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## Some Economics of Ticket Resale

Pascal Courty

**M**ore than a thousand ticket brokers in the United States offer, at substantial mark-ups, a wide selection of tickets for the theatre, concerts, sporting events and special events. According to some estimates, brokers resell 10 percent of primary tickets, and this figure goes up to 20–30 percent for top-tier seats (Happel and Jennings, 2002). In addition to brokers, who are licensed businesses, many scalpers resell tickets on the street. Event promoters typically try to discourage or prevent resale for profit. Most promoters limit block purchases and support other measures that restrict brokers' access to tickets. Some promoters also actively support laws that regulate resale and restrict resale mark-ups. In contrast, economists usually argue that resale increases efficiency, because it channels tickets to those consumers who value them the most.

The textbook analysis of resale typically takes for granted that promoters deliberately choose to underprice and that this opens the door for arbitrages (for example, McCloskey, 1982). A variety of explanations for underpricing have been proposed: uncertainty over sales leads to a preference for underpricing rather than risk overpricing (Swofford, 1999); the social externality that being in a fuller audience provides a more enjoyable experience than being in a sparse audience (Becker, 1991); that customers of such events value being treated fairly (Kahneman et al., 1986); and as a related point in the case of sport events, that a constant price is necessary to attract loyal team fans (Salant, 1992). Krueger (2001) reviews these arguments and discusses how they apply in the context of the apparent underpricing of tickets for the Super Bowl.

However, to treat underpricing as the fundamental cause of secondary ticket markets runs into several difficulties. The underpricing explanation does not seem

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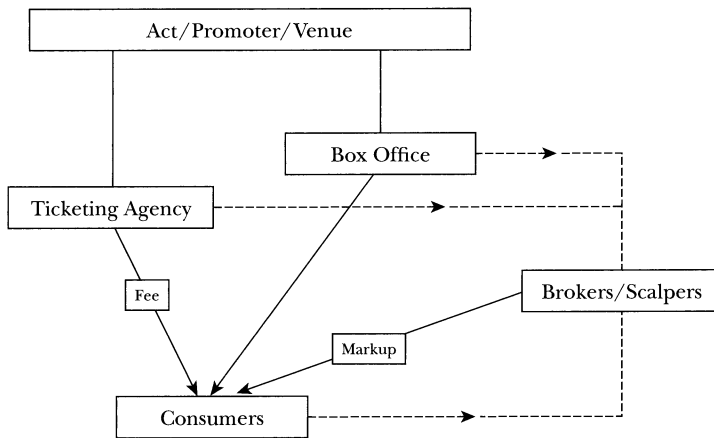
to apply well to scores of events, including many musicals and concerts. Concert ticket prices, for example, have dramatically increased in recent years, which presumably has reduced the incidence of underpriced events. Considering the top 25 concert tours in 2001, attendance figures collected by Billboard Boxscore Research reveal that only 39 percent of the concerts were sold out, and the average occupancy rate across all concerts was 84 percent. Brokers are often quite active in events that do not sell out; indeed, brokers are sometimes left with inventories of unsold tickets. At the most fundamental level, if profits can be made in secondary markets, why can't event promoters figure out a way to capture them? How can brokers survive in the presence of profit-maximizing promoters?

This paper offers a perspective different from the conventional underpricing arguments on the phenomenon of secondary markets for event tickets. This perspective borrows from the literature on airline ticket pricing, which has developed models based on the premise that some consumers learn new information about their demands over time (for example, Gale and Holmes, 1993; Courty and Li, 2000). In the context of event tickets, some consumers prefer to plan in advance, wanting to know ahead of time which seat they will get and assuring that they indeed get one, while others have to wait until the last minute because they will not find out until then if they can join. This feature of consumer preferences can explain the conflict between promoters and brokers. Promoters have to make tickets available early in advance to satisfy the needs of those consumers who value planning and would not attend if they were not able to secure early the property rights for a guaranteed experience. However, among those who postpone the decision to purchase a ticket, some will end up with a high valuation close to the event date. If resale is possible, this situation opens the door for profit opportunities where brokers can buy early tickets that they resell later to those consumers who eventually find out that they are eager to attend the event. With the additional assumption that brokers can always undercut the promoter in the late market for late buyers, I will show that the promoter cannot capture the profits earned by brokers—and moreover, that the promoter cannot prevent brokers from entering the market.

This paper starts by reviewing some basic facts on primary and secondary markets for tickets.<sup>1</sup> Then, I investigate how tickets have changed the nature of event admission and event pricing, and I discuss why some event promoters issue tickets while others use cash-on-entry admission. I will present a model to capture the behavior of brokers and discuss some evidence that is consistent with this model.

<sup>1</sup> Although this paper refers to previous work on tickets, it does not present a complete and exhaustive review on the topic. For such a treatment, the interested reader should refer to Courty (2000).

Figure 1  
Ticket Markets



## An Overview of Markets for Tickets

### Primary Market

Tickets are first sold in primary markets. To give an idea of the parties involved in the primary market, consider the organization of a typical entertainment event, like a concert, as illustrated in Figure 1. A promoter hires an act, rents a venue and the three agree on a revenue sharing rule. The promoter, sometimes together with the act, chooses the price of tickets and when to start advertising and selling tickets. The venue sells tickets through the box office where the event will be held and the promoter (or the venue) also contracts with a ticketing agency. Tickets issued at the box office or by the ticketing agent have a “face price” printed on them. Although the ticketing agency charges a processing fee on top of the face price, it typically sells a majority of the tickets because it can reach a much wider audience than the box office.

Estimates of the total value of tickets sold each year vary greatly. Considering the concert business alone, Amusement Business estimates in 2000 that 44.3 million concert tickets had been sold for a total value of \$1.6 billion worldwide. The world’s largest ticketing company, Ticketmaster, sold 86.7 million tickets in 2001 valued at more than \$3.6 billion. According to Forrester Research, the market for event ticketing in the United States totalled \$15.5 billion in 1999. Other estimates of the total market for tickets vary in the range of \$7 billion to \$60 billion, with the range depending on the set of events that are taken into account (Happel and Jennings, 2002).

### Secondary Market: Brokers and Scalpers

Ticket resale is ubiquitous. The auction website eBay, for example, has a category dedicated to event tickets and conducts thousands of ticket auctions.

Across all listings, eBay estimates that it will sell \$150 million worth of tickets in 2002. Although this figure may seem high, it represents only about 1 percent of total ticket sales based on the Forester Research estimate. On a given day (in August 2002), more than 22,000 tickets were for sale on eBay, with about 9,000 for concerts alone, and auction prices above \$1,000 were not uncommon. Although some of the exchanges in the secondary market are driven by early buyers who genuinely intended to attend the event at the time of purchase and changed their mind, the majority of exchanges are initiated by professional brokers who buy tickets early with the intent of reselling them at a profit.

Broker markets are usually quite competitive in most large metropolitan areas. Brokers are typically small firms with a few employees and about \$3 million in revenue per year (Happel and Jennings, 2002). They advertise in places like phone directories and on the Internet. Some even post bonds to guarantee the service they provide (one concern being that they sell forged tickets). They typically carry a large inventory of tickets for many events with a variety of seats, although they tend to concentrate on the best seats in the venue. Brokers may also provide seating charts, updated event calendars and sometimes packages including accommodation and other travelling arrangements. Brokers usually sell tickets at prices above face price. Also, while most concert venues divide the house into a few sections and offer the majority of tickets at two or three price points, brokers may charge different prices for different seats within the same section.

Ticket brokers are independent agents who are not affiliated with, nor endorsed by, the event promoter. Event promoters and ticketing agencies typically tend to limit brokers' access to the primary market. Brokers obtain tickets through many channels, including box office, ticketing agency, first-time buyers and by other methods. They also exchange tickets through national networks. One website that offers clearinghouse services for U.S. brokers is [Ticketsnow.com](http://Ticketsnow.com).

In contrast to brokers, who are officially licensed businesses, scalpers sell tickets in front of the venue just before the start of the event. Scalpers have a poor public image. They are often perceived as pushy and price gouging, in part because they typically do not post prices, and they often violate laws limiting the prices at which tickets can be resold. The word "scalper" was first used in the late-nineteenth century to refer to those who buy and sell at a profit, but at a price lower than the official one, unused portions of long-distance railway tickets. The term was later used to name those who resell tickets for events above face price.

Promoters and ticketing agencies often attempt to exclude brokers from the secondary market. For example, promoters restrict the number of tickets a single buyer can purchase at the box office and control large purchases made by credit cards at the ticketing agency. Ticketmaster stipulates in its contract with independent outlets that physically deliver tickets (like video stores) that "the providing of tickets to third party scalpers or brokers through preferential sale or otherwise . . . will be considered a material breach of this Agreement" (Office of New York State Attorney General, 1999). Some concert promoters have gone as far as

issuing bracelets, rather than tickets, that are distributed in advance and that cannot be removed without obvious sign of manipulation.

Tickets for many events also indicate in small print that they are nontransferable revocable licences. However, these restrictions are typically not enforced. The most likely explanation for this lack of enforcement includes the lack of feasibility of checking the identification of thousands of consumers in a short time. In that sense, event tickets are different from airline tickets where nontransferability restrictions can be more easily enforced. In practice, tickets for sports and entertainment events can be easily exchanged because they are not issued to any specific consumer, while airline tickets cannot be used by anyone other than the original person to whom they were issued. Although promoters and ticketing agencies may not be able to enforce nontransferability restrictions, they sometimes try to impair resale for profits by supporting resale laws and facilitating their enforcement. Ticketmaster, for example, states on its Canadian website at (<http://www.ticketmaster.ca/h/resellers.html>) that it “supports laws that prohibit the reselling of tickets for more than the designated purchase price.”

### **Resale Legislation**

Although event tickets can easily be traded, such transactions are not necessarily legal. About one-third of U.S. states regulate resale, although the nature of these legislations varies greatly across states. According to the National Conference of State Legislatures at (<http://www.ncsl.org/programs/lis/ticketscalplaws.htm>), at least 16 states prohibit resale or limit the mark-up above face price, at least four states require a license to broker tickets, effectively regulating entry, and four states grant localities or municipalities the ability to license or prohibit resale of tickets. A number of municipal ordinances govern ticket resale, as well. However, no federal laws restrict ticket resale, which means that even if an event takes place in a state where resale is restricted, tickets can still be traded in other states where resale is allowed. A good reference for updated information on resale legislation is eBay, which has to collect this information to maintain the legality of the trades that take place on its website at (<http://pages.ebay.com/help/community/png-tickets.html?ssPageName=TixPolicy>).

Resale laws have been enforced. For example, New York, which is the largest local market in the United States for entertainment events, has run several large-scale investigations, which have resulted in prosecution, against resellers who sell tickets above the regulated premium defined as \$5 or 10 percent of the face price (Office of New York State Attorney General, 1999).

### **Innovations in Event Admission**

In the absence of tickets, admission to events proceeds on a cash-on-entry basis, and seating is typically open. Tickets serve two complementary functions: they allow consumers to book in advance and to choose the seat they want in the venue. The history of ticket use sheds some light on why some promoters offer tickets while others choose different modes of admission.

Historians typically argue that commercial entertainment started in sixteenth-century England with the introduction of for-profit theatres.<sup>2</sup> These theatres were traditionally divided into sections, but in the absence of tickets, consumers had to be charged incremental amounts to access more exclusive sections, as suggested by the following description from 1576 (quoted in Baker, 1904, pp. 5–6): “Those who go to Paris Gardens, the Bell Savage, or the Theatre to behold bear-baiting, interludes, or fence play, must not account of any pleasant spectacles unless first they pay one penny at the gate, another at the entry to the scaffold, and a third for a quiet sitting.” Although tickets were not introduced until much later, circular pieces of metal known as “checks” were used in early theatres to dissociate payment and admission. With checks, consumers would pay once at the entrance and subsequently redeem their checks in designated sections of the theatre. This step also eliminated the need to handle cash in each section.<sup>3</sup>

Although checks were used early in the history of commercial entertainment, they were rarely sold in advance either at the theatre or at alternative locations. Advance booking was used only for special events, known as benefit performances, in which case the proceeds would be given in whole or part to the beneficiary (typically the cast), who would be responsible for selling tickets (Hume, 1984). Incidentally, this is the origin of the first paper tickets. Otherwise, for standard events, advance booking was only used for private boxes located in galleries. The office that managed box reservations was called the “box office.” Advance booking was the privilege of the few who could afford luxury boxes. Other affluent parties who wanted a desirable seat but could not afford a box would tell their servants or engage “place keepers” to go early and hold well-located seats until curtain time. Another reason for holding places was that overbooking would occur regularly because theatres would not keep track of sales. The practice of holding places lasted until around the nineteenth century when systematic seat numbering was introduced in theatres and operas, which permitted the introduction of the two major innovations in event admission, namely, advance booking and assigned seating.

Before discussing how assigned seating and advance booking changed the nature of the ticket pricing problem, let me emphasize two plausible reasons for why these innovations emerged. First, tickets reduce the transaction costs that result if consumers have to wait in line or send place keepers to secure premium seats. Second, consumers have different needs, and tickets may allow the promoter to satisfy a broader range of consumer preferences. In particular, tickets address the needs of those consumers who want to plan in advance and who will not join unless

<sup>2</sup> Because the conditions governing event admission are ill-documented until the nineteenth century, and research on tickets is still at an early stage, I focus here only on those facts that are widely accepted. For example, the Greeks and Romans also offered large-scale entertainment events, but these events were typically not for profit, and admission followed a political logic (Futrell, 1997).

<sup>3</sup> Cheung (1977) studies the problems that occur when the venue is divided in different sections, but the enforcement of property rights is imperfect.



they know the type of seating experience they will get. This second reason suggests that the concept of demand, which would be defined in the case of tickets as the distribution of valuation in a given population of consumers at a given point in time, may not be a useful starting point to understand many outcomes in ticket markets, because it misses the key point that different consumers decide at different points in time if they want to attend an event. This pattern is similar to demand for air travel, where the leisure travelers typically plan in advance, while business travelers plan at the last minute.

### **Assigned Seating**

The first defining characteristic of ticket pricing is assigned seating, where each seat is numbered and consumers buy the right to a specific seat. Because each seat offers a distinct experience, reserved seating opens the possibility to refine further the practice of differential pricing beyond segmenting the venue in sections (Rosen and Rosenfield, 1997). Potentially, each seat can be priced individually.

In addition, assigned seating is also closely related to the issues of congestion. To understand this point, it will help to contrast assigned seating with “free seating.” Free seating was used in the early days of theatre and opera where the bulk of the audience sat on benches or stood, and it persists today in many venues. Under free seating, where “seats” are not clearly defined because the audience is shepherded into a common area and no seats are reserved, the quality of the theatre experience is uncertain. Consumers do not know if they will be able to secure a desirable location and, more importantly, the physical space for consumers may become congested, especially in prime viewing locations where the crowd mashes together. Under free seating, the market for premium locations cannot clear through prices. However, it may clear through quality, since quality declines with congestion, and one would expect congestion, and therefore quality, to vary across locations.

### **Advance Booking**

The second defining characteristic of ticket pricing is advance booking, which pleases the consumers who want to be able to plan in advance and to know for certain which seat they will get. Thus, the existence of advance booking triggers some consumers to buy in advance, shifting the competition for seats before the event date (DeGraba, 1995). This insight introduces the issue of the optimal timing of ticket sales for the promoter, including the possibility of intertemporal price discrimination where the ticketing agency gives discounts to consumers who buy early (Dana, 1999) or offers a menu of options with varying upfront prices and levels of refund in the event of cancellation (Courty and Li, 2000). The opportunities for intertemporal price discrimination will largely depend on the ticket agency’s ability to prevent resale. When resale is possible, advance booking opens the possibility for third parties to buy tickets in advance and to hold them until the event date, with the intent to resell them close to the event date.



## A Model of Ticket Resale

As suggested above, an important characteristic of ticket markets is that some consumers want to plan in advance while others prefer to wait until the last minute. This feature of the demand for tickets may explain the conflict between event promoters and brokers.

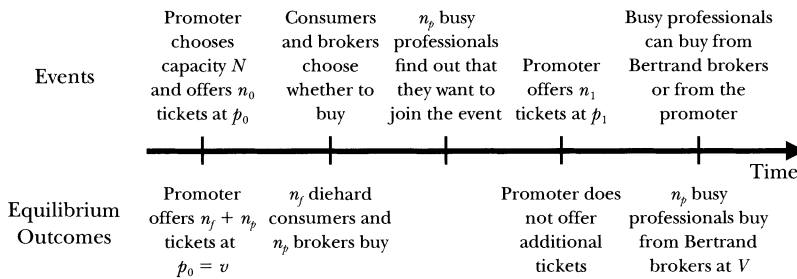
Let's assume that the audience is composed only of two types of consumers: "diehard fans," who plan their social calendars well in advance, and "busy professionals," who make decisions at the last minute. This consumer characterization does not suggest that busy professionals enjoy the event less than diehard fans, only that these two market segments plan their social calendars differently. Indeed, a consumer could qualify as a diehard fan for one event and as a busy professional for another.

There are  $n_f$  diehard fans who place a value  $v$  on attending the event. Diehard fans have to make commitments to attend the event, including issues like travel, accommodations and time off from work. If they do not commit in advance to attend, they are not willing to pay anything for a ticket. In contrast, busy professionals do not find out whether they want, if they want to at all, to join the event until the last minute. There are  $N_p$  busy professionals wanting to attend with probability  $n_p/N_p$ . Busy professionals are willing to pay  $V$ , such that  $V > v > Vn_p/N_p$ ; that is, busy professionals are willing to pay more than are diehard fans in the event they find out that they want to join, but they are willing to pay less in expectation, that is, before they have found out if they want to join. Assume, in addition, that the number of busy professionals who want to attend is small relative to the number of diehard fans,  $n_f \gg n_p$ , so that it is optimal to sell early to diehard fans.

The timing of events is outlined in Figure 2. The promoter first chooses the seating capacity  $N$  and incurs a fixed cost  $cN$  with  $c < v$ . The promoter then offers  $n_0 \leq N$  tickets for sale in the early market at price  $p_0$ . Consumers and brokers can buy a ticket. I call a broker someone who buys a ticket with no intention to attend the event, and although I assume free entry in the broker market, I also assume that only brokers can resell tickets. This assumption simplifies the presentation, and I will show later that this does not change the main result. After the early market, busy professionals discover if they want to attend the event, and then a late market for tickets takes place.

The point of the model is to establish a benchmark case where brokers enter, earn a profit, and the promoter cannot take any of these profits away. This outcome cannot happen if one assumes that the promoter and brokers compete equally in the late market, since under that scenario they would share the late profits. But equal competition in the late market does not seem to capture precisely the nature of price competition in ticket markets. Brokers typically adjust their prices until the last minute, depending on their ticket inventory and on the market situation, while the promoter does not. This pattern could arise because brokers are more flexible or because they are better

Figure 2  
Time Line



informed since they can aggregate demand information across different events. To capture this asymmetry, I will assume that the promoter first chooses the late price for tickets, and then brokers choose their prices. Obviously, price flexibility in the late market should ideally be treated as an endogenous choice, since the promoter could develop similar competencies as those of brokers. The model, however, establishes a natural benchmark case. Later, I will return to this assumption, and I will discuss the strategies that promoters have explored to deal with brokers. Finally, I assume Bertrand competition between brokers in the late resale market.

As it turns out, the only subgame perfect equilibrium is for the promoter to sell enough tickets to satisfy the diehard fans and the number of busy professionals who are expected to attend at the price that diehard fans are willing to pay; that is, to sell  $n_f + n_p$  tickets early at price  $p_0 = v$ . Then,  $n_f$  diehard fans and  $n_p$  brokers buy early and brokers resell their tickets to busy professionals late at price  $p_1 = V$ .

To understand why this is the equilibrium, it's useful to consider why the promoter cannot do better by changing its strategy, neither by altering the price nor the quantity sold. For example, the promoter can only capture the diehard fans by selling tickets in the early market, so having the promoter hold back all the tickets to sell as many as possible near the event date at the higher price  $V$  will bring in less revenue, based on the assumption that diehard fans are relatively numerous compared with busy professionals. Alternatively, consider the situation in which the promoter attempts to sell only enough tickets for diehard fans in the early market and then attempts to carry the remaining tickets over to the late market. For the promoter, it will only make sense to attempt such a strategy if it is possible to get a price at least higher than the cost; that is, a promoter selling tickets in the late market at a price  $c > p_1 > 0$  cannot be an equilibrium. But if the promoter can sell a given number of tickets in the late market at  $p_1 \geq c$ , it can also sell the same number of tickets at  $V$ , so it has to be that  $p_1 = V$  in any subgame perfect equilibrium in which the promoter sells tickets in the late market. But selling tickets at  $V$  is not an equilibrium

either, as brokers would enter and undercut slightly that price. Therefore, the promoter cannot profitably sell tickets in the late market.

In short, the only equilibrium arises when the promoter sells tickets early to capture the diehard fans and selects a venue that can cater both to diehard fans and busy professionals. The key result is that profit maximization on the side of the promoter leaves profit opportunities for brokers. The promoter cannot capture the profits earned by brokers and even more surprisingly, the promoter cannot preempt brokers and deter them from entering. The promoter would like to sell to busy professionals in the late market but cannot do so, because brokers have already bought the tickets that were meant for them.

Now return to the assumption that only brokers can resell tickets. If diehard fans could resell, then they would compete with brokers in the late market, and this would bring the late price down to  $v$ . This is a possibility, but only if enough diehard fans are willing to change their plans. There are at least two reasons why this may not happen. First, diehard fans have to make an early personal investment in travel and work plans to join the event, which implies that the value that diehard fans place on the event is more than just what they paid for their ticket in the early market. If their personal investment is high enough, then they will not be willing to resell in the late market. Second, the behavioral economics literature has shown that people typically report higher valuations on objects after they become owners of the objects, a phenomenon known as the endowment effect (Kahneman, Knetsch and Thaler, 1991), and Krueger (2001) has found some evidence suggesting that this hypothesis applies to tickets.

### **Why Would Promoters Want to Deter Brokers?**

The model suggests two reasons why promoters would want to deter brokers. First, those consumers who buy late lose out in equilibrium since brokers capture some of their surplus. Consumers may lobby promoters on the basis that brokers do not add any value and rob them of their surplus. Consumers would ask promoters to intervene and restrain brokers with the belief that in the absence of brokers, they would be able to get tickets at face price. I will call this the “caught in the middle” rationale, since the conflict is really between consumers and brokers, and promoters are caught in the middle. Under this rationale, promoters play a public relations game to dissociate themselves from the bad image that is associated with selling tickets at large premiums. This rationale is consistent with the popular debate on ticket scalping and with the justification for resale laws that brokers deprive consumers from the right to buy tickets at face price (Diamond, 1982). Note, however, that prohibiting brokers will benefit consumers only if promoters do not increase prices in the late market.

This insight suggests a second rationale for why promoters may want to deter brokers, and this is because they want to capture the profits that can be earned in

the late market. This corresponds to a “profit maximization” rationale. To capture the late profits, the promoter must eliminate brokers. The model shows that a promoter cannot fully cash in on late sales unless resale is prohibited. On that count, the model suggests one reason for why the outcomes observed in the markets for event tickets and airline tickets are so different. Airlines can prevent resale, so there is no secondary market for airline tickets. As a result, airlines can charge more from those consumers who value flexibility, and they can capture some of the rents from last minute travelers. The example of the airline industry suggests that promoters will not be able to appropriate the late market profits fully unless they take full control of the distribution chain, which means eradicating independent brokers. Courty (2003) presents a more general model and identifies conditions under which a profit maximizing promoter prefers to encourage or deter brokers. Karp and Perloff (2002) address the same question, but present a different analysis.

Some of the evidence points toward the “caught in the middle” hypothesis. For example, the Office of New York State Attorney General (1999) concludes from several investigations on resale practices in New York: “The stance of the venues, as well as Ticketmaster and Telecharge (original ticket distributors), has been cooperative throughout this investigation. . . . However, even the positive steps they have taken to clear up the ticket distribution process have been reactive rather than proactive.”

But there is also some evidence that points toward the profit maximization rationale. For example, some promoters put aside some of the most exclusive seats that are typically favored by busy professionals. Some Broadway theatres have tried that strategy. About 50 seats for the Broadway show “The Producers,” for example, were put aside and offered at a much higher price (\$480 versus \$100) to compete with brokers, as suggested by Marco Landesman, one of the managers who experimented with this scheme: “What we’re trying to do here is strike a blow at the heart of the scalping operations” (Winship, 2001). Under such a differentiation strategy, the promoter gets an edge over brokers in the late market because it keeps control over premium seats. Interestingly, even in that specific instance the promoters were possibly afraid of the negative image of charging much higher prices, so they pledged to donate about half of the price premium (\$150) to the Twin Towers Fund.

Another piece of evidence consistent with the profit maximizing rationale is the practice by some sports promoters—for example, baseball teams like the Chicago Cubs and Seattle Mariners—who have started to hold some tickets until close to the event date and to use auction-type mechanisms to price according to supply and demand, effectively competing with brokers. Along the same line, Ticketmaster is developing an online reseller system to compete with brokers and scalpers (Angwin, 2002). Presumably, these auction-type mechanisms will limit brokers to the extent that tickets are traded until close to the event date, so that there is no unfulfilled demand from last minute consumers.

## Welfare Implications

The model of ticket pricing presented here does not suggest any welfare recommendation either in favor or against brokers. If resale were prohibited, ruling out brokers, then the surplus appropriated by brokers would either go to promoters or to consumers depending on the price that promoters would charge in the late market. Overall, it would be welfare neutral since there would be no net change in total surplus. More realistically, however, one should go beyond the model to assess the welfare impact of brokers.

On one hand, one may argue that brokers just take advantage of the situation and waste resources in rent-seeking activities. Although brokers make profits in the model sketched earlier, one would expect that due to competition and entry—for example, through distribution and promotion activities—at least part of these profits would be diluted. Under that interpretation, brokers should be banned, and this would increase welfare through the elimination of inefficient rent seeking.

On the other hand, brokers provide a service: availability in the late market. They invest in activities that may create value in three ways. First, they seek new consumers who may not consume otherwise. Brokers aggregate tickets for multiple events, satisfying a broad range of consumer demands. Second, brokers help market clearing. In fact, brokers sometimes earn large profits, but at other times are left with unsold tickets. Some brokers even argue that they provide a form of insurance for the event promoter by buying tickets early and endorsing the event. Third, brokers price discriminate, and it is possible that the promoter ends up selling more tickets with the presence of brokers. Under that interpretation, brokers are welfare enhancing, since they help the promoter to sell to consumers whom the promoter would find it hard to reach or otherwise attract.

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