The Effect of Ticket Resale Laws on Consumption and Production in Performing Arts Markets

Melissa Boyle

Department of Economics, College of the Holy Cross E-mail: <u>mboyle@holycross.edu</u>

Lesley Chiou

Department of Economics, Occidental College

Although most economists assume that ticket stoglips efficient, existing theoretical models make ambiguous predictions of the effect of delicresale on production and attendance. This study uses variation in stated amunicipal laws to examine whether prohibiting or restricting resale has a positive or negretiimpact on consumer attendanced producer entry into arts markets. Our results show that restrictions resale prices and licensequirements stimulate attendance in performing arts events, but elesse the number of unique productions. This suggests that consumers value regulation that intersprices and requiselicensing for resellers over greater variety in productions.

Keywords: ticket resale, regulation thL-/5e .0002 Tc .148] I m

INTRODUCTION

The regulation of ticket scalping generatestcoversy and oftenvekes strong reactions from both sides of the debate. Ticket scalping re

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Given the limited empirical work on tickets are level lass and therefore do not fully capture separate regulations enacted by **origani** ties, which often differ from state laws.

Substantial variation in ticket-scalping legitiston exists across states. For instance, in 2006, Florida overturned a 60-year-otilicket scalping law that prohitied the resale of tickets for more than \$1 above face value (i.e., prointite) lar value on the tiket); now, consumers and ticket brokers can purchase and sell ticketsany agreed upon price. In August 2007, a Minnesota law went into effect that liftedeth50-year state ban on se

musical "Wicked" directly atthe box office (at the Gershwinheater), through a ticketing agency that partners with the musical (e.g., dheatege, Ticketmaster), through a ticket scalper (e.g., Ticketsnow.com, eBay).

The impact of ticket scalping on consumers **p**noducers is indeterminate. On the one hand, ticket scalping can improve **dief**ency. The transaict represents a trade from one party to another, and voluntary trading among two partise ould lead to an outcome where both are better off.³ The opportunity for a secondary market to develop occurs because event producers tend to charge prices **low** market-clearing levels [Court 2003a]. Ticket resale can therefore benefit both producers and consumers by reallog at the consumers who value them the most. The presence of ticket scalpers **can** set re as "insurance" to producers who might otherwise not sell the tickets at scalpers purchase. The **csect** ary market can also benefit consumers by allowing them to resell their tick **(etg.**, if unforeseen cincenstances prevent their attendance at the show) or to purchase **tickets** at the last minute.

On the other hand, ticket scalping could ve detrimental effects on producers and consumers in the long run. Becausselpers may be able to pericliscriminate more perfectly than producers, they may extract profits the tpt hoducer would collect it he scalper's absence. If scalpers lower producers' profits, producenay exit the market sooner or be discouraged from entering. Potentially, the quality or nber of shows may decline, since producers accumulate fewer profits to invest back into productions.

Our results indicate that optribiting resale above face lue and requiring licenses for resellers stimulates attendance. We also fired to the attendance increases, fewer distinct productions are shown in metropolitareas or states that requirektet resellers to be licensed or that prohibit resale above face value. On the one hand, if laws that prohibit resale above face

value do curtail prices, then we would expetiteredance to increase when prices fall. On the other hand, if these laws alseeable to less variety in the meetk (fewer productions), we would expect attendance to decreate overall effect on attendate will depend upon which effect dominates. Since attendance increases overhalls, is consistent with consumers valuing regulation that restricts prices or greater product variety.

RELATED LITERATURE

Previous theoretical research implies that ith pact of ticket scaling on attendance and producers' profits is ambiguous. Swofford 999] describes a one-period model in which scalpers act as middlemen and exploit sellipportunities that the producer cannot due to differences in risk preferences, costs, or demands wofford's model, scalpers sell tickets that would otherwise go unsold, and in this way naayually increase profits for the producer. The presence of ticket scalperan also act as a form of insuranto producers, since ticket scalpers purchase tickets early and promote the event. If these to a sell out, it the scalper rather than the producer who is left with excess disk and lower profits [Courty 2003a]. Moreover, the existence of a secondary market may induce encounsumers to purchase tickets; consumers know that if they cannot attend the event due too too the ticket and reco some of their losses.

Theoretical papers by Courty [2003a; 2003bd] & Karp and Perloff [2005] consider twoperiod models and reach differing conclusion geareling the impact of calpers on a monopolist producer's profits. The differing results are glealy based on assumptions regarding when consumers know their willing use to pay [Karp and Perloff 2005] ourty's model draws on an analogy to airline ticket pricing. In this model wo different types of consumers exist. Low types

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performances, on average (1.07 performances **abynueassus** 0.77 in non-law areas). Nineteen percent of law state (or city) **relevants** have attended at least **omesical** in the previous year, 14 percent have attended at least one play, **26n**¢ percent have attended at least one theater performance (play or musical). In states **auitibs** with no regulation of ticket scalping, 16 percent of residents have attended **atteast** one the past year, 11 percent have attended at least one play, and 20 percent have atten**ateast** one the at**teast** one the at**eeformace**.

Our second data source contains a lisp notifuctions from all member theaters of the Theatre Communications Group (TCG) from 2002006. TCG is an umbrella organization that includes more than 400 not-for-profibeaters in over forty stateEhis collection of theaters is well-suited for the study, since they represent indevarray of institutional sizes and structures". According to their statisticsthirty-six percent of memberbave budgets under \$500,000; 21% in the \$500,000-1 million range; 25% in the \$1-3 routilirange; 6% in the \$3-5 million range; 8% in the \$5-10 million range; and 4% have budsigne the \$10 million or more range. Another advantage of this dataset is titatontains productions across threajority of states, so variation in state laws can be used. The TCG datasetudies all of the not-for-prive Broadway theaters (the Vivian Beaumont, the Biltmore, Stood54, and the American Airlines Thead); reand non-profit Off-Broadway theaters as well as vaus-sized regional theeats. It is broadly representative of U.S. theaters in general, rootstrinch are non-profibrg anizations (with the exception of the majority of the Broadway theaters).

We create a balanced panel of thealtonumber of unique productions during 2002-2006 by locating the reported production history from a cheater's website and by extracting the reported productions of m the TCG databaseSummary statistics are reported in Table 2. We counted the total number of proceditions for each theter in a given season; for theaters with

missing production data in certain seasones used a linear interpolation We also identified the city and state of location for each theater. Outastat contains a balanced panel of 45 states, including the District of Columbia and exacting Kansas, Nevada, North Dakota, Oklahoma, South Dakota, and Wyomin¹g.

We include both state and mutipial regulations onticket-resale in our analysis. While previous work primarily focuses on state-letaews (see Table 3), many municipalities enact separate restrictions on resale, which differ frontante laws. For each city in our sample, we determined whether any municipal or state-level laws existed on ticket hetaeteeused online databases of municipal codesg(e amlegal.com and municode.coars) well as city websites to identify whether any municipal timet resale laws exist. In aidid, we obtained a summary of state regulations on tickeresale from the National Conferment State Legientures and from individual state legislatures. Similar to Elfeinto (2005], we classify each metro area according to four types of regulation: no egulation, resale restricted etvent site, resellers must be licensed, and tickets may not besold above face value.

We create two distinct produincen datasets by aggregatingle production data to the metropolitan- and state-level. For the metropolitanelledvataset, we omit theaters from cities that do not lie within a metropolitan area as **defi** in the Current Population Survey (CPS) 2002-2006 by a metropolitan statistical area (MSA)core-based statistical area (CBSA)For each region, we compute the total number of productipes capita and the average demographics. The metropolitan-level dataset contains municipal as well as steallevel laws, and the state-level dataset contains the corresponditions on ticket resalie.

As seen in Table 2, we have data onrotate metropolitan areas. The average number of productions is 19 per thousand residents. Subatavariation exists in laws across MSAs.

Approximately 18% of the areas had regulationshippiting resale at the site of the event; 24% of MSAs required resellers to be licensed, **app** roximately 34% of MSAs prohibited resale above face value. The MSAs exhibit geographication with 17% in the midwest, 33% in the south, 24% in the west, and 26% in the easth Atstate-level, we find a lower per capita number of productions as expected, sinter total number of productionis divided by the entire state population and not the local etropolitan population.

RESULTS

Attendance

In order to assess the impact of anti-scalping legislation on production and consumption in live theater markets, we estimate theory in gregression, utilizing the 2002 SPPA:

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correlated with ticket resale regulation. We estimate this equation using a zero-inflated negative binomial regression model, because the **depe**t variables (play attendance, musical attendance, play and musical attendance, **attendance** at any live performance) are count variables equal to zero for a statistial fraction of the observation statistical statistical fraction of the observation statistical statistical statistical fraction of the observation statistical statistical statistical statistical statistical fraction of the observation statistical st

Results from estimating this equation are required in Table 4. As shown in the table, the various types of anti-scalping regulation have a positive impact on attendance at musicals and plays. Regulation of scalping ptimes results in a 14 to 45 perceincrease in the number of performances attended. Licensinggulations (requiring that individuals hold a state or city license before they re-sell tickets) have **shee**ongest impact on attended, respectively, a 29 percent and 45 percent increase in the number of number of increase in total theater performances (plays, musicals together) and a 25 percent increase in attendance at all types of liveformances (plays, musicals, dance and operfembries do not, and may do so with more susse than unlicensed scalpers in markets where resale is unregulated. It also implies that consumers eraturegulated secondamyarket – when a broker is licensed the consumer can purchase a ticket increase market witholdeing concerned that the ticket is counterfeit.

Restrictions that forbid resale at the evesitet and prohibit resalebove the ticket's face value also increase attendance. The restriction someres the event site may result in a lower nuisance-factor for attendees while the prohibitiagainst resale for profit may result in lower ticket prices for consumers. With both of the speces of regulation consumers retain the option of reselling their tickets, should they find themselves able to attend at the st minute (in the case where resale is prohibited at the event site tickets still be resold online or in other locations).

Thus, it appears that consumer sugaregulations that still provide them with a safeguard in case they cannot use a previsely purchased ticket.

Production

We explore how the number of per capital ductions in each region relates to the region's demographics and ticknessale laws. We estimate advaced-form regression measuring the unique number of TCG productions per capita in each reignoreart :

productions, $_{it}$ ______n notatsite _____n notabove fae _______ license X ______i.

The dependent variable is the per-capita boomton productions by TCG theaters in each region.¹⁸ We estimate the regression separateloguour two constructed atasets at the MSA-level and state-level, and we caper capita measures to adjust the population sizes of each region. On the right hand side, we include **nue as** of the degree of anti-scalping regulation. The vector *X* contains regional dummy variables as well as each region's demographics – i.e., average age and the fraction to be population for each income above, ethnicity (white, black, Hispanic, and other), gender, **rital** status, and college-educated.

If scalpers do lower the (exepted) profits of porducers, then we would expect to see fewer entrants in markets where ticket scragipis unregulated; fewer unique productions would lead to a decreased variety in shows. On therdhand, if scalpers rabisthe profits of producers by acting as "insurance," we would expect to see ineased entry and number productions in markets where scalping is legal without restoricts. Finally, if scalpers imply extract profits that producers would not be abbe obtain otherwise, then we could expect to see increased consumption (tickets sold) and no effect the number of productions; for any given

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Economic theory makes conflicting prediction regarding the efficiency of unregulated secondary markets for event tickets. Allowitigket scalping to be ungulated may lead to higher consumer and producer suspluy enabling trades that realloce at the text of the highest willingness-to-pay. On the hand, some theoretical mode predict that the presence of scalpers in the market can lead in efficiencies if the scalprecaptures profits that would have accrued to the producer in his absence. Institutation, future quality and product variety might fall if producers are long profits that would otherwise have a neinvested in the market [Courty 2003a]. We utilize two unque datasets to empirically viestigate the effects of antiscalping regulation on attendance at perforgmarts events and on the number of unique productions mounted. We assemble nique dataset of state and nicipal scalping regulations, and we test whether various type f regulation lead to increases or decreases in consumption and production of the atter performances.

Our empirical results reveathat all forms of tested regulation (i.e., licensing requirements, prohibiting resale for profit, and prohibiting resale at the event site) lead to increases in theater attendand a trize to locations where scanging is allowed with no oversight. We find that two types of regulath – licensing requirements a prodohibiting resale above face value – lead to lower product variey relative to markets where adopting is unregulated, possibly because regulations impede the billity of scalpers to behave as insurers for producers, particularly in cases where Idoodemand may be unceinta It therefore appears that consumers value oversight and low reprices in the market for tiests above greater product variety. Consumers choose to attend momenductions – even with a same choice set – when the secondary market is regulated than when it is not.

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13. We compute the population in each ANS state using the counts in the CPS and scaling up by the total US population in the corresponding year.

14. Note that we are estimating the reduced form equation of the equilibrium attendance in the market. The equilibrium attendance is a function of the exogenous actualistics of demand (such as demographics) and supply (such as ticket resale laws). Our estimating equations can be interpreted as the reduced form regressions of equilibrium quantities in the market. For instance, if the demand and supply for theater can be expressed as:

d (demand equation) Q_d ₁P $_{2}X_{d}$

₁P Q $_{2}X_{s}$ (supply equation),

then the market equilibrium will be determined Oby=Qs. Solving these two equations simultaneously gives us the reduced form expression for equilibrium quantity in the market:

$$Q^* _1X_d _2X_s$$

where X_d and X_s are the exogenous characters of demand and supply $\frac{1}{2} = \frac{1}{1} \frac{2}{1}$, $\frac{1}{2} \frac{1}{1} \frac{2}{1}$, $\frac{1}{2} \frac{1}{1} \frac{2}{1}$,

and is an error term that is a function gfand s.

15. We run our regression for four outcomes, which mat mutually exclusive musicals, plays, theater performances, and total performances includes musicals and playsd any live performance includes musical plays, opera, ballet, and other dance.

16. For each of the four regression outcomes, chi-square goodness-of-fit tests reject the hypothesis that the data are Poisson, and likelihood-ratio tests cionnf that the negative binomial regression model is preferred. A Vuong [1989] test confirms that the zero-inflated negative binomial model is preferred to standard negative binomial. OLS produces results that are qualitatively and quantitatively similar.

17. To get an idea of what this implies for the absolute (rather than percentage) increase in attendance, note that a 45% increase in the number of plattended corresponds to an increase additional plays for the average individual in a non-law state (since three an number of plays attended in haw-states is .23). The sizes of the attendance increases interpreted in this manner are consistent observations obtained from OLS regressions with logged dependent variables (which are therefore conditionalositive attendance, since the natural log of zero is undefined). In that model, licensing restrictions leadered 1% increase in the number plays attended conditional on attending at least one play. The average attendee in a non-law state views 2.11 plays per year. This therefore implies that the presence of a licemequirement would cause the averation and individual to view an additional .2 plays. Complete results from the OLS semi-log model are available from the authors upon request.

18. Note that we are estimating the reduced-form equation for the number of unique productions in each market as a function of the market's exogenous characteristics. Similar to our discussion of the estimation of attendance, the equation for product variety is also a reduced form equation of the number of unique productions within a geographic locale.

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	number of observations	mean	standard deviation	minimum	maximum
MSA level					
number of productions per capita					
(000's)	532	18.72	17.00	0.62	182.23
not at site	532	0.18	0.39	0.00	1.00
license	532	0.24	0.43	0.00	1.00
not above facevalue	532	0.34	0.47	0.00	1.00
midwest	532	0.17	0.38	0.00	1.00
south	532	0.33	0.47	0.00	1.00
west	532	0.24	0.43	0.00	1.00
white	532	0.67	0.18	0.11	1.00
black	532	0.13	0.12	0.00	0.56
hispanic	532	0.14	0.14	0.00	0.69
male	532	0.48	0.02	0.39	0.56
married	532	0.40	0.04	0.27	0.53
State level					
number of productions per capita					
(000's)	225	11.84	14.86	0.52	111.19
not at site	225	0.04	0.21	0.00	1.00
license	225	0.16	0.36	0.00	1.00
not above facevalue	225	0.22	0.42	0.00	1.00

Table 2. Summary statistics for TCG

Table 3. State laws* on ticket resale

No resale at event site	Arizona, California
License required to sell	Alabama, Georgia, Illinois, Massachusetts, New Jersey, New York, Pennsylvania
No resale above face value	Arkansas, Connecticut, Florida, Kentucky, Louisiana, Michigan, Minnesota, North Carolina, Rhode Island, Wisconsin

	(1)	(2)	(3)	(4)
	# musicals	# plays	# theater	total # live
			performances	performances
not above face	0.159*	0.200**	0.177**	0.128*
	(0.071)	(0.075)	(0.062)	(0.058)
license	0.193*	0.370**	0.251**	0.225**
	(0.076)	(0.090)	(0.068)	(0.064)
not at site	0.171*	0.167+	0.130+	0.141*
	(0.083)	(0.089)	(0.069)	(0.064)
metro	0.040	0.136	0.104	0.148*
	(0.108)	(0.105)	(0.082)	(0.074)
male	-0.082	-0.013	-0.057	-0.099+
	(0.084)	(0.096)	(0.063)	(0.055)
marital	-0.189*	-0.327**	-0.282**	-0.386**
	(0.080)	(0.117)	(0.070)	(0.062)
employed	-0.009	-0.096	-0.083	-0.132*
	(0.087)	(0.110)	(0.073)	(0.067)
Observations	15331	15331	15331	15331

Table 4. Attendance at Live Performance Events

Results from zero-inflated negative binomial regression. . Independent variables also include Census region, income group, education, race, and age grdupmies. Prediction of over-representation zero outcomes includes metro, male, marital, employed, Census region, income group; and age group;

	(1)	(2)
	MSA/CBSA	state
license	-6.005+	-3.176*
	(3.414)	(1.606)
not at site	-0.020	4.105*
	(2.078)	(1.958)
not above face value	-4.410*	-3.270*
	(1.761)	(1.372)
year	0.293	-0.461
	(0.604)	(0.562)
midwest	-11.314**	-6.576**
	(2.851)	(2.342)
south	-9.523**	1.746
	(3.549)	(3.067)
west	-6.273	-9.973**
	(3.981)	(2.800)
white	17.137**	18.008**
	(5.531)	(5.505)
black	7.357	-22.801
	(14.279)	(14.217)
hispanic	2.066	-18.809*
	(8.320)	(7.528)
male	-38.480	-9.548
	(71.755)	(86.663)
married	0.481	-436.676**
	(31.025)	(42.176)
age	0.233	0.318
	(0.355)	(0.481)
college	76.747**	182.336**
	(28.608)	(28.951)
Observations	489	225
R-squared	0.190	0.788

Table 5. TCG productions

Robust standard errors in parentheses

+ significant at 10%; * significate 5%; ** significant at 1% The dependent variables are the total number of TCG **ptiods** per capita (000's) in a metropolitan area and in a state. Column (1) containsumicipal as well as state laws that applythe MSA. Column (2) contains state-level laws. All regressions contain year dureshand income variables measureftaetion of the population within each state (or city) that falls within a given income bracket.