limitation of data on ticket demand makes it challenging to explore

I first look at future profits of an artist as a potential explanation. If current ticket sales of an artist affect her popularity, then it will affect the artist's income in the future. Therefore, the artist who considers her future profits may price her concert ticket lower than the static ticket profit maximizing price. This explanation was considered by Swofford (1999).[3] He points out the tradeoffs between current profit gain and the future sales loss that might come from raising prices. Diamond (1992) also mentions a possible relationship between promoters' reputations and the success of future events.

The second explanation considers merchandising profits as another possible reason why promoters or bands do not raise their ticket prices. Some studies argue that ticket underpricing stems from the existence of complementary goods. (See Happel and Jennings [1995] and Marburger [1997].) Marburger (1997) models ticket pricing for performance goods when the price setter gets a part of the profit from concessions, which can be purchased only if a consumer attends the event. Since the demand for concessions depends on attendance rate, the promoter may have an incentive to set their ticket price lower than market rate.[4]

Instead of considering each explanation separately, I combine them in a ticket price decision model, where I implicitly assume that ticket scalping does not affect promoters' or bands' decisions. I estimate a parsimonious ticket price equation, which allows me not only to test the credibility of these two explanations, but also to estimate the relative importance of these effects. Even though the literature provides insights into possible reasons for under-

these explanations empirically, I do not consider them here.

[3]Swofford also presents different cost functions for promoters versus scalpers, which allow the resale markets exist.

[4]Marburger (1997) finds that Major League Baseball (MLB) tickets are priced in the inelastic part of the demand and argues that this fact supports his model. However, an artist who consider her profits also may price in the inelastic part of the demand.

pricing or the existence of ticket resale markets in the entertainment industry, few studies have tested the credibility of their hypotheses empirically.

The next section defines key players and describes some basic features of several contracts in the music concert market. Section 3 describes a simple model of a concert ticket price decision problem of a promoter and a band. In section 4, I estimate the ticket price equation to test the model. Section 5 provides conclusions and implications for future research.

2 Music Industry

A professional music artist has relationships with specialized agents: promoters and venues related to concert tours, record labels related to records and music videos, and publishing companies related to copyrights.[5] Promoters in particular play a prominent role in concert scheduling. They hire artists for shows, book venues, advertise the events, and collect the revenue from ticket sales. Venues provide the place for events on specific dates, and receive rental fees and part of the merchandising sales. Record labels deal with producing, manufacturing, and promoting records and music videos. Publishing companies collect publishing royalties on reproductions and distributed copies of songs and public performances on behalf of songwriters through performance rights organizations, such as BMI (Broadcast Music Incorporated).

The main sources of artists' incomes are concert ticket sales, merchandising sales, and record sales. In addition, if songs are written by the artist, then the copyrights on the songs can also be a source of an artist's income. In general, the sharing rule - the percentage of sales

[5] Passman(2000) provides an extensive review on the popular music industry.

that the artist receives - for concert ticket profits and merchandising royalties are higher than artist royalties for record deals.[6] Also, the contracts on record deals are generally long term, while the contracts on concerts are shorter than record deals. Therefore, concert ticket profits and merchandising profits may be more important for artists than record profits. Moreover, since downloading music on the Internet was introduced in the popular music market, record sales have decreased; consequently, the importance of concert profits will likely continue to increase.[7] In this context, I will focus on concert profits and merchandising profits.

The key players and their payoffs of the contracts on concert deals and merchandising contracts are as follows. First, concert deals are made by artists and promoters and they share ticket profits after the shows. They bargain over ticket price and the sharing rule for concert ticket profits.[8] Contracts for payment methods may be different depending on the popularity of the artist. However, the promoter generally pays a 'guarantee' to the artist in advance, then pays the rest of the net revenue from the show according to their 'split rate' after the show. The split rate for artists is usually 85 - 90 % of the net profits of the concert (See Passman [2000]). Next, at a concert venue, people can buy T-shirts, posters, or other products as souvenirs. Merchandisers, artists, and venues split the merchandising profits. Merchandisers produce merchandising goods with the license from the artists. They generally pay 25 - 40 % of gross sales as merchandising royalties to the artists, and give 35

[6] Artist royalty varies with the popularity of an artist. According to Passman (2000), the royalties are 9% - 14% of SRLP for new artists, 15% - 16% of SRLP for mid level artists, and 18% - 20% or more of SRLP for superstars.

[7] According to RIAA.com, total album sales has dropped since 2000, except a small peak between 2003 and 2004. However, the relation between the diffusion of digital music and record sales is controversial (See Burkart and McCourt [2006]).

[8] Sometimes promoters contract with booking agents, instead of contracting directly with artists. Booking agents take charge of the artist's live appearance for certain periods and are paid with 5 - 10 % of the artist's revenue from concerts.

- 40 % of gross sales to venues (See Passman [2000] and Thall [2006]). The contracts on concert deals between promoters and artists and the contracts for merchandising are usually separate contracts. In some cases the promoter who promotes an event can be the owner of the venue.[9] Then the promoter will get a part of the merchandising profit as well as a part of the ticket sales profit.

3 Model

This section introduces the concert ticket price decision problem of a promoter and a band. First, I define the demands for tickets and T-shirts, the profit function for each player, and the ticket price decision by the two players. Then I show how the different types of promoters or bands affect their ticket prices.

3.1 Setup

There are two players: a band and a promoter, with two types of each player. The band can be young or old, and the promoter can be the owner of the venue or not the owner. Every band exists for two periods. A young band considers forthcoming future profit as well as current profit, while an old band considers only current profit. A promoter who does not own the venue (type $\tau = 0$) gets only a part of the ticket sales revenue for the event, while a promoter who owns the venue (type $\tau = 1$) receives the profit from a part of the merchandising revenue as well as a part of the ticket revenue. There exist two goods: tickets

[9] In my data set, 27% of the events are held at venues owned by the promoters.

and T-shirts.[10] In period 1, the band's popularity is given as a_1 and they provide a concert. After the concert, the popularity a_2 in period two is formed. If the band is young, they offer another concert in period 2.

The demand for concert tickets q_t in period t depends on the price. Ticket demand is decreasing in the ticket price, i.e. $\frac{\partial q_t}{\partial p_t} \leq 0$. At the concert venue, T-shirts with the band logo are sold at price p_m, which is set by the merchandiser and the band before the ticket prices are determined. The demand for T-shirts q_{tm} depends on their price, but also on the demand for tickets. Since the T-shirts can be purchased only at the venue, the number of concert tickets sold can be considered equal to the number of potential T-shirt buyers. Consequently, merchandising demand is affected by the ticket price via the ticket demand. I assume that both ticket demand and T-shirt demand are linear. In other words, for constant a_t, ticket demand q_t and T-shirt demand q_{tm} are:

$$\begin{aligned} q_t(p_t) &= a_t - bp_t, \text{ and} \\ q_{tm}(p_t, p_m) &= cq_t - dp_m = -bcp_t - dp_m + a_t c, \quad t = 1, 2, \end{aligned} \tag{1}$$

where $b, c > 0$ and $d \geq 0$.

Current demand affects future demand via the band's popularity. The popularity of the band in the second period depends on the band's popularity a_1 in the first period as well as ticket demand q_1 in the first period. I assume that there is always a positive relationship between popularity and concert attendance. In other words, if a person attends a concert of a band, the person tends to like the band and to return to the concert of the band in the

[10] Here T-shirts represent all of the merchandising. Merchandising includes artists' individual names, photographs, artwork identified with artists, etc. (Thall [2006])

future. Then

$$
\begin{aligned}
a_2(p_1) &= a_1 + \alpha q_1(p_1), \text{ and} \\
q_2(p_1, p_2) &= a_2(p_1) - b p_2, \text{ and} \\
q_{2m}(p_1, p_2) &= c q_2(p_1, p_2) - d p_m. \qquad (2)
\end{aligned}
$$

where $\alpha > 0$ and b, c, and d are the same parameters as in (1).

I next define ticket profit, merchandising profit, and future profit, which together constitute each player's profit. Let $\overline{\kappa}$ be the fixed cost for concert production, and κ_m be the marginal cost for T-shirt production.[11] Then the ticket profit Π_t and the merchandising profit Π_{tm} are

$$
\begin{aligned}
\Pi_t &= p_t q_t(p_t) - \overline{\kappa}, \text{ and} \\
\Pi_{tm} &= p_m q_{tm}(p_t) - \kappa_m q_{tm}(p_t),
\end{aligned}
$$

where $p_m \geq \kappa_m$. Define Π_f as the future profit of a young band. A young band gets a part of the current profits, but also will receive a part of the profits in the next period. In the second period, the band can have a contract with a promoter who may or may not own the

[11] In reality, the band and the venue get certain portions of the merchandising revenue, then the merchandiser, who produced the merchadise, gets the rest of the merchandising revenue. However, for the simplicity of the model, here I assume that the venue and the band share the merchandising profit.

venue. The future profit of a young band is thus as follows:

$$\begin{aligned}
\Pi_f &= \frac{\delta}{2}\, E\Big[\Pi_2(p_1,p_2) + \Pi_{2m}(p_1,p_2)\Big], \text{ where} \\
p_2 &= \begin{cases} p_2^{\tau=0}, & \text{with probability } \beta, \text{ and} \\ p_2^{\tau=1}, & \text{with probability } (1-\beta), \end{cases} \\
\text{where } p_2^{\tau^*} &= \arg\max_{p_2} \Pi_2(p_1,p_2) + \frac{1+\tau^*}{2}\Pi_{2m}(p_1,p_2), \text{ and } 0<\delta\le 1 \text{ is a discount factor.}
\end{aligned}$$

Since current ticket price p_1 affects the future popularity of the band, which shifts the future ticket demand and the future merchandising demand, the future profit Π_f is a function of p_1 as well as future ticket price p_2.

Now I define each player's profit, and describe their ticket price decision process. First, I consider the profit of the promoter from the concert. Assume that the split ratio of the ticket sales profit as well as the merchandising profit is 1:1; and, for simplicity, that the band and the promoter maximize joint profit. This eliminates the necessity to model the players' bargaining structure. Then the promoter's profit Π_p is:

$$\Pi_p = \frac{1}{2}\Pi_1(p_1) + \tau\frac{1}{2}\Pi_{1m}(p_1),$$

where $\tau = 0,1$; where Π_t is the profit from ticket sales; and Π_{tm} is the merchandising profit. A band may earn future profit which is affected by current ticket demand. Let $\eta = 0$ for an old band and $\eta = 1$ for a young band. The band's profit Π_b is:

$$\Pi_b = \frac{1}{2}\Pi_1(p_1) + \frac{1}{2}\Pi_{1m}(p_1) + \eta\Pi_f(p_1,p_2), \quad \text{where} \quad \eta = 0,1.$$

I assume that the promoter and the band set the ticket price for the concert where it maximizes their joint profit (3):[12]

$$\Pi_1 + \frac{1+\tau}{2}\Pi_{1m} + \eta\Pi_f. \tag{3}$$

Since the joint profit varies over different types of players, the ticket price depends on the types.

3.2 Ticket Price

The band and the promoter maximize the joint profit (3), so the first order condition for the maximization problem is: [13]

$$a_1 - 2bp_1 - \frac{1+\tau}{2}bc(p_m - \kappa_m) + \eta\frac{\partial \Pi_f}{\partial p_1} = 0 \tag{4}$$

During the first period, it is still unknown with which type of promoter a band will book. Therefore ticket price p_2 in the second period takes one of two possible values, depending on the type of promoters: $p_2^{\tau=0}$ and $p_2^{\tau=1}$ with probability β and $(1-\beta)$ respectively, where $p_2^{\tau=0}$ is the optimal ticket price of the concert presented by a promoter who does not own the venue, and $p_2^{\tau=1}$ is the optimal ticket price of the concert presented by the promoter who

[12] I assume there is no capacity constraint. This is reasonable because they players have the choice of multiple shows for each run.

[13] If the band and the promoter consider only their static ticket sales profits, then they will set their ticket price p_1 such that maximizes Π_1.

owns the venue. Then the future profit of a young band is:

$$\Pi_f = \frac{\delta}{2}\ E\Big[p_2 q_2(p_2, p_1) - \overline{\kappa} + (p_m - \kappa_m) q_{2m}(p_2, p_1)\Big].$$

The second period maximization problem in cases with different promoter types gives ticket prices $p_2^{\tau=0}$ and $p_2^{\tau=1}$, and the partial derivative of future profit with respect to current ticket price can be written as follows: [14]

$$\frac{\partial \Pi_f}{\partial p_1} = -\frac{\alpha\delta}{4}\ \Big[a_1 + \alpha(a_1 - bp_1) + bc(p_m - \kappa_m)\Big].$$

Therefore, the optimal current ticket price p_1^* can be derived:

$$p_1^* = \frac{1}{(8 - \alpha^2\delta\eta)b}\ \Big[4a_1 - 2(1+\tau)bc(p_m - \kappa_m) - \alpha\delta\eta\Big(a_1 + \alpha a_1 + bc(p_m - \kappa_m)\Big)\Big]. \qquad (5)$$

Proposition 3.1 (Venue Ownership) *Suppose that the demand for tickets and the demand for T-shirts in each period are defined as (1) and (2). When a band gives a concert,*

[14] Let $p_2^{\tau=0}$ be the optimal ticket price in the second period when the concert is presented by a promoter who does not own the venue, and $p_2^{\tau=1}$ be the optimal ticket price in second period, when the concert is presented by the promoter who owns the venue. Then I have the maximization problems:

$$\max\ p_2 q_2(p_2, p_1) - \overline{\kappa} + \frac{1}{2}(p_m - \kappa_m) q_{2m}(p_2, p_1),\ \text{and}$$

$$\max\ p_2 q_2(p_2, p_1) - \overline{\kappa} + (p_m - \kappa_m) q_{2m}(p_2, p_1).$$

Maximizing gives the following optimal ticket prices:

$$p_2^{\tau=1} = \frac{a_1 + \alpha(a - bp_1) - bc(p_m - \kappa_m)}{2b}\ \text{and}$$

$$p_2^{\tau=0} = \frac{a_1 + \alpha(a_1 - bp_1) - \frac{1}{2}bc(p_m - \kappa_m)}{2b}.$$

the concert presented by a promoter who owns the venue for the event has a lower current ticket price than the one presented by a promoter who does not own the venue.

Proof By equation (5) the difference between the optimal price in each case is

$$p_1^{\tau=0} - p_1^{\tau=1} = \frac{2}{8 - \alpha^2 \delta \eta}\, c(p_m - \kappa_m). \tag{6}$$

Note that $(p_m - \kappa_m)$ is non-negative. Therefore, for an old band ($\eta = 0$), equation (6) is positive. For a young band, since the ticket demand q_1 at the optimal price is positive, $(8 - \alpha^2\delta)$ is non-negative, consequently, $p_1^{\tau=1}$ is lower than $p_1^{\tau=0}$.[15] Therefore, for both a young band and an old band, the ticket price of the concert presented by a promoter who owns the venue is lower than the ticket price of the concert presented by a promoter who does not own the venue.

■

Proposition 3.2 (Band Age) *Suppose that the demand for tickets and the demand for T-shirts in each period are defined as (1) and (2). Consider two types of bands: a young band with $\eta = 1$ and an old band with $\eta = 0$. The young band charges a lower ticket price than the old band.*

Proof By equation (5) the difference between the optimal price for a young band and the

[15] The ticket demand which a young band faces at their optimal ticket price is can be written as:

$$q_1(p_1^{\eta=1}) = \frac{1}{8 - \alpha^2\delta}\Big[4a_1 + \alpha\delta a_1 + 2(1+\tau)bc(p_m - \kappa_m) + \alpha\delta bc(p_m - \kappa_m)\Big].$$

optimal price for an old band can be written:

$$p_1^{\eta=0} - p_1^{\eta=1} = \frac{1}{8(8-\alpha^2\delta)b}\Big[8\alpha\delta a_1 + 4\alpha^2\delta a_1 + 2\alpha\delta bc(p_m - \kappa_m)(\alpha(1+\tau)+4)\Big]. \qquad (7)$$

Since the ticket demand $q_1(p_1^{\eta=1})$ at the optimal price is positive, $(8 - \alpha^2\delta)$ is non-negative. Consequently, equation (7) is weakly positive. This fact implies that an old band charges a higher ticket price than a young band, under the linear ticket demand assumption.

■

Proposition 3.3 *Let p_1^o be the optimal ticket price when a promoter and a band consider only their static ticket profit. The ticket price set by a promoter and a band who consider their merchandising profit, their future profit, or both is lower than p_1^o.*

Proof

$$p_1^o = \arg\max(a_1 - bp_1)p_1 - \overline{\kappa}$$

$$p_1^o - p_1^{\eta=0} = \frac{1}{4}(1+\tau)c(p_m - \kappa_m) \geq 0, \qquad \tau = 0, 1$$

By Proposition(3.2) the following inequality holds:

$$p_1^o \geq p_1^{\eta=0} \geq p_1^{\eta=1}, \qquad \tau = 0, 1.$$

Therefore, the static profit maximizing ticket price, p_1^o, is higher than any ticket price set by a promoter and a band, when at least one of them considers her merchandising profit or her future profit.

■

4 Data and Results

The model derived in section three predicts how the ownership of the venue or the age of a band may affect ticket price. In order to test whether those factors are important in the U.S. popular concert market, I will estimate the price equation with Pollstar Boxoffice historical data.[16]

4.1 Data Description

The Pollstar Boxoffice historical data set contains information on venue location and capacity, gross sales, the number of attendees, ticket prices (face value), and promoters for 14,231 concerts held in the U.S. between August 1981 and April 2007.[17] Artists' information, such as debut years, musical styles, and the ages of the artists, are collected from Billboard.com, allmusic.com and the artists' official web sites.[18] Venue characteristics information, such as location and ownership, is collected from each venue's web page and each promoter's web page.

Table 1 presents summary statistics. The main variables used in this study are the number of tickets sold, ticket prices, the ages of artists, and venue capacities. All prices are real values calculated with U.S. city average Consumer Price Index (CPI) for all urban consumers with 2006 = 100.[19] Here I use the age of artists when the event took place. The number of tickets sold is the total number of tickets sold for the events by an artist at a venue

[16]Pollstar is a company which provides concert tour schedules, music industry contact directories, and concert tour database.

[17]The data set includes 72 artists, who offered comparatively many shows in different locations, among relatively prominent artists who have at least more than 1 golden album award.

[18]For bands, the ages of the lead singers of the bands are used as the ages of artists.

[19]CPI's are collected from the Bureau of Labor Statistics. http://www.bls.gov/cpi/home.htm

for all dates of a given show.[20] Therefore, if an artist performs multiple shows at the same venue over consecutive days, the number of tickets sold may be greater than the capacity of the venue. Most of the events (61%) were held at venues with seat capacity of between 5,000 and 30,000 (See Figure 2).[21]

Figure 1: Attendance Rate

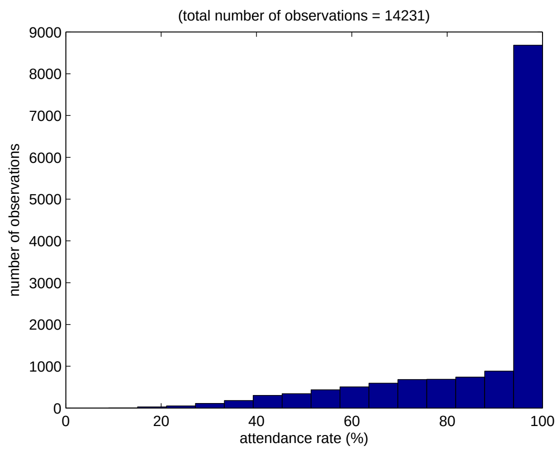

Figure 2: Capacity

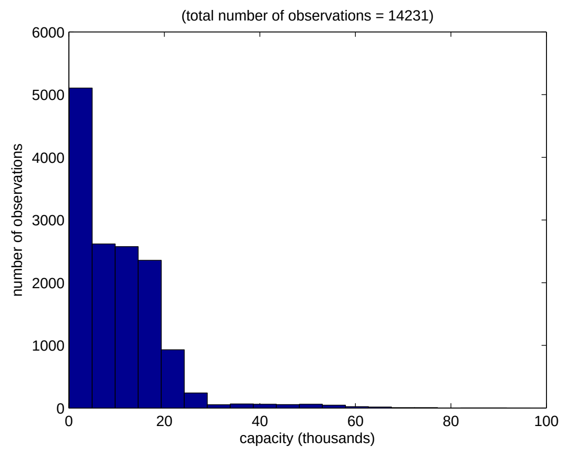

Table 1: Summary Statistics

	mean	std
Ticket price for the cheapest seats for each concert(2006 dollars)	31.90	14.50
Ticket price for the most expensive seats for each concert(2006 dollars)	49.00	90.60
Age of artist	37	11
Number of tickets sold (thousands)	11	17
Venue capacity (thousands)	12	17
Number of observations (thousands)	14	

In order to account for demand side information and real market situations, I use addi-

[20] About 54% of the shows were sold out. See Figure 1.

[21] In this data set, 36% of the events took place at the venue with capacity of less than 5,000 and 3% of the events took place at the venue with capacity of greater than 30,000.

tional data. The U.S. Census Bureau provides population and per capita income for each state.[22] The Recording Industry Association of America provides the numbers of awards, such as golden albums and platinum albums, for the artists, via RIAA.com. I also include information on anti-scalping laws for each state, which is provided by the National Conference of State Legislatures because ticket scalping can affect ticket prices.

4.2 Estimation Results

The key question is whether the future profits, the merchandising profits, or both, can be the explanation for the ticket underpricing practice in the popular music concert market. To answer this question, I estimate the following supply equation:

$$\log(\text{ticket price}) = \alpha_1 + \alpha_2 \log(\text{attendance}) + \alpha_3 \text{D}_{own} + \alpha_4(\text{age}) + \alpha_5 \text{D}_{law} + u.$$

When I estimate the supply equation, I run into an endogeneity problem arising from simultaneity and omitted variables. Note that what I observe are the ticket prices and the number of attendees in equilibrium. Since these are determined simultaneously, attendance is correlated with error term u, therefore the number of attendees is endogenous. I suspect that the ownership dummy is also endogenous because both ticket price and the ownership dummy may determined by such factors as attractiveness of location and cost reference. Since these factors are not observable, these may be part of the error term u.

In order to deal with the endogeneity problem, I employ 2SLS estimation method allowing attendance and the ownership dummy to be endogenous with instrumental variables (IVs)

[22] http://quickfacts.census.gov/qfd/index.html

which affect the endogenous variables but do not directly affect ticket price. The instrumental variables that I have chosen are population and income of the state where the event was held, how many years the artist has been playing since his/her debut, and the total number of multi-platinum album awards for each artist before the event takes place as a proxy of the popularity of an artist. These are good instruments because they are correlated with the endogenous variables, but uncorrelated with supply side error term.

Table 2 presents the estimation results of the price equations. Ticket prices are for the most expensive seats, the ticket price for the cheapest seats, and the average of both, after accounting for endogeneity. [23] The regressors are attendance, a venue ownership dummy, the age of each artist, and an anti-scalping law dummy. The number of tickets sold for each concert is used as the number of individuals attending the concert. The venue ownership dummy, D_{own}, is one if the venue is owned by the promoter, and zero otherwise. In order to analyze how the future profits of artists affect their ticket price decision, I use the age of an artist. In addition to the variables above, I include the anti-scalping law dummy as a regressor, since some studies on the entertainment industry indicate that anti-scalping laws can affect ticket prices.[24] The anti-scalping law dummy D_{law} is one if the state where the event was held has an anti-scalping law, and zero otherwise.

The main interests of this paper are in the coefficient of the dummy for venue ownership, which indicates the effect of the merchandising profits on ticket prices, and the coefficient

[23]Since there are six concerts which have a ticket price of zero, the number of observations used in the estimation for the cheapest ticket price is smaller than the number used in the estimation of the other ticket prices. The result for the first stage estimation is presented in Table 3.

[24]Williams (1994) tests the effect of anti-scalping laws on ticket prices in the National Football League (NFL) and finds that the NFL charges higher prices on tickets with the absence of anti-scalping laws. Also, Depken, II (2006) finds that NFL and National Baseball League (NBL) charge higher ticket prices with the presence of anti-scalping laws.

Table 2: 2SLS Estimation of Price Equation with Instrumental Variables*

	log(max(price))		log(mid(price))		log(min(price))	
	OLS	2SLS	OLS	2SLS	OLS	2SLS
log(attendance)	0.16	0.53	0.15	0.47	0.12	0.38
	(51.48)	(25.82)	(53.07)	(25.76)	(43.9)	(21.95)
D(ownership)	0.03	-0.22	-0.02	-0.28	-0.11	-0.47
	(4.35)	(-1.67)	(-3.06)	(-2.36)	(-16.99)	(-4.23)
age of artist	0.03	0.02	0.03	0.01	0.02	0.00
	(99.95)	(13.54)	(91.23)	(10.89)	(49.99)	(1.48)
D(anti-scalping law)	-0.01	-0.07	-0.02	-0.06	-0.03	-0.06
	(-1.65)	(-4.58)	(-2.86)	(-4.96)	(-4.68)	(-4.69)
constant	0.94	-1.41	1.24	-0.79	1.78	0.21
	(37.44)	(-9.15)	(56.04)	(-5.84)	(79.72)	(1.61)
number of observations	14231				14225	

* The values in parentheses are t-values.

of the age of the artist, which suggests the effect of the future profits on ticket prices. The coefficient for the venue ownership dummy is negative and significant for the prices for the cheapest seats and the average prices; in other words, the ticket price for a concert presented by a promoter who owns the venue is lower than the ticket price for a concert presented by a promoter who does not own the venue. For example, the ticket price for the cheapest seats in a concert presented by a promoter who owns the venue is about 37% lower than it would be if the concert were held in a venue which is not owned by the promoter. This supports the explanation that promoters may price tickets under market clearing price in order to maximize their merchandising profits as well as ticket sales profits, because a promoter who does not own the venue does not consider merchandising profits.

For the prices for the most expensive seats and the average prices, the coefficients of the age of the artist are significant and positive. This fact implies that an older artist charges

Table 3: First Stage Regression*

	log(attendance)	D(ownership)
the age of the artist	0.04	0.00
	(16.70)	(-1.03)
D(anti-scalping law)	0.10	0.03
	(4.72)	(2.94)
log(population)	0.06	0.02
	(5.76)	(4.92)
log(per capita income)	0.39	0.21
	(5.56)	(6.98)
# of multi-platinum albums	0.03	0.00
	(26.52)	(-4.82)
(event year) - (debut year)	0.00	0.00
	(-0.62)	(-0.69)
constant	1.73	-2.38
	(2.21)	(-7.00)
R^2	0.26	0.01

* The values in parentheses are t-values.

a higher ticket price than a younger artist. In the case of two artists who are identical in popularity, venue characteristics, etc., but are different ages, the older artist will charge 2% more for each year difference between their ages for the most expensive tickets . This supports the theory that artists may price tickets below static equilibrium price in order to maximize their future profits, which depend on current ticket demand, as well as their current static profits.

The estimation results also suggest that there are significant and negative effects of anti-scalping laws on ticket prices. For example, in the case of the most expensive seats, the ticket price for a concert held in a state with anti-scalping laws is about 7% lower than the ticket price for a concert in a state without anti-scalping law. This fact is consistent with

Williams (1994)'s results that ticket scalping provides information about ticket demand.

5 Conclusion

This paper investigates the reason that promoters and bands choose their concert ticket price such that ticket resale is profitable. Even though there exists persistent excess demand in the primary ticket market, i.e, the face values of the tickets are lower than resale market prices, promoters and bands do not raise their ticket prices. In order to explain this puzzle, I modelled the ticket price decision of a promoter and a band who may consider other profit sources besides ticket sales profits. The model predicted that when the promoter and the band consider merchandising revenue as well as ticket revenue, or when the band considers their future profit as well as their current profit, they may charge a price lower than the price which maximizes their static ticket profit.

I tested the credibility of these potential explanations by estimating a ticket supply equation with Pollstar Boxoffice historical data. I found that the ticket price for a concert presented by a promoter who owns the venue is lower than the ticket price for a concert presented by a promoter who does not own the venue. This supports the theory that promoters price tickets below market clearing price in order to maximize their merchandising profits as well as ticket profits. My results imply that an older artist may charge a higher ticket price than a younger artist, provided that other conditions are the same. This supports the theory that artists may price tickets below static equilibrium price in order to maximize their future profit, which depends on current ticket demand, as well as their current static profits.

The estimation results suggest that the existence of ticket resale markets may affect the price decision in the primary market. A valuable extension of the model in this paper would add the secondary market. This addition would necessitate introducing demand uncertainty into the primary market. My future research plans include developing this model as well as an estimation of the effects of the secondary market on the primary ticket sales market.

References Cited

Becker, Gary S. (1991), "A Note on Restaurant Pricing and Other Examples of Social Influences on Price," *Journal of Political Economy* 99–5, 1109–1116.

Billboard Music Group (2000), *Audarena Stadium 2000 International Guide and Facility Buyers Guide,* BPI Communications Inc.

Burkart, Patrick and Tom McCourt (2006), *Digital Music Wars: Ownership and Control of the Celestial Jukebox,* Rowman & Littlefield Publishers, Inc., MD.

Connolly, Marie and Alan B. Kruger (2005), "Rockonomics: The Economics of Popular Music," *NBER Working Paper*, 11282.

Courty, Pascal (2003a), "Ticket Pricing under Demand Uncertainty," *Journal of Law and Economics*, 46–2, 627–652.

Courty, Pascal (2003b), "Some Economics of Ticket Resale," *Journal of Economic Perspectives*, 17–2, 85–97.

Depken, II, Craig (2006), "Another Look at Anti-Scalping Laws: Theory and Evidence," *Public Choice*, 130, 55–77.

DeSerpa, Allen C. (1994), "To Err Is Rational:A theory of Excess Demand for Tickets," *Managerial and Decision Economics*, 15, 511–518.

Diamond, Thomas A. (1982), "Ticket Scalping: A New Look at an Old Problem," *University of Miami Law Review*, 37, 71–92.

Happel, Stephen K. and Marianne M. Jennings (1995), "The Folly of Anti-Scalping Laws," *The CATO Journal*, 15–1, 65–80.

Kahneman, Daniel, Jack Knetsch and Richard Thaler (1986), "Fairness as a Constraint on Profit Seeking: Entitlements in the Market," *American Economic Review*, 76–4, 728–741.

Marburger, Daniel R. (1997), "Optimal Ticket Pricing for Performance Goods," *Managerial and Decision Economics*, 18, 375–381.

Passman, Donald S. (2000), *All You Need to Know about the Music Business*, Simon & Schuster, NY.

Swofford, James L. (1999), "Arbitrage, Speculation, and Public Policy toward Ticket Scalping," *Public Finance Review*, 27–5, 531–540.

Thall, Peter M. (2006), *What They'll Never Tell You about the Music Business*, Billboard Books, NY.

Williams, Andrew T. (1994), "Do Anti-Ticket Scalping laws Make a Difference?," *Managerial and Decision Economics*, 15, 503–509.