Deregulated markets can punish greed.

Lessons from a Scalper

By David E. Harrington
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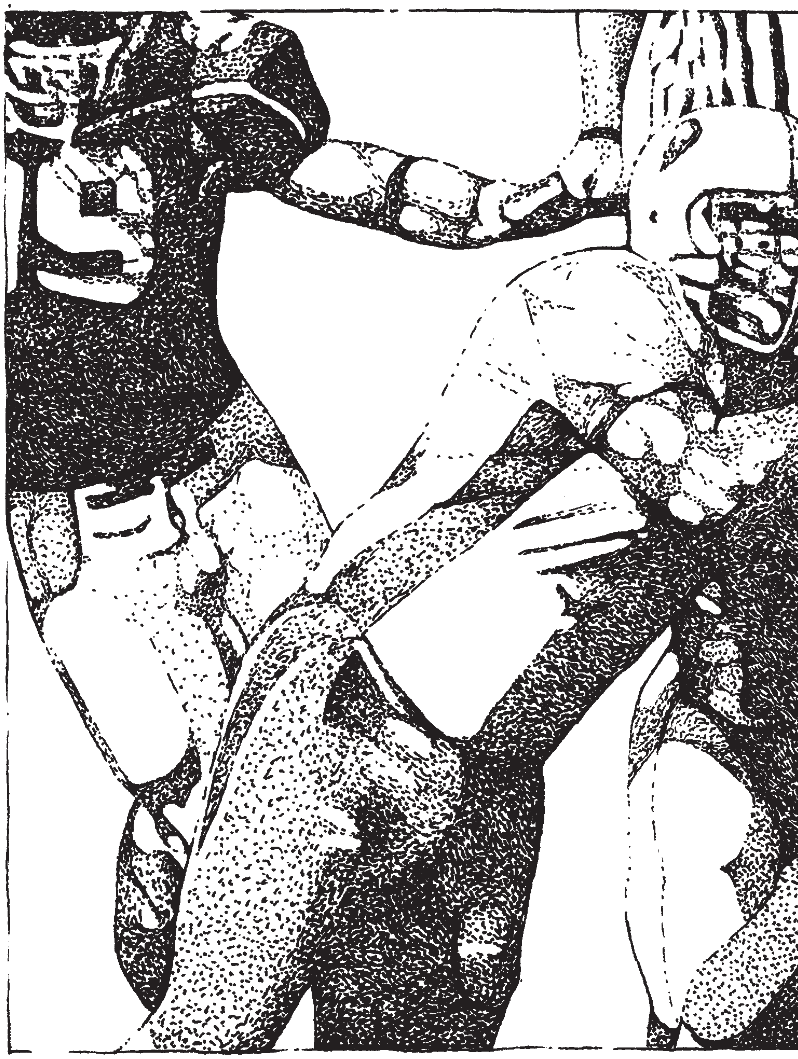
Greed took a beating during the recent presidential election. Last September 16th, John McCain blamed the financial meltdown on the "greed and mismanagement of Wall Street and Washington." Later that day, Barack Obama took a swing at greed in a speech that blamed the country's economic problems on the "Bush-McCain" philosophy of deregulation. According to Obama, rising foreclosures and falling incomes are "what happens when you confuse the free market with a free license to let special interests take whatever they can get, however they can get it."

The candidates' comments triggered an explosion of news reports that mentioned greed and deregulation in the same breath. In the month prior to the candidates' comments, the two words appeared together only three times in the same paragraph of a major American newspaper; in the month after, they appeared together 117 times. The candidates' comments and the coverage they spawned likely convinced many Americans that free markets cannot handle greed. Greed is just too powerful and, as a result, needs to be harnessed with the reins of government regulation.

But free markets are often much better at handling greed in socially desirable ways than government regulations. To demonstrate this, I examined the secondary market for Ohio State University football tickets.

Most of the fans sitting in Ohio Stadium — known affectionately as "The Horseshoe" or simply "The Shoe" — during Buckeyes games bought their tickets directly from the university's athletic department in the primary market. But some fans bought their tickets in the secondary market, often at Internet sites such as Stubhub. The secondary market involves the reselling of tickets, either by season ticket holders who discover that they can't attend games or by professional brokers who gobble up tickets to sell later at a profit.

The behavior of secondary markets for tickets to sporting events (as well as concerts and plays) is especially pertinent



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because many states have recently deregulated those markets. Six years ago, there were 22 states that stringently regulated "ticket scalping" either by putting caps on allowable markups of ticket prices or by outlawing secondary sales altogether for particular events. All but a handful of those states have repealed or reformed those laws, including Florida, Illinois, Louisiana, Minnesota, New York, and South Carolina. Massachusetts is currently debating whether to repeal its anti-scalping law.

THE BIG GAME

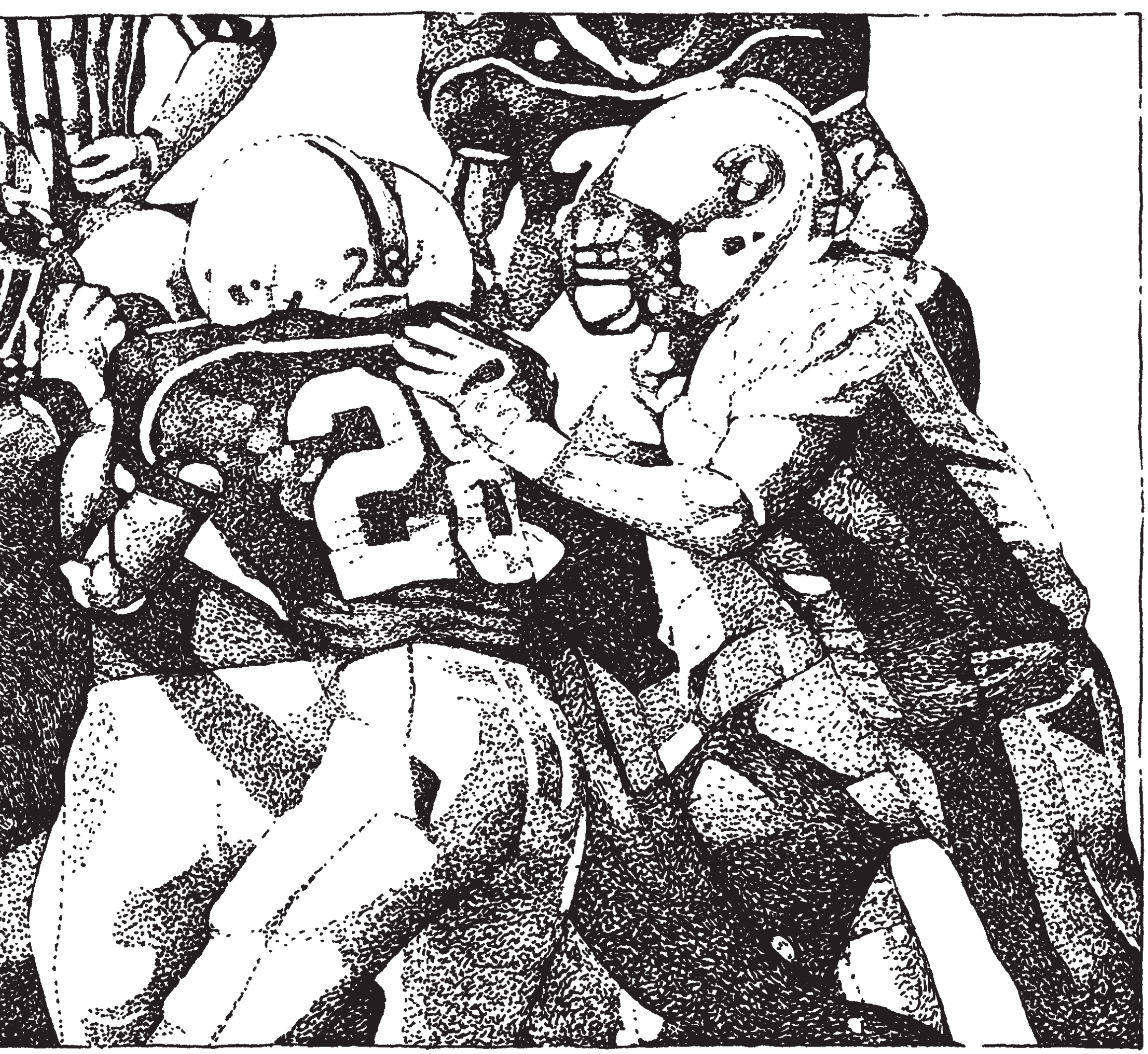
For this study, I collected data on secondary market prices, quantities, and locations of football tickets for the October 25, 2008 game between Ohio State and Penn State. This was one of the biggest games of the 2008 college football season, matching two Associated Press Top-10 football teams that were contending for the Big 10 Conference championship and a berth in the Rose Bowl or, possibly, the national championship game. Ultimately, 105,711 fans attended the game, setting an Ohio Stadium record.

The secondary market data came from Stubhub, an Internet website (owned by eBay) where users can buy and sell tickets to sporting events, plays, and concerts. Stubhub acts as a middleman, making money by charging commissions of 10 percent to sellers and 15 percent to buyers. Sellers may set any price they choose, making it an ideal source of information on "greedy" sellers.

I collected information at two points in time. The first sample was collected on October 13th, 12 days prior to the game. That set includes 346 sellers who offered 682 tickets. The second sample was collected eight days later, on October 21st, four days prior to the game. The second set includes 411 sellers offering 845 tickets. A handful of observations were dropped because information was missing on the location (and hence the quality) of the seats.

The most desirable (and expensive) seats for football games in Ohio Stadium are those on the 50-yard line nearest the field, in sections such as 20AA and 22AA. Seat quality depends on the seat's distance from the field, its distance from the 50-yard-line, and its row number. For this study, the distance from the field is measured by the stadium's deck (which ranges from prime seats in lower deck sections AA and A to nosebleeds in Section D). The distance from the 50-yard line is measured by the number of sections away from the 50-yard-line (i.e., from sections such as 20AA and 22AA).

MORGAN BALLARD



PRICES Table 1 presents the mean prices and locations of the tickets offered on October 13th and 21st. Two important events occurred between those two dates: Ohio State clobbered the 20th-ranked Michigan State Spartans, while undefeated Penn State pounded the Michigan Wolverines. That led my students in Microeconomic Principles to predict that the price of tickets to the Penn State–Ohio State game would increase between the two dates. Instead, the average price of all the tickets offered decreased from \$359 to \$304! However, this difference doesn't hold the quality of tickets constant, and quality clearly deteriorated after the Michigan State game. The percentage of tickets for sale in the stadium's lower deck decreased from over half to only one-third, while the percentage of nosebleed seats more than doubled, albeit from a small base.

Our first glimpse of greedy sellers can be seen by identifying the tickets that nobody wanted to buy over the week from Oct. 13th to Oct. 21st. Nearly a quarter of the tickets offered for sale on October 13th were still

Table 1

The Game Draws Closer Average prices for Penn State @ Ohio State

	October 13th			October 21th		
	All	Sold (not listed 9/21)	Not sold (listed 9/21)	All	New listing (not listed 9/13)	Old listing (listed 9/13)
Price per ticket ($)	358.89	347.58	394.71	304.09	296.82	332.80
Distance from field						
"AA" nearest (%)	9.0	9.1	8.4	6.1	5.5	8.4
"A" (%)	43.6	43.0	45.8	27.3	22.3	45.8
"B" (%)	16.2	15.6	18.1	39.9	45.4	18.1
"C" (%)	30.1	31.6	25.3	23.4	22.9	25.3
"D" nosebleed (%)	1.2	0.8	2.4	3.4	4.0	2.4
Distance from 50-yd-line (# sections)	4.2	4.2	4.1	3.7	3.6	4.1
Quantity of tickets offered						
1 ticket (%)	20.2	17.9	27.7	18.0	15.6	27.7
2 tickets (%)	70.8	72.2	66.3	69.8	70.7	66.3
More than 2 tickets (%)	9.0	9.9	6.0	12.2	13.7	6.0
Observations (# sellers)	346	263	83	411	328	83

available the following week. (It is impossible to perfectly match tickets across time because Stubhub does not provide the seat number, only the section and row. Hence, tickets were categorized as unsold if there was a unique match of section, row, and quantity of seats offered on the two days.) The tickets that nobody wanted were, on average, nearly $50 more expensive on Oct. 13th than the ones that were sold over the following week. The average quality of the tickets looks similar, except that the unsold ones include a larger fraction of single seats, which should have decreased their average price rather than increased it. Nearly all (82 percent) of the owners of the unsold tickets reacted by cutting their prices over the week by, on average, $103 per ticket. Interestingly, the tickets of the greedy sellers represent a growing share of high-quality — "AA" and "A" — tickets, rising from 25 percent of tickets on Oct. 13th to 33 percent on Oct. 21st.

SETTING TICKET PRICES

To learn more about the way that ticket prices are set, we need to hold the quality of the tickets constant using regression analysis. There are two ways to control for ticket quality: characterize the location of seats (1) using explanatory variables such as distance from field and distance from 50-yard-line, or (2) using section (of the stadium) fixed effects. Section fixed effects do a better job of controlling for seat quality because they allow unmeasured factors to influence quality, such as whether the seat is located in a "student section," where students traditionally stand for the entire game. On the other hand, fixed effects don't allow us to produce estimates of the effect on prices of being closer to the field or closer to the 50-yard-line.

The first column of Table 2 presents the regression results using section fixed effects. According to the regression results, greedy sellers were charging 9.5 percent more for their tickets than other sellers on Oct. 13th, holding the quality of the tickets constant. Hence, it's not surprising that they couldn't sell their tickets over the following week.

Overall, tickets were 15.2 percent cheaper after the Michigan State game than before, contrary to my students' prediction, probably because tickets are a perishable commodity and the game was only a few days away. The interaction term implies that greedy sellers reduced their prices only a little bit more than other sellers, implying that their tickets were still relatively expensive on Oct. 21st. The number of competing sellers in the same section of the stadium is an important determinant of price. Roughly one-fifth of the sellers faced either one or no other competitors, while another one-fifth faced more than eight competitors. According to my estimates, adding an additional eight competitors drives down prices by roughly 10 percent.

The second regression presented in Table 2 relates the price of tickets to the characteristics of the seats. This regression allows us to identify the sellers who are asking much more for their tickets than would be predicted based on the location of the seats. In this case, it is important to exclude variables that explain high prices for any reason other than the seat's location. The results for the hedonic regression — presented in the second column of Table 2 — imply that single-seat tickets are 22 percent cheaper than paired seats, and are 21 percent more expensive when they are part of a larger group. As expected, seats further from the field and from the 50-yard-line are less expensive.

Figure 1 illustrates how the predicted price decreases with distance from the field using the fitted regression line evaluated at the mean of the other explanatory variables. The residuals of each observation from October 13th were then added to the predicted price to illustrate the variation in asking prices. I've labeled one observation "Greedy Guy" because the seller was offering a single ticket, located in row 11 of section 39AA (right behind the south goal post) at a price far above the market; three other people were selling single tickets in the same section (in rows 3, 8, and 9) at prices ranging from 25 percent to 50 percent of Greedy Guy's price. Only one of those three tickets was available on Oct. 21st, while Greedy Guy's ticket was still unsold. As a result, Greedy Guy had lowered his price to about a third of the original price.

The next largest deviation of asking and predicted price among seats in the sections nearest the field ("AA") is a tie between observations W and X. These sellers were the only ones offering tickets in section 25AA and their asking prices per ticket were $650 and $649 for pairs of tickets in rows 10 and 5, respectively. The former pair sold prior to October 21st but the latter pair didn't. The disappointed seller reduced the price to $450 per ticket. Consider two more sellers, Y and Z. Seller Y offered to sell a pair of tickets in row 12 of section 16A at $800 per ticket. However, there were four other sellers offering pairs of tickets in the same section at prices that ranged $377 to $501 per ticket. No one bought Y's tickets, inducing Y to reduce the price to $500 per ticket the following week. Finally, seller Z was selling seats in the first row of the upper deck, which explains why someone bought them despite other pairs being offered in the same section (but higher row) at half the price.

The asking prices of Greedy Guy and W, X, Y, and Z were all substantially higher than the predicted price based on the characteristics of the tickets. Only two of the five sellers (or 40 percent) found buyers for their tickets. In contrast, more than 75 percent of the other tickets offered on Oct. 13th found buyers before Oct. 21st. And the only two of our highlighted sellers who sold their tickets, W and Z, had tickets with fewer good substitutes than the others. Hence, the secondary market for ticket sales appears to penalize sellers who set prices well above predicted prices by reducing the probability that they will find buyers for their tickets.

More formally, my hypothesis is that sellers who set their ticket prices at levels that generate large (positive) residuals in regressions that predict price (like column 2 of Table 2) are less likely to sell them. This can be tested by regressing the dummy variable *Not Sold* (1 = yes) on the residuals from the regression of column 2 in Table 2. The estimated coefficient is highly significant, both statistically (at the 1 percent level) and economically, implying that increasing the asking price by an additional $10 reduces the probability of selling the ticket by 4.3 percentage points. Given that the mean probability of not selling tickets is 24 percent and that $10 is not much of an increase, the penalty for raising prices above predicted prices is substantial.

Table 2

Setting Prices

Determinant of Penn State @ Ohio State ticket prices
(Dependent variable: natural log of price)

	Fixed Effect Regression	OLS Regression
Not Sold between Oct. 13 and 21 (1=yes)	0.095^{***} (3.62)	
October 21 (1=yes)	-0.152^{***} (8.25)	-0.183^{***} (11.35)
Interaction term: Not sold x Oct. 21	-0.022 (0.64)	
Other sellers in section (#)	-0.013^{***} (3.01)	
Row number	-0.002^{***} (2.80)	0.000 (0.21)
Single ticket (1=yes)	-0.253^{***} (10.46)	-0.223^{***} (9.92)
More than two tickets (1=yes)	0.201^{***} (8.08)	0.208^{***} (8.01)
Distance from field (1= nearest... 5=nosebleed)		-0.133^{***} (16.17)
Distance from 50 yard line (# sections)		-0.147^{***} (14.08)
Distance from 50 yard line, squared		0.012^{***} (9.44)
Constant	5.944^{***} (184.48)	6.540^{***} (195.44)
Observations	757	757
R-squared	0.351	0.597

*Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%*

RATIONALES FOR ANTI-SCALPING LAWS

Several rationales are given for state laws that heavily regulate or prohibit the secondary market. In light of the findings above, let's consider some of those rationales.

PROTECT CONSUMERS New York State passed its first anti-scalping law in 1922, capping prices at 50 cents over the face value of the ticket. The state's rationale for the law was to safeguard "the public against fraud, extortion, exorbitant rates and similar abuses." In 1924, the Court of Appeals agreed, deciding that the law "merely prohibits" scalpers and ticket brokers from charging excessive prices and thereby "end[s] the extortion" of the public, which is "widely recognized" as occurring. Over the next 50 years, many states adopted similar anti-scalping laws designed to prevent greedy guys from gouging poorly informed consumers by charging outlandish prices or by selling counterfeit tickets.

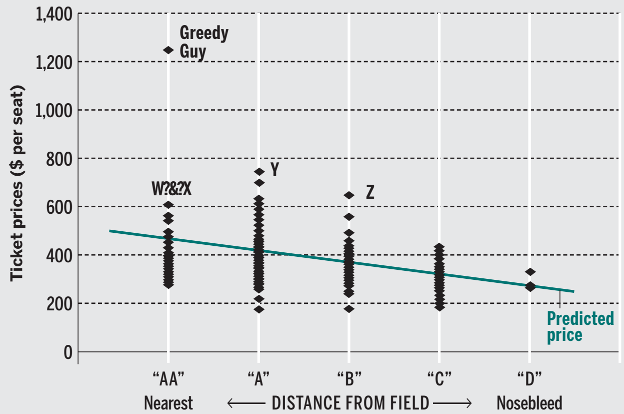
Negotiating with scalpers is not easy — it's often done on noisy, unfamiliar turf with the scalper's buddies hanging around, telling you what a good deal you're getting. And it's nearly impossible to compare the prices of different scalpers. But there is a better way to protect consumers from greedy guys selling tickets: let the market discipline them. Using regression analysis, I was able to identify an extremely greedy guy who was asking two to three times as much as other sellers of similar tickets. Fortunately, buyers using Stubhub can easily compare prices, making it transparent to potential buyers that Greedy Guy was setting a very high price. Not surprisingly, no one bought his ticket. The ease of comparing prices on Stubhub forced Greedy Guy to lower his price the following week, making it comparable to those set by other sellers for similar tickets.

The story told here is applicable to a broader group of sellers than just the greediest of the greedy. My results imply that all sellers are less likely to sell their tickets as they raise their prices, causing them to run the risk of having to lower their prices dramatically as the day of the game approaches. The evidence also implies that the benefits of transparency

Figure 1

The Big Game

Stubhub prices for Penn State @ Ohio State



increase with the number of sellers offering tickets in the same sections, leading to lower prices.

PROTECT PERFORMERS A second rationale for anti-scalping laws is that they protect performers and venue owners from box office corruption. In 1963, New York State's attorney general held hearings on the practice of bribing box office employees to reserve the best seats to Broadway plays for ticket brokers, a practice known on Broadway as paying "ice." The customary practice was for brokers to only pay ice on tickets actually sold, returning the unsold ones to the box office, which lowered the official box office receipts shared by artists and theatre owners. The producer of *South Pacific* testified that the "excessive prices" charged by ticket brokers was reducing the number of "theatergoers," leading to audiences that were often "less than 50 percent of capacity." He warned that fewer plays would be produced in the future if the practice of paying ice was not curbed.

The excessive prices of the best seats to Broadway plays can be modeled as a double monopoly where the producer (and theatre owner and artist) sets the initial price and the corrupt box-office employee sets an additional markup — the "ice" — based on the residual demand. Hence, imposing a legal price ceiling on the secondary market could theoretically improve efficiency by inducing more people to see current plays and inducing artists to create more new ones.

However, there is no empirical evidence that slapping a price ceiling on the secondary market curbs corruption. There were numerous investigations of box office corruption over the nearly century-long span that New York had its anti-scalping law, including public hearings in 1927, 1963, and 1999. At the first of those hearings, witnesses described how bribes of box office employees "boost prices" and "gyp the author, the music writer, the theatre owner, and anybody else who has a percentage in the gross profits." At the most recent of the hearings, state attorney general Eliot Spitzer (re)discovered the "unholy illegal alliance between box office workers and ticket brokers" that produced "outrageously high — and illegal — prices." The conclusion was always the same: corruption is endemic to the system of distributing tickets to sporting events, concerts, and Broadway shows, despite (or perhaps because of) having a price ceiling on the secondary market.

Fans and brokers continue to race one another for tickets in the primary market, with brokers often winning by using questionable tactics. While brokers are still being caught bribing box office employees, they are also using technology to win the race in the primary market. For example, brokers use computer "bots" to buy large batches of tickets when they first become available. Some of the bots can even bypass the tests of whether customers are human, overcoming such tests as the requirement that customers type a string of letters or numbers from a distorted image. The sellers in the primary market have a strong incentive to monitor their sales and employees, putting them in the best position to umpire the process. Indeed, Ticketmaster recently sued a software company that sells computer bots designed to circumvent its test of whether customers are human.

BEYOND SCALPING

In 1997, a *New York Times* editorial argued that New York should more aggressively enforce its anti-scalping law, claiming that it would prevent tickets from "ending up in the hands of price-gouging ticket agents." The editorial rejected calls to deregulate the market, arguing that deregulation "would only make the ticket-scalping problem worse." The editorialist was wrong. The wave of deregulation of the ticket resale markets over the last 20 years has brought ticket scalping out of the shadows and onto the Internet, increasing the transparency of the market. Making the resale of tickets illegal or setting caps pushes the market underground where opacity, rather than transparency, rules.

On the day after last fall's presidential election, the *Times* argued that "Americans were deeply anguished about their futures and the government's failure to prevent an economic collapse fed by greed and an orgy of deregulation." The coupling of greed and deregulation in this way is likely to lead many Americans to believe that the deregulation of markets inevitably leads to the unleashing of the harmful effects of greed. It's not true: deregulating markets to make them more competitive (and more transparent) is an important tool to combat the harmful (and to promote the beneficial) effects of greed. The lesson of how the transparency of markets thwarted Greedy Guy is an important one to learn at a time when so many people are calling for more stringently regulating financial markets to control the greed of Wall Street. R

Readings

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- *Ticket Scalping: An American History, 1850-2005*, by Kerry Segrave. McFarland & Company, 2007.