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

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Although most economists assume that ticket scalping is efficient, existing theoretical models make ambiguous predictions of the effect of ticket resale on production and attendance. This study uses variation in state and municipal laws to examine whether prohibiting or restricting resale has a positive or negative impact on consumer attendance and producer entry into arts markets. Our results show that restrictions on resale prices and license requirements stimulate attendance in performing arts events, but decrease the number of unique productions. This suggests that consumers value regulation that restricts prices and requires licensing for resellers over greater variety in productions.

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INTRODUCTION

The regulation of ticket scalping generates controversy and often evokes strong reactions from both sides of the debate. Ticket scalping re

Given the limited empirical work on ticket resale, our paper contributes by assembling a unique dataset of consumption and production decisions. While previous works have focused on the impact of ticket resale on the National Football League (NFL), we examine the effect in performing arts markets; in contrast to sports markets, producers in the performing arts have flexibility and discretion over entry decisions as well as innovation and product variety. Our data also has the advantage of including information on both state- and municipal-level anti-scalping laws. Prior empirical work primarily focuses on the effect of state-level laws and therefore do not fully capture separate regulations enacted by municipalities, which often differ from state laws.

Substantial variation in ticket-scalping legislation exists across states. For instance, in 2006, Florida overturned a 60-year-old ticket scalping law that prohibited the resale of tickets for more than $1 above face value (i.e., printed dollar value on the ticket); now, consumers and ticket brokers can purchase and sell tickets at any agreed upon price. In August 2007, a Minnesota law went into effect that lifted the 50-year state ban on se musical "Wicked" directly at the box office (at the Gershwin Theater), through a ticketing agency that partners with the musical (e.g., Telecharge, Ticketmaster), or through a ticket scalper (e.g., Ticketsnow.com, eBay).

The impact of ticket scalping on consumers and producers is indeterminate. On the one hand, ticket scalping can improve efficiency. The transaction represents a trade from one party to another, and voluntary trading among two parties should 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 below market-clearing levels [Courty 2003a]. Ticket resale can therefore benefit both producers and consumers by reallocating tickets to the consumers who value them the most. The presence of ticket scalpers can also serve as "insurance" to producers who might otherwise not sell the tickets that scalpers purchase. The secondary market can also benefit consumers by allowing them to resell their tickets (e.g., if unforeseen circumstances prevent their attendance at the show) or to purchase tickets from resellers at the last minute.

On the other hand, ticket scalping could have detrimental effects on producers and consumers in the long run. Because scalpers may be able to price discriminate more perfectly than producers, they may extract profits that a producer would collect in the scalper's absence.[4] If scalpers lower producers' profits, producers may exit the market sooner or be discouraged from entering. Potentially, the quality or number of shows may decline, since producers accumulate fewer profits to invest back into productions.

Our results indicate that prohibiting resale above face value and requiring licenses for resellers stimulates attendance. We also find that while attendance increases, fewer distinct productions are shown in metropolitan areas or states that require ticket 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 expect attendance to increase when prices fall. On the other hand, if these laws also lead to less variety in the market (fewer productions), we would expect attendance to decrease. The overall effect on attendance will depend upon which effect dominates. Since attendance increases overall, this is consistent with consumers valuing regulation that restricts prices over greater product variety.

RELATED LITERATURE

Previous theoretical research implies that the impact of ticket scalping on attendance and producers' profits is ambiguous. Swofford [1999] describes a one-period model in which scalpers act as middlemen and exploit selling opportunities that the producer cannot due to differences in risk preferences, costs, or demand. In Swofford's model, scalpers sell tickets that would otherwise go unsold, and in this way may actually increase profits for the producer. The presence of ticket scalpers can also act as a form of insurance to producers, since ticket scalpers purchase tickets early and promote the event. If the event does not sell out, it is the scalper rather than the producer who is left with excess tickets and lower profits [Courty 2003a]. Moreover, the existence of a secondary market may induce more consumers to purchase tickets; consumers know that if they cannot attend the event due to unforeseen circumstances, they will be able to re-sell the ticket and recoup some of their losses.

Theoretical papers by Courty [2003a; 2003b] and Karp and Perloff [2005] consider two-period models and reach differing conclusions regarding the impact of scalpers on a monopolist producer's profits. The differing results are largely based on assumptions regarding when consumers know their willingness to pay [Karp and Perloff 2005]. Courty's model draws on an analogy to airline ticket pricing. In this model, two different types of consumers exist. Low types

performances, on average (1.07 performances annually versus 0.77 in non-law areas). Nineteen percent of law state (or city) residents have attended at least one musical in the previous year, 14 percent have attended at least one play, and 25 percent have attended at least one theater performance (play or musical). In states and cities with no regulation of ticket scalping, 16 percent of residents have attended a musical in the past year, 11 percent have attended at least one play, and 20 percent have attended at least one theater performance.

Our second data source contains a list of productions from all member theaters of the Theatre Communications Group (TCG) from 2002 to 2006. TCG is an umbrella organization that includes more than 400 not-for-profit theaters in over forty states. This collection of theaters is well-suited for the study, since they represent a "wide array of institutional sizes and structures".[6] According to their statistics, thirty-six percent of members have budgets under $500,000; 21% in the $500,000-1 million range; 25% in the $1-3 million range; 6% in the $3-5 million range; 8% in the $5-10 million range; and 4% have budgets in the $10 million or more range. Another advantage of this dataset is that it contains productions across the majority of states, so variation in state laws can be used. The TCG dataset includes all of the not-for-profit Broadway theaters (the Vivian Beaumont, the Biltmore, Studio 54, and the American Airlines Theatre[7]), and non-profit Off-Broadway theaters as well as various-sized regional theaters. It is broadly representative of U.S. theaters in general, most of which are non-profit organizations (with the exception of the majority of the Broadway theaters).

We create a balanced panel of the total number of unique productions during 2002-2006 by locating the reported production history from each theater's website and by extracting the reported productions from the TCG database.[8] Summary statistics are reported in Table 2. We counted the total number of productions for each theater in a given season; for theaters with missing production data in certain seasons, we used a linear interpolation.[8] We also identified the city and state of location for each theater. Our data set contains a balanced panel of 45 states, including the District of Columbia and excluding Kansas, Nevada, North Dakota, Oklahoma, South Dakota, and Wyoming.[10]

We include both state and municipal regulations on ticket-resale in our analysis. While previous work primarily focuses on state-level laws (see Table 3), many municipalities enact separate restrictions on resale, which differ from state laws. For each city in our sample, we determined whether any municipal or state-level laws existed on ticket resale.[11] We used online databases of municipal codes (e.g., amlegal.com and municode.com) as well as city websites to identify whether any municipal ticket resale laws exist. In addition, we obtained a summary of state regulations on ticket resale from the National Conference of State Legislatures and from individual state legislatures. Similar to Elfenbein [2005], we classify each metro area according to four types of regulation: no regulation, resale restricted at event site, resellers must be licensed, and tickets may not be resold above face value.

We create two distinct production datasets by aggregating the production data to the metropolitan- and state-level. For the metropolitan-level dataset, we omit theaters from cities that do not lie within a metropolitan area as defined in the Current Population Survey (CPS) 2002-2006 by a metropolitan statistical area (MSA) or core-based statistical area (CBSA).[12] For each region, we compute the total number of productions per capita and the average demographics. The metropolitan-level dataset contains municipal as well as state-level laws, and the state-level dataset contains the corresponding state laws on ticket resale.[13]

As seen in Table 2, we have data on over 500 metropolitan areas. The average number of productions is 19 per thousand residents. Substantial variation exists in laws across MSAs.

Approximately 18% of the areas had regulations prohibiting resale at the site of the event; 24% of MSAs required resellers to be licensed, and approximately 34% of MSAs prohibited resale above face value. The MSAs exhibit geographic variation with 17% in the midwest, 33% in the south, 24% in the west, and 26% in the east. At state-level, we find a lower per capita number of productions as expected, since the total number of productions is divided by the entire state population and not the local metropolitan population.

RESULTS

Attendance

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

correlated with ticket resale regulation. We estimate this equation using a zero-inflated negative binomial regression model, because the dependent variables (play attendance, musical attendance, play and musical attendance, and attendance at any live performance) are count variables equal to zero for a substantial fraction of the observations.[16]

Results from estimating this equation are reported 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 prices results in a 14 to 45 percent increase in the number of performances attended. Licensing regulations (requiring that individuals hold a state or city license before they re-sell tickets) have the strongest impact on attendance, leading to a 21 percent and 45 percent increase in the number of musicals and plays attended, respectively, a 29 percent increase in total theater performances (plays and musicals together) and a 25 percent increase in attendance at all types of live performances (plays, musicals, dance and opera).[17] This may suggest that licensed brokers are able to reach consumers that theater box offices do not, and may do so with more success than unlicensed scalpers in markets where resale is unregulated. It also implies that consumers value a regulated secondary market – when a broker is licensed the consumer can purchase a ticket in the resale market without being concerned that the ticket is counterfeit.

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

Thus, it appears that consumers value regulations that still provide them with a safeguard in case they cannot use a previously purchased ticket.

Production

We explore how the number of per capita productions in each region relates to the region's demographics and ticket resale laws. We estimate a reduced-form regression measuring the unique number of TCG productions per capita in each region i in year t:

$$\text{productions}_{it} = \gamma_0 + \gamma_1 \text{notatsite}_i + \gamma_2 \text{notaboveface}_i + \gamma_3 \text{license}_i + X_{it}\phi + \eta_{it}.$$

The dependent variable is the per-capita number of productions by TCG theaters in each region.[18] We estimate the regression separately using our two constructed datasets at the MSA-level and state-level, and we use per capita measures to adjust for the population sizes of each region. On the right hand side, we include measures 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 of the population for each income bracket, ethnicity (white, black, Hispanic, and other), gender, marital status, and college-educated.

If scalpers do lower the (expected) profits of producers, then we would expect to see fewer entrants in markets where ticket scalping is unregulated; fewer unique productions would lead to a decreased variety in shows. On the other hand, if scalpers raise the profits of producers by acting as "insurance," we would expect to see increased entry and number of productions in markets where scalping is legal without restrictions. Finally, if scalpers simply extract profits that producers would not be able to obtain otherwise, then we would expect to see increased consumption (tickets sold) and no effect on the number of productions; for any given performance, scalpers would be selling tickets that would be left unsold in their absence [Swofford 1999].

Table 5 reports the results of our OLS regressions. The regressions also include year dummies and the fraction of the population within each state (or city) that falls within a given income bracket. The results are qualitatively similar across the two samples. Column (1) contains the regression at the metropolitan-level, and column (2) contains the regression at the state-level. We find that the presence of a license requirement is correlated with fewer unique productions per capita. Similarly, prohibiting resale above face value is also correlated with a lower number of unique productions. Thus, it appears that these types of regulation inhibit the ability of scalpers to act as promoters and insurers for producers, and therefore discourage entry by some producers.

Given that attendance increases under these same regulations, this suggests that consumers value regulation that may lower resale prices and require licensing of resellers over increased variety in performing arts markets. On the one hand, if laws that prohibit resale above face value do curtail prices, then we would expect attendance to increase when prices fall. On the other hand, if these laws also lead to less variety in the market (fewer productions), we would expect attendance to decrease. The overall impact on attendance will depend upon which effect dominates. Since equilibrium attendance increases, this is consistent with consumers valuing regulation that restricts prices over greater product variety.

CONCLUSION

Economic theory makes conflicting predictions regarding the efficiency of unregulated secondary markets for event tickets. Allowing ticket scalping to be unregulated may lead to higher consumer and producer surplus by enabling trades that reallocate tickets to those with the highest willingness-to-pay. On the other hand, some theoretical models predict that the presence of scalpers in the market can lead to inefficiencies if the scalper captures profits that would have accrued to the producer in his absence. In this situation, future quality and product variety might fall if producers are losing profits that would otherwise have been reinvested in the market [Courty 2003a]. We utilize two unique datasets to empirically investigate the effects of anti-scalping regulation on attendance at performing arts events and on the number of unique productions mounted. We assemble a unique dataset of state and municipal scalping regulations, and we test whether various types of regulation lead to increases or decreases in consumption and production of theater performances.

Our empirical results reveal that 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 attendance relative to locations where scalping is allowed with no oversight. We find that two types of regulation – licensing requirements and prohibiting resale above face value – lead to lower product variety relative to markets where scalping is unregulated, possibly because regulations impede the ability of scalpers to behave as insurers for producers, particularly in cases where local demand may be uncertain. It therefore appears that consumers value oversight and lower prices in the market for tickets above greater product variety. Consumers choose to attend more productions – even with a smaller choice set – when the secondary market is regulated than when it is not.

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13. We compute the population in each MSA or 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 characteristics 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:

$$Q_d = \alpha_1 P + \alpha_2 X_d + \varepsilon_d \quad \text{(demand equation)}$$

$$Q_s = \beta_1 P + \beta_2 X_s + \varepsilon_s \quad \text{(supply equation),}$$

then the market equilibrium will be determined by $Q_d = Q_s$. Solving these two equations simultaneously gives us the reduced form expression for equilibrium quantity in the market:

$$Q^* = \gamma_1 X_d + \gamma_2 X_s + \upsilon$$

where X_d and X_s are the exogenous characteristics of demand and supply, $\gamma_1 = \alpha_2 - \frac{\alpha_1 \alpha_2}{\alpha_1 - \beta_1}$, $\gamma_2 = \frac{\alpha_1 \beta_2}{\alpha_1 - \beta_1}$,

and ν is an error term that is a function of ε_d and ε_s.

15. We run our regression for four outcomes, which are not mutually exclusive: musicals, plays, theater performances, and total performances. Theater includes musicals and plays, and 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 confirm 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 plays attended corresponds to an increase of .1 additional plays for the average individual in a non-law state (since the mean number of plays attended in non-law states is .23). The sizes of the attendance increases interpreted in this manner are consistent with those obtained from OLS regressions with logged dependent variables (which are therefore conditional on positive attendance, since the natural log of zero is undefined). In that model, licensing restrictions lead to a 11% increase in the number of 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 license requirement would cause the average theater-going 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.

References

Courty, Pascal. 2000. Ticket Pricing in the Arts and Sports: A Review. *Louvain Economic Review*, 66: 167-192.

_____________. 2003a. Some Economics of Ticket Resale. *Journal of Economic Perspectives*, 17: 85-97.

_____________. 2003b. Ticket Pricing Under Demand Uncertainty. *Journal of Law and Economics*, 46(2): 627-652.

Depken, Craig A. 2006. Another Look at Anti-scalping Laws: Theory and Evidence. *Public Choice*, 130: 55-77.

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Table 2. Summary statistics for TCG

	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 3. State laws* on ticket resale

Ticket resale regulation	states
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

*Municipal laws available from the authors upon request.

Table 4. Attendance at Live Performance Events

	(1)	(2)	(3)	(4)
	# musicals	# plays	# theater performances	total # live 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

Results from zero-inflated negative binomial regression. . Independent variables also include Census region, income group, education, race, and age group dummies. Prediction of over-representation of zero outcomes includes metro, male, marital, employed, Census region, income group, education, race and age group dummies – these coefficients are available from the authors upon request. Robust standard errors in parentheses.
+ significant at 10%; * significant at 5%; ** significant at 1%

Table 5. TCG productions

	(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

Robust standard errors in parentheses
+ significant at 10%; * significant at 5%; ** significant at 1%
The dependent variables are the total number of TCG productions per capita (000's) in a metropolitan area and in a state. Column (1) contains municipal as well as state laws that apply in the MSA. Column (2) contains state-level laws. All regressions contain year dummies and income variables measure the fraction of the population within each state (or city) that falls within a given income bracket.