

# A Meta-Analysis of Demand and Income Elasticity in the Performing Arts

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## ABSTRACT

This meta-analysis synthesizes the literature on price and income elasticity in the performing arts. This pool of 31 primary studies conducted over the last five decades includes 125 effect sizes for price elasticity and 61 effect sizes for income elasticity. Consistent with substitution effects, studies performed at the consumer level tend to be price elastic ( $E_{pcons} = -1.37$ ) while organization level studies are close to unit elasticity ( $E_{porg} = -.79$ ) and category level estimates are inelastic ( $E_{pcat} = -.49$ ). For product level estimates, studies examining theater show greater elasticity ( $E_p = -2.08$ ) than other forms of performing arts such as ballet, classical music and opera ( $E_d = -.92, -.41$  and  $-1.33$  respectively). We attribute this difference to the greater number of substitutes for theater productions in a given market. Elasticity tends to increase over time ( $\beta = -.06$  per year). Studies using OLS methods show lower elasticity ( $\beta = .73$ ). These differences are not found at the consumer or category level. For income elasticity, studies performed at the category, organization and consumer and product level are close to unit elasticity ( $E_y = 1.16, .74,$  and  $.90$  respectively).

## INTRODUCTION

In the past five decades, numerous researchers have looked upon the domain of the performing arts in an attempt to enlighten its specificities in terms of demand and income elasticities. Seaman (2005, 2006) has built up a comprehensive literature review on the question of demand and attendance in the performing arts. His extensive analysis represents an unprecedented contribution to this field of study and leads to the conclusion that the primary studies on demand and income elasticities in the performing arts have resulted in a diversified set of findings. For instance, whereas some studies conclude on an inelastic demand (e.g., Moore, 1966; Touchstone, 1980; Gapinski, 1986; Luksetich and Lange, 1995), others support the notion

that demand is quite elastic (e.g., Pommerehne and Kirchgassner, 1987; Jenkins and Austen-Smith, 1987; Lévy-Garboua and Montmarquette, 1996; Schimmelpfennig, 1997). In some cases, results vary within the same study. For example, in his research on the demand for performing arts in the United States from 1929 to 1973, Withers (1980) found price elasticities ranging from -0.62 to -1.19, spanning inelasticity, unit elasticity, and elasticity as interpretations. The same phenomenon was true regarding income elasticities that ranged from 0.64 to 2.78. From a broader perspective, Seaman's (2005, 2006) literature review indicates that price inelasticity is found in 12 studies, elasticity is supported in four studies and mixed results are observed in five other studies. Towse (2010) comments that: "It is therefore somewhat depressing to report that, despite all efforts (at least so far), there is no firm consensus even as to whether the own price elasticity of demand is greater or less than one. (p. 211)"

These conflicting results raise the question of whether some factors could explain the variance in elasticity estimation that is observed across studies. In fact, this state of affair led Seaman to comment that "it is extremely difficult to draw unambiguous conclusions (...) since studies differ in so many dimensions" (2005, p. 145). In order to produce a clear and meaningful synthesis of demand and income elasticities in the performing arts, the current article relies on a meta analytic framework. The examination of study-level moderators can solve conflicting results and tease apart what is due to random variation coming from sampling error and systematic variation (Hunter and Schmidt, 2004). Thus, the goal of this meta-analysis is not only to estimate overall price and income elasticity, but to identify systematic sources of variations.

This paper is organized as follows. First, we build the theoretical background and develop our hypotheses regarding the effects of the main moderators at work in the literature. For price elasticity, we rely on substitution effects to make predictions about sources of variations. For income elasticity, the foray is more descriptive in nature. Second, we discuss the methods used to collect and analyze the data obtained from studies published since 1966. Third, we summarize the results of 186 effects sizes. The main results of this meta-analysis show that, overall, price

elasticity diminishes with more aggregated estimates; that is elasticities estimated with Category level data are less elastic than ones where the unit of analysis was at the Consumer level. We show that price elasticity in the performing arts increase over time. We also underline the specificities of different art forms, with Theater being the most elastic of the performing arts. In general, elasticities estimated with an OLS procedure yield less elastic estimates. Finally, we find no significant moderators for income elasticity, but the estimates suggest unit elasticity. Fourth, we discuss the implications of these findings and we present the managerial implications as well as the main limitations and suggestions for future research.

### **Substitution and price elasticity of demand**

Substitution is the overarching principle used to derive the main predictions about the elasticity of demand. Heilbrun and Gray (2001) note that: “Elasticity rises with the availability of substitutes. The more, or the closer, the available substitutes for a given good or service, the more readily consumers will switch to something else when the price of that good or service rises relative to other prices. (p. 88)” Heilbrun and Gray argue that there are many valid substitutes for live performing arts such as “books, newspapers, magazines, motion pictures, television and radio broadcasts, tapes and recordings of music, videotapes of many kinds, attendance at cabarets and nightclubs, eating out, spectator sports, and even participatory recreational activities. (p.102)” This suggests that we should expect a relatively high price elasticity of demand for live performing arts. Heilbrun and Gray identify a counterbalancing force in that arts are an acquired taste. With greater expertise acquired with a given art form, substitutes become less acceptable for art patrons. According to this perspective, demand should be relatively price-inelastic. Using the “acquired taste” argument, Towse (2010) arrives at the reverse prediction. To sum up her thinking, a more experienced art consumer will make more informed decisions about the hedonic attributes of an artistic experience leading to greater price elasticity.

While the substitution principle can lead to equivocal predictions about the overall value that should be expected for price elasticity, it allows the identification of three potential moderators: the level of aggregation, the art form that is considered and the time component. Illustrating the substitution effect, Heilbrun and Gray (2001) underline that “price elasticity is always higher for a subcategory like pork, for which there are good substitutes within the larger class of meat, than it is for meat as a whole. (p.88)” In his review of literature Seaman supports this prediction for the performing arts: “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” (2006, p.424). However, it should be emphasized that Seaman’s observation is not backed by any formal test. Hence, we predict that the higher the level of analysis of the primary studies the less elastic the demand will be.

More specifically, the following levels of aggregation are distinguished in this meta-analysis. Primary studies investigating elasticities at the Category level cover more than one art form within a particular administrative entity (i.e., a country, a region, or a city) and aggregate the data across them. The Organization level indicates that the data cover a single organization (i.e., a particular theater venue) while the Consumer level is when the data are obtained at the individual level from a census or survey. We thus predict that:

H<sub>1</sub>: The price elasticity of demand will be the strongest when estimated at the consumer level, followed by the product level; while the category level estimations will be the weakest.

Heilbrun and Gray’s (2001) argument on substitution also applies in comparing the relative elasticities between art forms. Substitution is more likely to occur between similar organisations that are spatially close (Stavins, 1997). A large city is likely to find many theaters that are relatively close to each other. For instance, the area of New York City was home of 42 theater companies in 1989 (Heilbrun, 1992). Even in a city like New York, the number of ballet

companies, symphony orchestras and operas is much lower. As a typical city houses no more than one or two ballet companies, we can assume there are more direct substitutes for theater than for ballet or even the two other forms of performing arts. By applying the substitution argument, we propose that:

H<sub>2</sub>: The price elasticity of demand will be stronger for theater than for ballet, classical music and opera.

The substitution effect may also be at play in predicting the evolution of price elasticity through time. In the United States, as in most other developed economies, we observe the emergence of new leisure activities and a general increase in the cultural offering. Information technology is a driver of new leisure activities, such as the Internet, smartphones and video games. In addition, it is important to note that this type of substitute constitutes a free or low-price offer compared to traditional performing arts. Second, cultural organizations, being subjected to the Baumol cost disease have to increase prices, potentially entering into the elastic portion of the demand curve. Finally, consumers tastes may have changed, rendering them more price sensitive. Peterson (1992) notes that consumers of high art have widened their tastes, becoming cultural omnivores. Thus, these omnivores find substitutes more acceptable than the univores of latter days.

Based on this reasoning, the following is hypothesized:

H<sub>3</sub>: The price elasticity of demand is increasing over time.

Income elasticity of demand

Common sense suggests that the demand for performing arts is income-elastic. As underlined by Heilbrun and Gray (2001) performing arts are not a basic necessity such as food, clothing, shelter or medical care. These necessities are priorities in a personal budget, and tickets for opera, theater, ballet, and symphony music are expected to enter one's expenses only when income is sufficiently high. However, this pure income effect may be offset by the time cost

effect associated with increasing income (Heilbrun and Gray 2001). With increasing income, the value of time also increases for consumers, dampening the income effect for time consuming activities such as arts attendance.

Compared with price elasticity, there is no clear substitution mechanism that would allow a clear prediction about the effect of substantive moderators. Therefore, no formal hypotheses are generated for income elasticity. This section of the meta-analysis will be devoted at determining the overall effect size of the income elasticity of demand.

### **Estimation method as a moderator**

A meta-analysis allows to control for method-induced biases. The estimation method – the use of ordinary least square (OLS) regression or a more elaborate statistical approach – is the methodological moderator of interest in this study. In a meta-analysis on price elasticity of residential water demand, Espey, Espey and Shaw (1999) propose that deriving price elasticity using OLS may lead to different results than other analysis techniques. They point out that if the distribution of demand is not normal, the estimation will be biased. Angrist and Pishke (2008) underline that: “One of the most important results in the statistical theory of linear models is that a regression coefficient is biased towards zero when the regressor of interest is measured with random errors” (p.84). In the case of the estimation method as a source of bias, OLS in particular, there seems to be a consensus on its existence but not on its direction. Even though Tellis (1998) found in his meta-analysis on price elasticity a greater price elasticity when OLS is used, he notes that method-induced biases on price elasticity are not easily predicted. Thus, the estimation method will be integrated in the meta-analysis as a moderator without a specific expectation in terms of the direction of its effect.

## **METHODOLOGY**

### **Data collection**

We based our literature search on Seaman's review on attendance in the performing arts (2005; 2006) which remains the most complete work on the topic. It lists 29 empirical studies estimating price and income elasticity. Following Seaman, to be eligible for inclusion, articles had to satisfy the following criteria: the empirical work needed to be carried out within the performing arts sector (e.g. theater, orchestra music, ballet, opera, Broadway shows and circus) and had to report original estimates of demand elasticity. We double-checked Seaman's pool of studies and looked for manuscripts running up to January 2012. In addition, we performed our own bibliographic search using online databases such as ABI/Inform Complete, Business Search Complete and ScienceDirect and Emerald. We did an issue-by-issue search of fifteen major journals in economics and cultural economics: *American Economic Review*, *American Journal of Economics and Sociology*, *International Journal of Arts Management*, *International Journal of Cultural Policy*, *Journal of Cultural Economics*, *Journal of Economic Behavior and Organization*, *Journal of Economic Issues*, *Journal of Economic Literature*, *Journal of Economic Perspectives*, *Journal of Economic Surveys*, *Quarterly Journal of Economics*, *Review of Economics and Statistics*, *Southern Economic Journal*. Our search confirmed the comprehensiveness of Seaman's review and demonstrated the validity of using his literature review as the basis for our search for primary studies from his. In the end, 31 studies reported sufficient statistical information to be included in the meta-analysis.

As a result, we were able to add two studies compared to Seaman's review both published in the *Journal of Cultural Economics* (i.e. Werck and Heyndels, 2008; Zieba, 2009). Note that we decided to exclude the only paper on circus. Our final pool of 31 studies was published between 1966 and 2009, based on data collected between 1928 and 2005. A list of those studies is available on demand.

### **Coding**

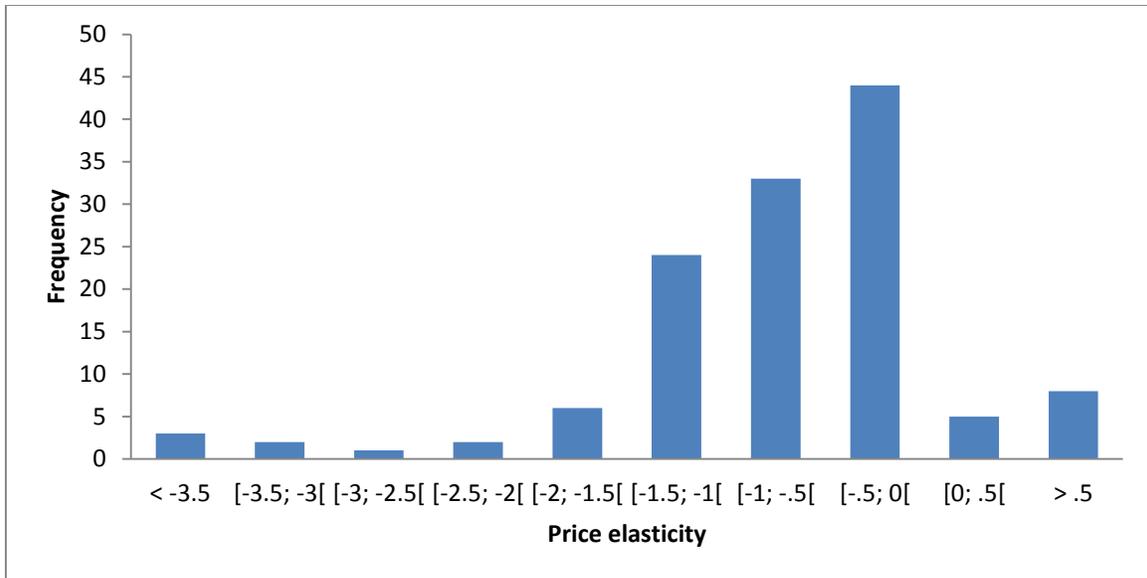
The final pool of studies includes 186 effect sizes; 125 for price elasticity and 61 for income elasticity. Two of the researchers independently coded each study. Inconsistencies were

resolved by the other researchers. We established the following coding scheme to test for the level of analysis hypothesis. First, estimates derived from industry level data, covering one or more art form, were labeled as Category level. For example, Bonato, Gagliardi and Gorelli (1990) estimate price elasticity with aggregated governmental sources for a bundle of performing arts (e.g. theater, opera, ballet and orchestra music). Second, estimates obtained from one or more venues in a specific market were labeled as Organization level. For example, Corning and Levy (2002) estimated price elasticity from the box office records of three separate venues of a Californian theater over an eight year period. Third, data obtained directly from individual consumers were labeled as Consumer level. For example, Lévy-Garboua and Monmarquette (1996) used data from a large survey of theatergoers.

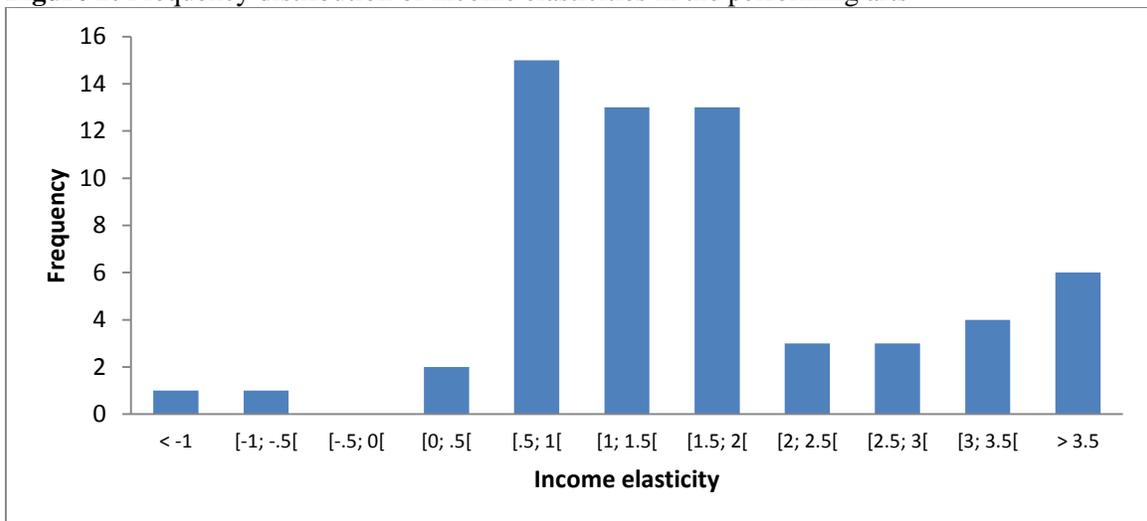
Of the 125 effects for price elasticity, 84 relied on US data, 16 on German data, 15 on UK data and 10 were obtained from other countries. In regards to the art forms, 37 effects deal with Orchestra, 35 Theater, 17 Opera, 16 Ballet, 7 Broadway, and 13 cover aggregated data from several performing arts. As shown in Figure 1, the price elasticity results cumulated in the 30 single studies are distributed widely; from below -3.5 to above .5. Most of the effect sizes (77/125) are found within the 0 to -1 range, suggesting general price inelasticity.

Of the 61 effects for income elasticity, 30 relied on US data, 15 on German data, 7 on UK data and 9 on other sources. In regards to the art forms, 14 effects deal Music, 19 Theater, 4 Opera, 4 Ballet, 8 Broadway, and 12 cover aggregated data from several performing arts. As shown by Figure 2, the price elasticity results are distributed widely; from below -1 to above 3.5.

**Figure 1:** Frequency distribution of price elasticities in the performing arts



**Figure 2:** Frequency distribution of income elasticities in the performing arts



## RESULTS

We first performed separate meta-analyses of price and income elasticity at the Category, Organization and Consumer levels. Then, we ran meta-regressions within each level of analysis in order to uncover moderating effects.

### *Price Elasticity*

We extracted three grand mean effect sizes at the Category, Organization and Consumer levels. Price elasticity at the Consumer level is higher than at the Organization level which in turn is higher than at the Category level:  $|E_{pcons}| > |E_{porg}| > |E_{pcat}|$ . The observed mean elasticities are respectively -1.37, -0.79, and -0.49. As shown in Table 1, price elasticity in performing arts is relatively inelastic at the category level, unitary elastic at the organizational level and relatively elastic at the consumer level.

The absence of overlap between the two confidence intervals around the mean elasticities at the Category and Consumer levels indicates a statistically significant difference (CI95% [-.849; -.125] and [-1.548; -1.194], respectively). Since comparing intervals is very conservative, we applied Schenker and Gentleman's (2001) standard method to test the differences between elasticities with overlapping intervals (e.g.  $|E_{pcons}|$  vs.  $|E_{porg}|$  and  $|E_{porg}|$  vs.  $|E_{pcat}|$ ). Because the interval for the Organization and Consumer levels does not contain zero [0.30; 0.85], the difference between their elasticities is statistically significant ( $|E_{pcons}| > |E_{porg}|$ ). On the other hand, with an interval of [-0.11; 0.72], the difference between the Category and Organization level estimates of elasticities is not statistically significant ( $|E_{pcons}| = |E_{porg}|$ ). Overall, this is consistent with our prediction that greater aggregation leads to less price elasticity; supporting H1.

**Table 1: General meta-analysis results**

	k	N	Estimate	Confidence interval (95%)	
<b>Price elasticity</b>					
Category	33	735	-0.487	-0.849	-0.125
Organisation	85	4446	-0.794	-1.025	-0.564
Consumer	9	2268	-1.371	-1.548	-1.194
<b>Income elasticity</b>					
Category	42	1010	1.162	0.544	1.780
Organisation	22	600	0.735	0.382	1.087
Consumer	10	55264	0.903	0.748	1.057

*Income elasticity*

As shown in Table 1, income elasticity at the Category level is higher than at the Organization or Consumer level with mean observed elasticities of 1.162, 0.735, and 0.903, respectively. All three estimates are undistinguishable from unit elasticity since all the confidence intervals span one. In addition, when comparing the three estimates, the standard method yields non-significant difference estimates (  $|E_{icat}|$  vs.  $|E_{iorg}|$  : [-0.26; 1.13],  $|E_{iorg}|$  vs.  $|E_{icons}|$  : [-0.53; 0.19], and  $|E_{icat}|$  vs.  $|E_{icons}|$  : [-0.35; 0.87] ).

**Random Effects Meta-Regression Model**

To uncover the moderators at work, we use a random effects model of meta-regression (Hunter and Schmidt, 2004). In their research examining the impact of service quality, Carrillat, Jaramillo and Mulki (2009) noted that the random-effect model is more appropriate because it relaxes the assumption that all the effect sizes comes from a single population.

The only significant set of results was for price elasticity at the Organization level whereas neither the Category nor the Consumer levels yielded significant results. As a consequence, we concentrate on the former level of analysis. We isolate three effects: time period, art forms and estimation method used. Each individual study focused on one art form (e.g. Theater, Ballet, Opera, or Orchestra) during different time periods using distinct estimation

methods. Note that there was no Broadway study at the Organization level. In all of our analyses, the country effect was not significant and was removed from the model for the sake of parsimony. As shown in table 2, Orchestra, Opera and Ballet display significantly more inelastic price elasticities than Theater ( $p < .05$ ). A follow up analysis shows that apart from Theater, only Orchestra and Ballet differ significantly from one another;  $t(79) = 2.00, p < .05$ . This pattern of results suggests that, as anticipated in H<sub>2</sub>, the demand for art forms for which more substitute options are available is more price sensitive.

Price elasticity tends to increase over time;  $\text{Beta} = -0.06426, t(79) = -3.99, p < .0001$ . This is consistent with H<sub>3</sub> according to which the growth of substitutes over time leads to an increased price sensitivity. Studies using the OLS method yield more inelastic price elasticities;  $\text{Beta} = 0.7251, t(79), p < .01$ .

**Table 2:** Meta-regression at the Organization level (df = 79)

<b>Effect</b>	<b>Estimate</b>	<b>SE</b>	<b>t</b>	<b>Pr &gt;  t </b>
<b>Intercept (ref. = Theater)</b>	-2.0820	0.2727	-7.64	<.0001
<b>Orchestra</b>	0.6698	0.2738	2.45	0.0166
<b>Opera</b>	0.7498	0.3178	2.36	0.0208
<b>Ballet</b>	1.1622	0.3121	3.72	0.0004
<b>Year (ref. = 1983)</b>	-0.06426	0.01612	-3.99	0.0001
<b>OLS method</b>	0.7251	0.2606	2.78	0.0067

## DISCUSSION

The objective of this meta-analysis was to overcome contradictions in previous studies and present a clear understanding of price and income elasticity demand. The findings of this research offer a synthesis of substantive and methodological moderators. Based on the substitution framework, we postulated on a continuously increasing elasticity through time and a hierarchy between art forms and levels of analysis. As expected, the more disaggregated studies are the higher price elasticity. The meta-regression model at the Organizational level allows us to differentiate price sensitivity of audience according to art forms. Theater stands out as the most

price-elastic art form. Our results also highlight an increasing elasticity in the performing arts through time. This pattern of results is consistent with substitution effects.

Finding that theater is generally price-elastic and that price elasticity is increasing over time has public policy as well as managerial implications. Arts organizations, being mostly non-profit entities, tend to favor greater audience over profit maximization. With price elastic demand, these organizations have an incentive to hold their ticket prices low.

The finding of a year effect at the organization level, but not at the category or consumer level suggests that this increasing price elasticity with time may be associated with heightened competition in the performing arts.

Income elasticity of demand reaches unitary elasticity at category, organization and consumer levels. Category level estimates are measured with longitudinal data. This means that consumer spending on performing arts rises at the same rate as the economy. Results for consumer level estimates, measured mostly with cross sectional data, suggests that the proportion spend on performing arts remains constant with increased income. With unit elasticity, performing arts can hardly be considered a luxury good.

We acknowledge that any meta-analysis is affected by the quality and results offered by single studies (Hunter and Schmidt, 2004). As previously discussed in our methodology, from the random effects meta-regression model we conducted the results were statistically significant only at the organization level.

For further research, it would be worth considering various approaches of price elasticity in literature: while it seems more relevant for some researchers to address leisure price, others focus on price with full or disposable income. These distinctions would unveil specificities that our coding fails to recognize. Other specificities not acknowledged in this meta-analysis should be pointed out. These include socio-demographical variables, such as age, level of education or social class, but also the product portfolio of performing art companies. Our findings included only four art forms (Theater, Ballet, Opera and Classical music) due to a limited availability of

studies. More econometric research on price elasticities for Broadway or Circus would have been beneficial to the discussion. Finally, our study of substitutes could find an interesting supplement in a geographical analysis of specific locations regarding the concentration of performing arts organizations and cultural offerings.

## REFERENCES

- Angrist, J.D. and J.S. Pischke (2008) *Mostly Harmless Econometrics: An Empiricist's Companion*, Princeton University Press, Princeton.
- Baumol W.J. and H. Bowen (1965) "On the Performing Arts: The Anatomy of Their Economic Problems", *The American Economic Review* 55(1/2): 495-502.
- Baumol W.J. and H. Bowen (1966) *The Performing Arts: The Economic Dilemma*, Twentieth Century Fund, New York.
- Bonato, L., Gagliardi, F., Gorelli, S. (1990). "The demand for live performing arts in Italy", *Journal of Cultural Economics* 14: 41–52.
- Carrillat, F. A., Jaramillo, F. and J. P. Mulki (2009) "Examining the Impact of Service Quality: A Meta-Analysis of Empirical Evidence", *Journal of Marketing Theory and Practice*, 17(2): 95-110.
- Corning, J., Levy, A. (2002). "Demand for live theater with market segmentation and seasonality", *Journal of Cultural Economics* 26: 217–235.
- Espey, M., Espey, J., & Shaw, W. D. (1997). Price elasticity of residential demand for water: A meta-analysis. *Water Resources Research*, 33(6), 1369-1374.
- Heilbrun, J. (1992) "Art and Culture as Central Place Functions", *Urban Studies* 29(2): 205-215.
- Heilbrun, J., & Gray, C. M. (2001). *The economics of art and culture*. Cambridge University Press.
- Hunter, J.E. and F.L. Schmidt (2004) *Methods of Meta-Analysis: Correcting Error and Bias in Research Findings*, Sage Publications, London.
- Jenkins, S. and D. Austen-Smith (1987) "Interdependent Decision-Making in Nonprofit Industries: A Simultaneous Equation Analysis of English Provincial Theatres", *International Journal of Industrial Organization* 5: 149-174.
- Lévy-Garboua, L. and C. Montmarquette (1996) "A Microeconomic Study of Theater Demand", *Journal of Cultural Economics* 20: 25-50.

- Luksetich, W.A. and M.D. Lange (1995) "A simultaneous Model of Nonprofit Symphony Classical music Behavior", *Journal of Cultural Economics* 19: 49-68
- Moore, T.G. (1966) "The Demand for Broadway Theater Tickets", *Review of Economics and Statistics* 48: 79-87.
- Pommerehne, W. and G. Kirchgassner (1987) "The Impact of Television on the Demand for Cinema and Theatre Performances", in: N.K. Grant et al., eds., *Economic Efficiency and the Performing Arts* (Association for Cultural Economics, Akron) 44-61.
- Schenker, N. and J.F. Gentleman (2001) "On Judging the Significance of Difference by Examining the Overlap Between Confidence Intervals", *American Statistician* 55(3): 182-186.
- Schimmelpfennig, J. (1997) "Demand for Ballet: A Non-Parametric Analysis of the 1995 Royal Ballet Summer Season", *Journal of Cultural Economics* 21: 119-127.
- Seaman, B.A. (2005) "Empirical Studies of Demand for the Performing Arts", Nonprofit Studies Program Working Paper NP05-03. Andrew Young School of Policy Studies, Georgia State University.
- Seaman, B.A. (2006) "Empirical Studies of Demand for the Performing Arts", in: V.A. Ginsburgh and D. Throsby, eds., *Handbook of the Economics of Art and Culture* (North Holland, UK) Volume 1: 415-472.
- Stavins, J. (1997) "Estimating Demand Elasticities in a Differentiated Product Industry: The Personal Computer Market", *Journal of Economics and Business* 49: 347-367.
- Tellis, G. J. (1988). The Price Elasticity of Selective Demand: A Meta-Analysis of Economic Models of Sales. *Journal of Marketing Research (JMR)*, 25(4).
- Touchstone, S.K. (1980) "The Effects of Contributions on Price and Attendance in the Lively Arts", *Journal of Cultural Economics* 4: 33-46.
- Towse, R. (2010). A textbook of cultural economics. Cambridge University Press.
- Werck, K. and B. Heyndels (2007) "Programmatic choices and the demand for theatre: The case of Flemish theatres", *Journal of Cultural Economics* 31: 25-41.
- Withers, G.A. (1980) "Unbalanced Growth and the Demand for Performing Arts: An Econometric Analysis", *Southern Economic Journal* 46(3): 735-742.

Zieba, M. (2009) "Full Income and Price Elasticities of Demand for German Public Theatre",  
*Journal of Cultural Economics* 33(2): 85-108.