

The Effects of Ticket Pricing on Arts Attendance Patterns

An Economics Literature Review (2000-2018)

September 2020

National Endowment for the Arts

400 7th Street, SW

Washington, DC 20506

202-682-5400

arts.gov

Produced by the National Endowment for the Arts

Mary Anne Carter, Chairman

Office of Research & Analysis

Sunil Iyengar, Director

Patricia Moore Shaffer, Deputy Director

Bonnie Nichols, Operations Research Analyst

Patricia Germann, Research Administrative Officer

Prepared for the National Endowment for the Arts by Andrew Moyseowicz

Editorial assistance by Don Ball and Rebecca Sutton

About the Report

Cultural providers and policymakers who seek to expand arts audiences can benefit from knowing, empirically, how ticket pricing affects arts attendance patterns. This report presents the results of an economics literature review from 2000 to 2018 on the topic of ticket price elasticity in the arts.

There is mixed evidence to support the view that public demand for arts events (i.e. ticket sales) changes at a greater rate than changes to price—a concept known as elastic demand. If anything, findings from a literature review suggest that demand in the arts tends toward inelastic, a situation in which demand responds at a lower rate to ticket price. Even so, examples of elastic demand in the arts were found in some disaggregated analyses that looked at demand in relation to specific audience types, different types of production, and the size of the arts organization.

At least three research questions stemming from this review merit investigation in the future:

1. How does theoretical literature surrounding the secondary (i.e. resale) ticket market compare with findings about ticket price elasticity? Traditionally the secondary market has been difficult to quantify due to a lack of data. With the advent of major online ticketing resale platforms, however, more researchers may begin to gain public access to ticketing data.
2. Beyond theater and popular music concerts, what are the effects of price discrimination, such as ticket discounts or pricing tiers, on demand for the arts? The studies in this review largely reported on the effects of price discrimination for music and theater, but little has been published recently about the effects of such practices on museum-going.
3. To what extent is a meta-analysis feasible for interrogating the relationship of ticket pricing and arts demand? At least one unpublished meta-analysis has been conducted, although others remain skeptical of such a project's utility—particularly given the dilemma of findings limited to aggregated reporting and the intrinsic variation among art forms.¹

While challenges remain, it is clear that understanding the determinants of demand for the arts and ticket prices remains an important endeavor. Determining ticket price elasticity of demand for all art forms is a valuable exercise for promoters, practitioners, and cultural policymakers. For arts organizations, understanding consumer sensitivity to prices can be a make-or-break proposition. Despite significant knowledge gaps, this review should help provide structure and a path forward for future projects and studies.

Table of Contents

About the Report

Table of Contents

Why a Literature Review?

How Were Studies Identified for Review?

Understanding Own-Price Elasticity of Demand: Theoretical Perspectives

Ticket Price Elasticity of Demand: Theoretical Perspectives

Ticket Price Elasticity of Demand: Empirical Perspectives

Conclusions

Literature Reviewed

Endnotes

Why a Literature Review?

The ticket market for arts and entertainment constitutes a multibillion-dollar industry in the United States.² Tickets are sold every day that provide consumers with access to performances, concerts, museums, festivals, and more. They have existed since antiquity; many of the small bronze plates used as tickets in Ancient Greek theaters survive to this day.³ For most individuals, the ticket market remains the fundamental enabler of attendance in many art forms, particularly those for performing arts events, fairs and festivals, and art museums.

The National Endowment for the Arts is charged with funding, promoting, and strengthening the creative capacity of communities by providing all Americans with diverse opportunities for arts participation. Monitoring economic trends in the U.S. ticket market, therefore, is of importance to the agency. For arts and cultural policymakers at all levels—federal, state, and local—understanding ticket price elasticity of demand can assist in designing effective programs that boost overall access and participation. For cultural providers ranging from the performing arts to museums and galleries, ticket sales compose a critical revenue stream that sustains the fiscal health of these organizations and their ability to engage the public with high-quality artistic programming.

This review explores recent economic and econometric research on the ticket market. It surveys articles and publications related to ticket pricing, primary versus secondary market characteristics, “scalping” and the effect of regulatory responses, and other factors. By and large, articles have tended to draw on insights from specific artistic fields, including popular music, opera, symphony orchestras, and art galleries.⁴ While most articles have focused on specific art forms, some have attempted to conduct broader meta-analyses.

How Were Studies Identified for Review?

Electronic searches were conducted across databases such as Econlit, EBSCO Host: Music Index, JSTOR, NADAC, Literature Database, and WorldCat. Articles were considered for inclusion if they were published in peer-reviewed journals and if they satisfied all of the following characteristics:

1. Included at least one keyword in the arts (e.g., music, concert, arts, performing arts, ballet, opera, symphony, dance, museum, gallery);
2. Focused on economics subject matter (e.g. admission price, admission elasticity, ticket price, ticket elasticity, demand, price model, consumer model, consumption model, substitution); and
3. Were published between 2000 and 2018.⁵

Resulting articles included theoretical economic perspectives, empirical econometric micro-studies, and literature reviews. Book chapters were included if they appeared in the initial search results.

Articles then were summarized for 1) the art form highlighted in the publication; 2) the theoretical versus econometric perspective (e.g., whether the researcher/s had computed an own-price elasticity of demand by using empirical data); and, for the latter; 3) research methodologies (e.g. analysis of aggregated sales data, survey data). Ticket price elasticities reported in relevant articles were recorded for analysis. A list of the summarized articles is included at the end of this review.

Understanding Own-Price Elasticity of Demand: Theoretical Perspectives

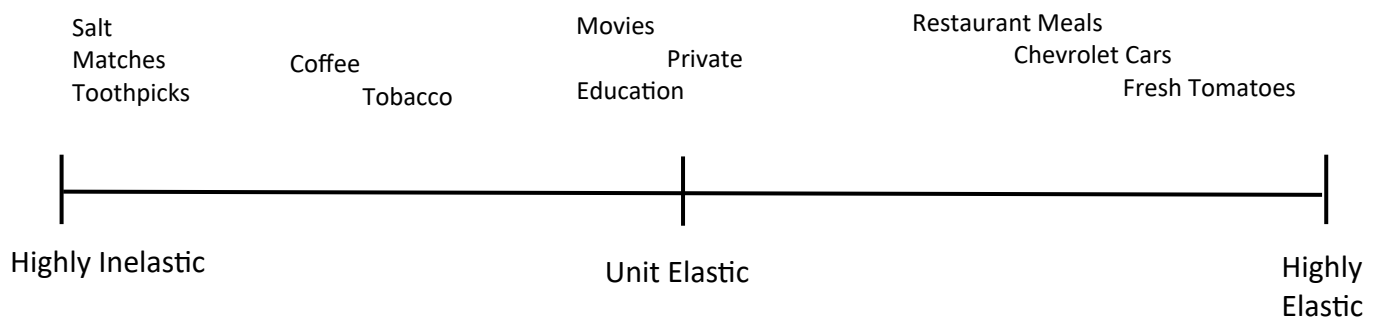
Price elasticity of demand is a fundamental principle in economic theory. It measures how much, in terms of percentage change, the quantity demanded responds to a change in price.⁶ It is a measure of the proportion by which an increase or decrease in the price of a product will lead to an increase or decrease in the amount purchased. For the purposes of this paper, own-price elasticity of demand—or the elasticity of demand with respect to the product’s own price—will be examined. It differs from similar concepts such as cross-price elasticity of demand, which is a measure of the sensitivity of one product in relation to changes of price for another product (e.g., how a price increase in oranges affects apple consumption). It also differs from income-elasticity, which is the relationship between a product’s price and changing levels of income (e.g., how greater consumer income affects steak consumption).

Price elasticity of demand is an intuitive concept. It follows from the law of demand, which states that as the price of a given good goes up, a consumer’s natural inclination is to buy less of that good, and vice versa. However, while the price and quantity sought may move in opposite directions, the law of demand is more nuanced. Because not all products are the same, a consumer’s sensitivity to changes in price will likely depend on the product in question. For example, a 1 percent increase in the price of apples might not have the same effect on the quantity demanded as, say, a 1 percent increase in the price of gasoline. This is for multiple reasons. For one, apples are highly substitutable. If the price of apples were to increase, a consumer might be inclined to switch from consuming apples to consuming pears or oranges. On the other hand, most car owners need gasoline to operate their vehicles. An increase in gas prices is unlikely to have much of an immediate effect on the quantity demanded, because most cars currently lack alternative fueling methods.

Price elasticity of demand for a given product is typically expressed as a ratio of the percentage change in quantity demanded divided by a given percentage change in price for that product (typically a 1 percent increase). As an increase in price is usually associated with a decrease in the quantity demanded, price elasticity of demand is often displayed as a negative value, although many times it is also displayed in absolute terms.

$$\textit{Price Elasticity of Demand} = \frac{\textit{\% Change in Quantity Demanded}}{\textit{\% Change in Price}}$$

If the quantity demanded for a given good changes at the same rate as a change in price (e.g. with a 1:1 ratio), that good is said to be “unit elastic.” If the quantity demanded for a good changes at a greater rate than a change in price (e.g. with a 2:1 ratio), then that good is said to be “elastic.” On the flipside, if a good is “inelastic,” quantity demanded for the good does not change very much when the price of the good changes. All products will have a price elasticity of demand, which will fall along a relative continuum ranging from just above 0.1 (highly inelastic) to 1 (unit elastic) to 2 or more (highly elastic).⁷ Ample studies have been conducted across a wide array of products to determine respective price elasticities of demand. Some textbook estimates of price elasticities of demand are plotted below, along a stylized axis.⁸



Ticket Price Elasticity of Demand: Theoretical Perspectives

This section will begin broadly with a survey of general reports and theoretical perspectives of the ticket market. This literature encompasses a wide array of economic, behavioral, and sociological views on the organization and structure of the primary and secondary ticket markets; price discrimination and profit maximization; consumer and firm preferences; regulatory affairs; and consumer price sensitivity. As articles highlighted in this section tend to provide more theoretical claims about the ticket market, it should be assumed that references reflect general statements and not specific art forms, unless otherwise stated. This extensive theoretical background is useful in processing the range of empirical evidence-based econometric study findings covered in the latter section of this report.

Much has been written about the ticket market, from general primers that are readily accessible for policymakers to more nuanced discussions. Most recently, in April 2018, the U.S. Government Accountability Office (GAO) published an extensive report intended for Congressional requesters wishing to learn more about primary and secondary online ticket sales, as well as consumer protection concerns, and an analysis of various federal and state policies on the ticket market. The GAO report outlined how the primary and secondary ticket markets in the United States are both highly concentrated—with the firm Ticketmaster holding approximately 80 percent of the primary market share in 2008, and estimates of the company StubHub holding 50 percent of the secondary market share in 2017.⁹ While the report did not explicitly cover price elasticity of demand or consumer sensitivity, it did provide potential evidence of

monopolistic tendencies in the ticketing industry, which could have direct implications on theoretical views of demand elasticity.¹⁰ The report also concluded that extant federal data are incapable of providing reliable estimates on the number of business entities currently in the ticketing industry, and that private-sector sources must be included to give a more complete picture.¹¹

Courty published a theoretical and empirical literature review on ticket pricing in 2000. His theoretical review focuses on tickets as applied to second-degree price discrimination, bundling, transaction costs, peak load pricing (e.g. the practice of raising prices when demand is highest and cutting them when demand is lowest), and intertemporal pricing (e.g. multiple shows, where marginal cost is low for each performance). The theoretical section is further divided into three themes: pricing of different seats in the same performance; pricing of tickets under demand uncertainty; and pricing of tickets when there will be multiple performances. Courty also discusses pricing complementary goods, such as introducing refreshments at events, and two-part tariffs, such as paying extra for a special performance or exhibition. Courty mentions that the social dynamic of events—that is, what motivates people to attend a given concert or play—may be promising for future study.¹²

In follow-up work, Courty introduces a model for the secondary ticket market that sets time preferences as the reason for secondary markets to exist. Previous literature posits that the secondary market exists because primary markets are underpriced, and therefore an efficient outcome is to create a secondary market that allocates the remaining tickets to individuals who are willing to purchase them. Courty writes that some consumers can plan in advance, but that some need time to find out if they can attend an event. This difference creates an opportunity for intertemporal price discrimination (for example, the way that airlines hike prices over time—although in this case the tickets cannot be resold). A market opportunity opens up for brokers to buy up tickets and sell them at a later date. The model describes why primary sellers would wish to eliminate brokers but posits that the only way consumer's benefit would be maintained would be if the primary sellers were restricted from intertemporal price discrimination.¹³

The secondary ticket market is of prime interest to Happel and Jennings, who apply microeconomic theory in a 2010 article explaining ticket scalping and the pitfalls of regulating the secondary ticket market. Secondary ticket markets are affected by microeconomic forces that make them an inevitable outcome of an efficient primary market. The authors state an opinion that state and local regulation of secondary ticket markets will ultimately prove futile, but they also warn about the potential for anti-trust concerns when primary ticketing businesses enter the secondary market.

The eight principles are:

1. Tickets for high-demand and/or limited-supply events are typically underpriced in primary markets;
2. Underpriced high-demand events produce queues;
3. Time is a cost;
4. Where there are nuisances, there is noise, followed by regulation;
5. Price controls do not bring relief for consumers;
6. Allowing market participants to structure government regulation of their market adds vertical integration and/or monopolies;
7. Regulation without recognition of market forces will thwart a national ticket market; and
8. “Creative destruction” is always at work in the ticket market.¹⁴

One of the most salient findings that Happel and Jennings explore—namely, that concert and event tickets are underpriced in the primary market—might seem counterintuitive to the current ticketing landscape, but it is a powerful intuition. Traditional economic theory would posit that sellers’ primary motivation is to maximize profit, and yet concert promoters rarely do so (at least not for individual performances). The reasons for this tendency are partly explained by risk mitigation under demand uncertainty, but perhaps more potent are the behavioral explanations: the thrill of performing for a sold-out audience and the concept of “fairness.” Performers often would rather play before a smaller, sold-out club audience than for a half-empty concert hall. By underpricing tickets, artists ensure a greater likelihood that their performances will be well-attended, which may go a long way toward ensuring sustainable profitability.¹⁵ The issue of “fairness,” meanwhile, is relatively straightforward: promoters do not wish to have the appearance of “gouging” their customers, and they will often resort to artificially depressing ticket prices. Such practices may seem to run counter to the economic intuition of profit-maximization, but as strategies to avoid backlash and an ensuing loss, they fit neatly into the behavioral economics domain.¹⁶

Boyle and Chiou are also concerned with the resale market, but their interest lies in exploring the effects of ticket resale on production and attendance. Boyle and Chiou analyze matched local data from the National Endowment for the Arts’ 2002 Survey of Public Participation in the Arts (SPPA) as well as ticket sales data and other data from 400 nonprofit member theaters of the Theatre Communications Group (TCG).¹⁷ They run a binomial regression model to explore how variation in state and local laws that restrict resale of tickets have an effect on consumer attendance and producer entry into the local arts market. Their dependent variable is number of performances attended by residents, with independent variables of various anti-scalping laws. The authors find that restrictions on resale prices and license requirements are correlated with higher attendance in performing arts events, suggesting, they argue, that consumers may value regulation.¹⁸ They also find evidence that restrictions in the secondary market coincided with decreased variety of theatrical productions relative to control cases.

Flanagan delves specifically into the world's symphony orchestras in his 2012 book, *The Perilous Life of Symphony Orchestras*. Of particular value to the present review are Chapter Five (“The Search for Symphony Audiences”) and its conceptual framework of factors that influence concert attendance, which include average ticket price, venue price structure (e.g. scaling the house), marketing, and quality. It turns out that the typical questions that are posed of a concert promoter (e.g., How sensitive is concert attendance to the average ticket price? What structure of ticket prices for different seats will maximize symphony revenues?) are heavily nuanced in the largely subscription-based world of symphony orchestras. Subscribers are typically the most reliable revenue for orchestras, but critically they also account for a disproportionately greater share of “voluntary” donations necessary for the operating budgets of the nonprofit symphony orchestras. As Flanagan writes, “any loss of subscribers from higher ticket prices may reduce private donations to an orchestra.”¹⁹ Flanagan also notes the competitive relationship between symphony orchestras and local opera, dance, or theater companies. In his own analysis, Flanagan concludes that higher season ticket prices for symphonies are associated with higher opera attendance and vice versa, providing limited evidence that the forms do behave as economic substitutes to an extent. Flanagan notes that the results do not provide a causal direction and could stem either from a commensurate increase in the former’s price, or a decrease in the price of the latter.

Notwithstanding its pessimistic title, *The Perilous Life of Symphony Orchestras* helps to clarify the essential question of symphony promoters: given rising costs, will increasing prices lead to an increase in net revenue? Or will it deter would-be concert-goers to such an extent that the decrease in attendance will offset any revenue gains? Flanagan highlights the varied results of price discrimination strategies as a way of increasing revenue while maintaining affordably priced ticket categories. More evidence of price structure and elasticity will be discussed later; suffice it to say this area of study holds promise for symphony orchestras, as well as other types of performing arts organizations.

Another notable finding is that U.S. symphony orchestras are not alone in battling rising costs and chronic deficits in performance revenue. As Flanagan states, “The richness of the European orchestral tradition offers little protection from the same economic forces that buffet U.S. orchestras.”²⁰ Indeed, Flanagan asserts that chronic deficits are a given across the globe. The key distinction between European and American symphony orchestras are the methods of financing these deficits, with U.S. orchestras typically relying on private contributions while foreign orchestras typically rely on direct government subsidies. Flanagan does not comment on the effects that these policy decisions may have on demand price elasticity in international contexts. However, given his overarching conclusion—that market pressures affect symphony orchestras evenly across the globe—it seems reasonable to treat the variability of government subsidies similarly to other external factors that might affect individual studies.

In the realm of museum management, Prieto-Rodriguez and Fernandez-Blanco provide a theoretical construct for understanding optimal ticket pricing and grant policy for publicly funded cultural institutions by delving into principal-agent frameworks. Principal-agent frameworks are a standard model in economic theory that are used to explain divergent incentives between entities that are able to make decisions and/or take actions on behalf of another entity. Principal-agent relationships are ubiquitous, from employer-employee relations to seller-broker or manufacturer-distributor arrangements. When set to cultural

economics, the principal-agent framework can be readily applied to public sector “principals,” who are tasked with providing funding for museums and cultural institutions, and nonprofit management “agents,” who are charged with operating museums while minimizing public expenditures. The authors in this 2006 publication use a model of ticket revenue and grant revenue to explain the somewhat paradoxical intuition behind why “free access” museums are located on the inelastic segment of the demand curve.²¹

Ticket Price Elasticity of Demand: Empirical Perspectives

This section will survey relevant empirical studies that have been conducted on the ticket market. Empirical studies typically rely on quantitative data such as aggregate ticket sales of a venue or surveys on consumer preferences to draw insights. There are many advantages of studying empirical results—the first being that empirical analysis uses real data to draw upon trends and arrive at quantifiable metrics such as price elasticity of demand and the probability of an event’s occurrence. The existence of sales data is ubiquitous within performance venues, potentially offering hundreds of thousands of points of study. While access to proprietary business information can be challenging to obtain, a number of studies have used data in aggregate from multiple venues.

To policymakers and cultural practitioners alike, the primary challenge lies in determining which findings are externally valid and can be applied outside the particular context from which they originated. The products of human creativity and imagination are not conducive to generalizations, nor are the profoundly complex array of factors that underlie consumer tastes and preferences. Individual demand for the arts is a matter of personal preference; it would be misguided to assume that a person who enjoys contemporary music would necessarily be an operaphile or a museum-lover. The idiosyncratic quality of personal taste similarly complicates research findings about ticket price elasticity of demand.

Seaman provides a convenient starting-off point for discussion. His comprehensive empirical literature review is widely cited among articles in this review, and it is particularly useful in providing a one-stop resource for at least 44 econometric analyses of consumer demand conducted for various art forms between 1966 and 2006.²² Particularly insightful is Seaman’s table of 29 studies that reported own-price elasticity and income elasticity, which he catalogs by year of publication. Of the 29 studies, inelastic results were more prominent, with 12 findings that demand for arts was strongly price-inelastic. Only six studies found evidence of solely elastic demand, while the remaining study found evidence of both elastic and inelastic demand.

Seaman provides further insight for interpreting the distribution of results by analyzing study design. “Regardless of technical sophistication,” he writes, “the price inelasticity result is much more prominent in those studies that used very aggregative data across all performing arts groups in contrast to studying individual arts organizations.”²³ This is an important caveat, as the “aggregation dilemma” is not unique to the arts. In markets with highly differentiated products (Seaman gives the example of personal computers), it is likely that different products will face very different demand elasticities due to the abundance of substitutes offered by competing brands or even differing segmentation within the same brand. However, in terms of the overall personal computer market, it is difficult to imagine a substitutable product (beyond smaller tablets or smart devices) that could provide the same level of service or productivity. In the same sense, the arts are clearly highly differentiated and segmented, with differing art

forms containing varying qualities of performers and pieces. The demand elasticity for a concert by a world-renowned performer at Carnegie Hall will differ from that of a local hobbyist at a nonprofit showroom; yet taken in aggregate, an inelastic demand for the arts would seem to show few substitutes.

Disaggregated studies tend to show lower-demand elasticities, although this was not always the case. For example, in a 1984 article by Lange and Luksetich, symphony orchestra demand was found to be highly price-inelastic. However, disaggregation into major, urban, and community-based symphony orchestras found significant variation. Major symphony orchestras were found to be highly price-inelastic, while the smaller, less prestigious metro and community orchestras were price-elastic.²⁴ Some studies also displayed different outcomes when adjusting for short-term and long-term temporal specifications. For example, Krebs and Pomerehne studied German opera companies from the 1960s until the mid-1990s, finding highly inelastic demand in the short-term and a long-term overall price elasticity, likely reflecting changing tastes and preferences.²⁵

In the realm of rock music, Krueger details in a 2005 article the nationwide trend of exponential price increases in popular music tickets, arguing that declining album sale revenues due to the Internet and streaming are likely tied to concert ticket price increases. His findings display that between 1997 and 2003, concert ticket prices grew by 82 percent, as compared with only a 17 percent concurrent increase in the Consumer Price Index.²⁶ Krueger employs a very large dataset obtained by Pollstar, the concert industry trade publication, encompassing 270,679 separate performances by 1,275 artists. Artists were selected for inclusion based upon their recognition in the 2001 *Rolling Stone Encyclopedia of Rock & Roll* and comprise roughly 75 percent of all revenues reported to Pollstar between 1981 and 2003. Further artist attributes are included in a vector of covariates, as well as a specification of year fixed-effects.

One area that has been increasingly scrutinized is the effect of price discrimination on demand and revenues. In a 2004 paper, Leslie observes effects on price elasticity and revenue gains for a Broadway musical engaging in price discrimination. His observations are based on a dataset of price and quantity sold for all 17 different seat categories for all 199 performances of August Wilson's *Seven Guitars*, which ran on Broadway in 1996. Leslie runs a utility-based model to conduct experiments on the effects of uniform pricing, sticky pricing, and discounted same-day sales. Studying the cross-price elasticities associated with tiered seating, Leslie finds that price discrimination can lead to up to a 5 percent increase in profits for theater companies while providing negligible welfare decreases for consumers.²⁷

The National Endowment for the Arts has also commissioned work on the impact of price discrimination within the nonprofit theater category. Based on regression analysis of Theatre Communications Group member survey data from 1998 through 2005, Smith and Pollak found evidence to suggest that theater ticket sales do not respond strongly to price changes. Further models in fact predict that a 20 percent price rise in low-end subscription or single tickets would reduce total attendance by only 2 percent.²⁸

Eckard and Smith provide empirical estimates of the revenue benefits of multi-tier pricing at a major U.S. pop music venue. Using exact prices and numbers of tickets sold at 165 pop concerts between 2005 and 2008 (reduced to 140 shows due to data discrepancies), the authors find evidence that multi-tier pricing significantly increased mean revenue—roughly 4.2 percent, or an increase of approximately \$20,000 per

show. To determine the effects of price discrimination, the authors categorized shows by their price spreads—namely, the dollar-value difference between the show’s cheapest and most expensive tickets. Four pricing strategies were uncovered through this process: uniform pricing, price spreads that were less than \$10, use of two to four prices with pricing spreads reaching beyond \$30, and a “VIP” strategy with a mean spread of \$93.52. Using individual demand curves from the price segments, the authors then modeled a counterfactual equation to estimate potential increases from shows with price spreads of less than \$20.00.²⁹

Eckard and Smith’s results would seem a promising indicator for venues and promoters. After all, the simple act of generating different seat categories does not alter total seat capacity, and ticket prices for general admission could potentially remain low without alienating fans. At the same time, the nature of certain popular music genres may limit its efficacy, particularly for genres that rely more on general admission strategies for behavioral reasons (e.g. a sense of equality among concert goers; the desire not to appear deferential to higher-paying patrons).

Courty and Pagliero seem to produce similar findings through a study of concert tickets sold at general admission or different prices to reflect different seating categories. Using data from more than 21,000 concerts by the top 100 grossing artists in the concert industry between 1992 and 2005, the authors investigate the effects of price discrimination on gross revenue. The authors model a fixed-effects regression to control for city demand, artist, and year fixed effects, and introduce controls for artist, venue, and promoter fixed effects. The authors find that price discrimination leads to an average of 5 percent greater revenues than single-price ticketing, although with some caveats. The monetary return from price discrimination is higher in larger markets, as well as those with greater socio-economic diversity.³⁰ Courty and Pagliero also find that there are diminishing returns that result from different tiers of price discrimination. For example, they find the return on increasing from three concert seat categories to four is roughly half that of increasing from one category to two.

Werck and Heyndels focus their analysis on ticket prices and demand for Flemish theater companies in Belgium over the period 1980–2000. Using a panel of 59 Flemish theaters, the authors examine the impact on demand of output characteristics and a range of own-price and income elasticities. They further differentiate based on geographical markets for touring and non-touring theaters. They find that theatergoers during the period of study preferred large productions, as well as plays by Dutch-speaking playwrights and revivals of old productions. Own-price elasticity was negative and inelastic, with point estimates ranging between $-.16$ and $-.14$, depending on the model specifications. The authors also found that attendance tended to increase with greater incomes, a declining proportion of new plays, and growth in the presence of plays by Dutch-speaking playwrights. These increases tended to be offset, however, by trends toward smaller cast sizes and higher ticket prices, which increased by an average of 51.8 percent between 1980 and 2000. The net result was a considerable overall drop in theater attendance.³¹

Writing about her native Taiwan, Lin tries to estimate demand for cultural institutions from persons living in poverty. In particular, Lin is interested in attitudes of low-income people toward increased entry fees and whether or not qualitative results match empirical findings of demand elasticity. Lin surveys 2,447 Taipei residents to establish baseline attitudes on museum attendance, and then follows up with a restricted set ($n=30$) of in-depth interviews with low-income non-attendees. Similar to other countries, Lin finds that museum attendance is strongly correlated with income and education, with higher-income, higher-educated individuals being more likely to visit museums. Compared with empirical results from the United Kingdom and the United States, the “inequality of opportunity” seems less pronounced in the Taiwanese case, although Lin cautions against drawing broader conclusions from a non-nationally representative sample.³²

Although Lin reports that the majority of interviewees cited cost as a major concern when choosing leisure activities, it was not reported as the main factor deterring them from visiting museums. Rather, the majority of interviewees reported a lack of interest above all other factors. At the same time, concerns over the cost of visiting museums were cited at a disproportionately greater rate by non-attendees in lower-income groups than by others.³³ These reported findings seemed to be reflected in price elasticity of demand for museums, which she calculated through posing a hypothetical entry fee and asking respondents whether or not they would consider visiting a museum. Lin’s estimates are highly inelastic overall (0.01), but highly elastic (-2.08) for low-income individuals.³⁴ While these estimates reflect prior literature, their power is limited as a result of being estimated from hypothetical survey responses and not sales data.

Zeiba contributes findings from the German public theater sector, using a large and reliable data set for 178 theaters over 40 years (1965-2004). Zeiba uses the annually published Theater statistikan of the German Stage Association (Deutscher Bühnenverein), which includes data from all German public theaters beginning in 1965 and including East German theaters beginning in 1990. Zeiba uses an unbalanced panel (accounting for the inclusion of East Germany and the fact that some theaters were closed or opened during the period of study) and quality indicators to model price and income elasticities of demand. The quality indicators are theater reputation (modeled as a theater’s percentage share of guest performances in all performances), the technical ability of artists (expressed as artistic wages), and the level of costume and stage design (modeled as an aggregation of expenses for decor and costume design per production). Overall, own-price elasticities are found to be negative and inelastic: -0.27 for the whole period of study, with variance between -0.26 and -0.43 per sub-periods.³⁵

Zeiba continues her work in the German public sector with O’Hagan, this time turning their attention to German public symphony orchestras. The authors employ a data set covering 79 public symphony orchestras between 1973 and 2005, with 1,313 observations for panel data. Similar to theaters, German public symphonies are ubiquitous in most metropolitan areas—including major cities like Berlin and Hamburg but also small cities like Meiningen and Coburg. Unlike the trends described by Flanagan and others, however, the vitality of German symphony orchestra attendance seems to have flourished in recent years.³⁶ Zeiba and O’Hagan estimate that attendance has increased by around 20 percent in the past 20 years, followed by an increase of about 24 percent in West Germany between 1973 and 1990.

Price elasticity of demand is calculated to be roughly -0.3, indicating a relatively inelastic response to increased prices. For policymakers, estimating price elasticity of demand in the German context of significant state subsidies poses intriguing questions. Zeiba and O'Hagan calculate the average level of public subsidies for German orchestras accounted for 81.3 percent of the total budget, compared with only 4 percent in the United States.³⁷

Laamanen contributes to the realm of opera in his study of the Finnish National Opera between 2001 and 2009. Laamanen's dataset is rich and highly disaggregated, including information on full-priced and different types of campaign tickets. Using 4,914 discrete performances of the Finnish National Opera between 2001 and 2009, Laamanen calculates an average price-elasticity of demand of -1.15, although this estimate is shown to contain significant variation when disaggregated. Tickets during premiere season are shown to be inelastic at -0.69, while the elasticity of demand for tickets to subsequent productions is highly elastic and estimated at -3.99. Laamanen further disaggregates estimates for variables such as day of the week, classical versus modern, star power, and more.³⁸

Unlike the majority of arts demand studies, Laamanen employs a censored quantile regression similar to Powell to calculate own-price and demand functions.³⁹ The reasoning for this sophisticated technique lies in the problem of quantifying actual demand for sold-out performances. Laamanen notes that "the number of tickets sold is limited by the capacity of the opera house, so the actual demand is not observed for performances that are sold out." Censored quantile regression, he argues, takes these capacity constraints into account and is not sensitive to distributional assumptions. It is an intriguing model, particularly given the fact that generating sold-out performances is a clear goal for most promoters—although likely one that would require further use in demand studies.⁴⁰

Pompe and colleagues continue on the literature of U.S. symphony orchestras, although with a particular emphasis on "flexible" subscription models that are increasingly employed in small to mid-sized orchestras. In general, symphony orchestras rely heavily on a subscription model where attendees purchase a full season's subscription to the symphony. Recently, however, there has been a push towards flexible subscription options, in which patrons may purchase tickets for smaller bundles of performances. The authors question the salience of such tactics, particularly as it might encourage "cherry-picking" of only the most attractive performances rather than full-season subscriptions. Using log-linear regression analysis to detail subscription ticket vs. single ticket markets, they find price elasticity to be -.3 for individual tickets and -.71 for subscription tickets, indicating a greater sensitivity towards increases in subscription prices. The power of their findings is significant at 90 percent confidence.⁴¹

Conclusions

The arts literature on demand contains a breadth of theoretical and empirical works, all of which contribute to a more thorough understanding of ticket price elasticity and determinants for arts attendance. This review has outlined works related to primary and secondary ticket markets, price discrimination and profit maximization, regulatory affairs, and a wide variety of econometric studies conducted with newly available data. The growing availability of ticket sales data has certainly played an important role in the proliferation of empirical studies, particularly as purveyors continue to grapple with falling profitability in the midst of declining attendance and changing consumer preferences.

At the same time, challenges remain. Larger databases and sophisticated modeling have shone new light on these pricing topics, but they have generally failed to deliver definitive answers to lingering questions. For example, the evidence on the arts—as a commodity—being elastic remains mixed. While the articles containing price elasticity of demand outlined in this review tended toward inelastic demand, results tended to derive from each study's highest level of aggregation. For example, Lin reports highly inelastic demand for museums in Taiwan, but the results shift to highly elastic demand when surveying low-income individuals.⁴² For Laamanen, the elasticity of demand for Finnish opera was roughly unit elastic (-1.15), while ticket elasticity for remounted operas was -3.99.⁴³ As with Seaman's findings in his literature review, the level of aggregation seems to remain a key distinction.

At least three priority research questions follow from this review:

1. How does theoretical literature surrounding the secondary market hold up to empirical findings? Traditionally the secondary market has been difficult to quantify due to a lack of data. With the advent of major online ticketing resale platforms, however, more researchers may begin to gain access to ticketing data.
2. Beyond theater and popular music concerts, what are the effects of price discrimination on demand for the arts? The studies in this review largely reported on the effects of price discrimination for music and theater, but little has been written recently about the effects of such practices on museum-going.
3. To what extent is a meta-analysis feasible for interrogating the relationship of ticket pricing and arts demand? At least one unpublished meta-analysis has been conducted, although others remain skeptical of such a project's utility—particularly given the dilemma of findings limited to aggregated reporting and the intrinsic variation among art forms.⁴⁴

While challenges remain, it is clear that understanding the determinants of demand for arts and ticket prices remains an important endeavor. Determining ticket price elasticity for all art forms is a valuable exercise for promoters, practitioners, and cultural policymakers. For arts organizations, understanding consumer sensitivity to prices can be a make-or-break proposition. Despite significant knowledge gaps, this review should help provide structure and a path forward for future studies.

Literature Reviewed

- Boyle, Melissa, and Lesley Chiou. "The Effect of Ticket Resale Laws on Consumption and Production in Performing Arts Markets." *Eastern Economic Journal* 38, no. 2 (2012): 210-222.
- Courty, Pascal. "An Economic Guide to Ticket Pricing in the Entertainment Industry." *Recherches Economiques De Louvain* 66, no. 2 (2000): 167-192.
- Courty, Pascal. "Some Economics of Ticket Resale." *The Journal of Economic Perspectives* 17, no. 2 (2003): 85-97.
- Courty, Pascal and Mario Pagliero. "The Impact of Price Discrimination on Revenue: Evidence from the Concert Industry." *The Review of Economics and Statistics* 94, no. 1 (2012): 359-369.
- Eckard, E. Woodrow and Marlene A. Smith. "The Revenue Gains from Multi-Tier Ticket Pricing: Evidence from Pop Music Concerts." *Managerial and Decision Economics* 33, no. 7/8 (October-December 2012): 463-473.
- Flanagan, Robert J. *The Perilous Life of Symphony Orchestras*. New Haven, CT: Yale University Press, 2012.
- Happel, Stephen and Marianne M. Jennings. "The Eight Principles of the Microeconomic and Regulatory Future of Ticket Scalping, Ticket Brokers, and Secondary Ticket Markets." *Journal of Law and Commerce* 28, no. 2 (2010): 115-210.
- Krebs, Susanne and Werner W. Pommerehne. "Politico-economic Interactions of German Public Performing Arts Institutions." *Journal of Cultural Economics* 19 (1995): 17-32.
- Krueger, Alan B. "The Economics of Real Superstars: The Market for Rock Concerts in the Material World." *Journal of Labor Economics* 23, no. 1 (January 2005): 1-30.
- Laamanen, Jani-Petri. "Estimating Demand for Opera using Sales System Data: The Case of Finnish National Opera." *Journal of Cultural Economics* 37, no. 4 (2013): 417-432.
- Lange, Mark D. and William A. Luksetich. "Demand Elasticities for Symphony Orchestras." *Journal of Cultural Economics* 8 (1984): 29-48.
- Leslie, Phillip. "Price Discrimination in Broadway Theater." *The RAND Journal of Economics* 35, no. 3 (2004): 520-541.
- Lin, Yung-Neng. "Admission Charges and Public Museums." *International Journal of Arts Management* 10, no. 2 (2008): 56-67.
- National Endowment for the Arts. *All America's a Stage: Growth and Challenges in Nonprofit Theater*. Washington, DC: National Endowment for the Arts, 2008.
- Pompe, Jeffrey, Lawrence Tamburri, and Johnathan Munn. "Subscription Ticket Sales for Symphony Orchestras: Are Flexible Subscription Tickets Sustainable?" *Managerial and Decision Economics* 39, no. 1 (2018): 71-78.

- Prieto-Rodriguez, Juan and Victor Fernandez-Blanco. "Optimal Pricing and Grant Policies for Museums." *Journal of Cultural Economics* 30, no. 3 (2006): 169-181.
- Seaman, Bruce. "Empirical Studies of Demand for the Performing Arts." In *Handbook of the Economics of Art and Culture*, Volume 1, edited by Victor A. Ginsburgh and David Throsby, 416-472. Amsterdam: Elsevier, 2006.
- United States Government Accountability Office. *Event Ticket Sales: Market Characteristics and Consumer Protection Issues*. GAO-18-347. Washington, DC, 2018.
- Werck, Kristien and Bruno Heyndels. "Programmatic Choices and the Demand for Theatre: The Case of Flemish Theatres." *Journal of Cultural Economics* 31 (2007): 25-41.
- Zieba, Marta. "Full-income and Price Elasticities of Demand for German Public Theatre." *Journal of Cultural Economics* 33, no. 2 (2009): 85-108.
- Zieba, Marta and John O'Hagan. "Demand for Live Orchestral Music—The Case of German Kulturorchester." *Jahrbucher Fur Nationalokonomie Und Statistik* 233, no. 2 (2013): 225-245.

Endnotes

¹ Renaud Legoux, et al., "A Meta-Analysis of Demand and Income Elasticity in the Performing Arts." Paper presented at ACEI 2014, The 18th International Conference on Cultural Economics, Montreal, Canada, June 24-27, 2014, https://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=ACEI2014&paper_id=160.

² Government Accountability Office, *Event Ticket Sales*, 4.

³ "Greece: Secrets of the Past: Theatre," Canadian Museum of History, accessed April 28, 2020, <https://www.historymuseum.ca/cmhc/exhibitions/civil/greece/gr1180e.shtml>.

⁴ Although "film" was not specifically included among search terms, articles that examined film were not excluded from this review.

⁵ Further articles were selected if they were cited by articles uncovered in the initial results and were deemed appropriate for further review.

⁶ Wei, Jong-Shin, "On Teaching Price Elasticity of Demand and Change in Revenue due to Price Change – a Synthesis," *International Journal of Business and Economics* 12, No. 1 (2013): 1-14.

⁷ Amy Gallo, "A Refresher on Price Elasticity," *Harvard Business Review* [online], August 21, 2015, accessed April 28, 2020, <https://hbr.org/2015/08/a-refresher-on-price-elasticity>.

⁸ Points plotted using estimated price elasticities of demand referenced by Patrick L. Anderson, et al., Price Elasticity of Demand, November 13, 1997, accessed April 28, 2020, https://scholar.harvard.edu/files/alada/files/price_elasticity_of_demand_handout.pdf.

⁹ Government Accountability Office, *Event Ticket Sales*, 4.

¹⁰ Avinash K. Dixit and Joseph E. Stiglitz, "Monopolistic Competition and Optimum Product Diversity," *The American Economic Review* 67, no. 3 (1977): 297–308.

¹¹ Government Accountability Office, *Event Ticket Sales*, 53.

¹² Courty, "An Economic Guide to Ticket Pricing," 167-192.

¹³ Courty, "Some Economics of Ticket Resale," 85-97.

¹⁴ Happel and Jennings, "The Eight Principles," 119-193.

¹⁵ *Ibid*, 124.

¹⁶ Daniel Kahneman, Jack L. Knetsch, and Richard Thaler, "Fairness as a Constraint on Profit Seeking: Entitlements in the Market," *American Economic Review* 76, no. 4 (Sept. 1986): 735.

¹⁷ While this section of the review is intended for theoretical perspectives on the ticket market, this empirical study is included as it adds to the theoretical discussion surrounding ticket resale and less consumer price sensitivity.

¹⁸ Boyle and Chiou, "The Effect of Ticket Resale Laws," 220.

¹⁹ Flanagan, *The Perilous Life*, 47.

- ²⁰ Ibid, 145.
- ²¹ Prieto-Rodriguez and Fernandez-Blanco, "Optimal Pricing," 169-181.
- ²² Seaman, "Empirical Studies of Demand," 416–472.
- ²³ Ibid, 424.
- ²⁴ Lange and Luksetich, "Demand Elasticities for Symphony Orchestras," 29-48.
- ²⁵ Krebs and Pommerehne, "Politico-economic Interactions," 17-32.
- ²⁶ Krueger, "The Economics of Real Superstars," 1-30.
- ²⁷ Leslie, "Price Discrimination in Broadway Theater," 520-541.
- ²⁸ National Endowment for the Arts, *All America's a Stage*.
- ²⁹ Eckard and Smith, "The Revenue Gains from Multi-Tier Ticket Pricing," 463-473.
- ³⁰ Courty and Pagliero, "The Impact of Price Discrimination," 360.
- ³¹ Werck and Heyndels, "Programmatic Choices and the Demand for Theatre," 25-41.
- ³² Lin, "Admission Charges," 59.
- ³³ Ibid, 60.
- ³⁴ Ibid, 62.
- ³⁵ Zeiba, "Full-income and Price Elasticities," 85-108.
- ³⁶ Flanagan, *The Perilous Life*.
- ³⁷ Zieba and O'Hagan, "Demand for Live Orchestral Music," 230.
- ³⁸ Laamanen, "Estimating Demand for Opera," 417-432.
- ³⁹ James L. Powell, "Censored Regression Quantiles," *Journal of Econometrics* 32, no. 1 (June 1986): 143-155.
- ⁴⁰ Laamanen, "Estimating Demand for Opera," 417-432.
- ⁴¹ Pompe, Tamburri, and Munn, "Subscription Ticket Sales," 71-78.
- ⁴² Lin, "Admission Charges," 56-67.
- ⁴³ Laamanen, "Estimating Demand for Opera," 417-432.
- ⁴⁴ Renaud Legoux, et al., "A Meta-Analysis."