
Subsidizing the Performing Arts: Profit, Loss, and Residual Demand

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ABSTRACT

Public facilities such as performing arts centers are often justified on the basis of serving the dual goals of providing a focal point for the community's cultural arts needs as well as an anchor or catalyst for economic development. The arts administrator is faced with two distinct and possibly conflicting tasks; present primarily mainstream popular events to generate substantial revenues and keep the center operating in the black, or present cultural and "high arts" events, such as classical music, opera, and dance, more in line with one of the missions of a performing arts center, but far riskier for the building's fiscal well-being. This paper makes use of the concept of residual demand to estimate the demand elasticities for the performing arts. Estimation of the residual demand curves makes use of information that is normally available at the local level the local performing arts organization and to arts administrators, but would otherwise be insufficient for full estimations of the structural and general community demand function. Knowledge of these elasticities and other measures of market power could provide important information to arts administrators and local performing arts organizations in the planning and use of the performing arts center.

INTRODUCTION

Across the nation, public facilities to house sporting events, conventions, and performing arts events, are constructed or under consideration, in the name of economic development and progress. Once on line, these facilities often receive harsh criticism when they are not immediately able to generate enough revenues to support themselves. The amount of criticism and scrutiny that a facility receives is generally related to the level of community support, popular appeal, and the project's perceived commercial viability. Sports facilities and convention centers that provide activities with broad-based appeal to residents and the business community may be able to pass this "acceptability" hurdle relatively easily. The performing arts center, with a more limited base of popular appeal, may have a more difficult time overcoming the stigma of red ink.

The arts administrator is presented with two distinct and possibly conflicting tasks. They can present primarily popular events such as Broadway shows, and 'big name' acts, which will generate substantial revenues, and hopefully ensure that the center remains in the black. Programming the performing arts center in this manner though, may subvert one of the original intents for constructing it to begin with -- to provide a forum for the presentation of live cultural or 'high' arts, e.g., classical music (symphony orchestras), opera, dance, and classic repertory theater. The central issue for administrators, government officials, local arts organizations, and taxpayers in the community is, does the diversion of government subsidies and private donations from performing arts companies to the construction and maintenance of performance facilities enhance the output of cultural events in the community. Additionally, can administrators prevent these facilities from

becoming financial burdens to the community and to the arts organizations that they are meant to help.

Traditionally, the modern performing arts center was constructed with a resident company or companies in mind, i.e., the traditional symphony hall. Today's center is typically more generic, built as part of a regional development plan and intended to serve the needs of both cultural and popular arts performance. The arts complex itself, has additionally taken on the role of promoter and intermediate producer of live performing arts, mounting its own season of touring ensembles that run the gamut of popular artists to chamber groups, theater companies, and classical and modern dance troupes. In between these touring "road" shows, local performing companies, such as the symphony orchestra, ballet and dance companies, opera companies, and local theatrical groups may rent and use the facilities as well.

Measurement of demand elasticities and market power could provide important information to arts administrators and local performing arts organizations in the planning and use of the performing arts center. For this reason, specification and estimation of the residual demand function facing the individual performing arts center and its season of activities is of critical importance. The residual demand function is the relationship between one firm's price and output given the supply response of all other firms. Estimation of the residual demand curves makes use of information that is normally available at the local level to the local performing arts organization and to arts administrators, but would otherwise be insufficient for full estimation of the structural and general community demand function.

In Section 2, a general demand and supply system for the performing arts is specified. Following Baker and Bresnahan (1988), the price and quantities of all other firm's production is solved and used to derive the residual demand facing the individual firm. This residual demand can, in turn, be used either as a single equation, or in a system of simultaneous equations to estimate demand elasticities and market power for the regional performing arts center. Drawing upon the model of the residual demand for the arts, Section 3 presents the case of Broward County, Florida, and its three performing arts centers. Section 4 is a preliminary discussion of the data and data sources that were used to estimate the residual demand. The residual demand for the arts for each of the three facilities is estimated in Section 5.

THE RESIDUAL DEMAND FOR THE PERFORMING ARTS

Baker and Bresnahan (1988) and Bresnahan (1989) use residual demand analysis to determine the market power that a firm may have under different market structures. Their analysis is rooted in the structure, conduct, and performance paradigm of industrial organization. The cultural performing arts may differ from other industries in two principal ways. The prevailing view of the performing arts is that it is a quasi-public good with a significant degree of positive externalities that would otherwise be under produced in the market (Frey & Pommerehne 1989; Heilbrun 1988). This viewpoint, coupled with view of the performing arts as a merit good, serves as the cultural economist's rationale for public subsidization of the arts. The other main difference is the prevalence of the nonprofit supplier. Instead of maximizing profits, the performing arts supplier will maximize output and quality (Felton 1992; Throsby and Withers 1979; West 1988). Thus, the nonprofit supplier is assumed to produce where average costs equal average revenue. The concern in the performing arts is not the negative aspects of concentration, but survival of the performing arts company. For the performing arts the estimation of market concentration and market power can be a useful tool for planning in the hands of arts administrators.

Using Baker and Bresnahan's (1988) notation, the inverse demand function for the single firm can be represented as:

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$$P_1 = P^1(Q_1, Q, Y; a^1) \quad (1)$$

P_1 and Q_1 are the price and quantity for firm 1, Q is the vector of other firms' output, Y are the exogenous variables in the demand system, and the a^1 are parameters.

The inverse demand functions for the other firms output Q is;

$$P_i = P^i(Q, Q_1, Y; a^i), \forall i \neq 1. \quad (2)$$

The a^i parameters may include most of the a^1 parameters found in equation 1, depending on the nature of the market structure and product differentiation. However the nature of competition within the market need not be determined 'a priori', as one of the goals of the method is to determine if a firm faces a downward sloping demand curve.

For a profit-maximizing industry, the supply function takes the form of marginal cost (MC) equal to perceived marginal revenue (PMR) for all firms i , i not equal to 1;

$$MC^i(Q_i, W, W^i; B^i) = PMR(Q, Q_1, Y; a^i, O^i) \quad (3)$$

where,

$$PMR^i(\bullet) = P^i(\bullet) + Q^i \sum \frac{\partial P^i}{\partial Q_j} \frac{\partial Q_j}{\partial Q_i} \quad (4)$$

Marginal cost is dependent upon output, industry wide factor prices W , and on some firm individuated factor prices W^i .

Adopting the assumption that nonprofit suppliers of the performing arts maximize output, the performing arts center will produce where average revenue from box office sales, grants, and unearned sources (such as voluntary donations), is equal to average costs (Throsby and Withers 1979; West 1987; 1988; Felton 1992; Weisbrod 1998). To the performing arts center acting as producer, industry wide factor prices may take the form of such things as standard licensing fees for music performance rights from organizations like ASCAP and BMI, and ticket agency fees. Firm specific costs are variables such as artist's fees, and specific technical and building limitations. O^i is a conduct parameter. Additionally, the supply relationship for the performing arts must take into account the possible injection of government subsidization (G). Supply takes the form;

$$AC^i(Q_i, W, W^i, G^i; B_i) = AR^i(Q, Q_1, Y; a^i, O^i) \quad (5)$$

$$S^i(AC^i(Q_i, W, W^i, G^i; B_i)) = AR^i(Q, Q_1, Y; a^i, O^i) \quad (6)$$

Equations 1, 2, and 6 are used to derive the firm's residual demand curve (Baker and Bresnahan 1988). Individual cost, demand, and behavioral parameters are not estimated separately. Only their joint impact on market power is estimated through the slope of the residual demand function. With this approach, and using readily available data at the firm

level, price elasticity of demand can be estimated.

$$\bar{Q} = E^I(Q_1, Y, W, W^I, G^I; a^I, B^I, O^I). \quad (7)$$

Letting P_i be denoted by P , equations 2 and 6 are solved simultaneously for Q and P , $E^I(\cdot)$ is the equilibrium quantity in all of the markets for i not equal to 1. The superscript I on the parameters denotes the union of the demand parameters a^i , the cost parameters B^i , and the conduct parameters O^i , for all i not equal to 1. $E^I(\cdot)$ is a vector of functions, $Q_i = E^I(\cdot)$, and Q_1 is its only endogenous variable.

Substituting equation 7 into equation 1 yields the inverse residual demand curve facing firm 1;

$$P_1 = P^1(Q_1, E^I(\cdot), Y; a^I). \quad (8)$$

Substituting out for the redundant variables and letting 'a' denote the union of a^1 with a^I , the inverse residual demand function is written as;

$$P_1 = R(Q_1, Y, W, W^I, G^I; a, B^I, O^I). \quad (9)$$

Residual demand is described by own quantity, structural demand variables Y , subsidies G , and other firms' cost variables. Since the function includes the costs of all other firms, firm 1's price will vary with output. For the performing arts center, this implies that it may be able to adjust its revenues by appropriate price and output response.

Differentiating equation 7 in logarithmic form with respect to Q_1 yields;

$$\eta_{1R} = \frac{\partial \ln R}{\partial \ln Q_1} = \eta_{11} + \sum \eta_{1i} \frac{\partial \ln E_i}{\partial \ln Q_1} \quad (10)$$

The elasticity with respect to Q_1 depends on all of the elasticities of the inverse demand function (equation 1) and the elasticities of the competing firms reactions. The elasticity h_{ij} is $M \ln P^i(\cdot) / M \ln Q_j$. The elasticity h_{1R} is the inverse elasticity or flexibility of residual demand, while $1/h_{1R}$ is the elasticity of residual demand.

Closing their model, Baker and Bresnahan (1988) specify the supply relationship for firm 1 as;

where,

$$P_1 - MC^1(Q_1, W, W^I; B^I) = (Q_1, Q_1, Y; a^I, O^I) \quad (11)$$

where,

$$M^1(\bullet) = MR^1(\bullet) - P_1 \quad (12)$$

making this a transformation of marginal revenue equals marginal cost. Adapting this for the nonprofit;

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$$P_1 - AC^1(Q_1, W, W^1; B^1) = A^1(Q, Q_1, Y; a^1, O^1), \quad (13)$$

where,

$$A^1(\bullet) = AR^1(\bullet) - P_1, \quad (14)$$

Accounting for the influence of subsidies in firm 1's supply relationship yields;

$$P_1 - S^1(AC^1(Q_1, W, W^1), G^1; B^1) = A^1(Q, Q_1, Y; a^1, O^1). \quad (15)$$

Substituting out Q, equation 15 becomes, and using Baker and Bresnahan's notation;

$$P_1 - S^1(AC^1(Q_1, W, W^1), G^1; B^1) = MK^1(Q_1, Y, W, W^1, G^1; a, B^1, O). \quad (16)$$

MK(\cdot) is the residual markup, and 'O' is the union of O^I and O^1 .

In double log form, equation 9 can be written as;

$$\ln P_j = \eta_{jR} \ln Q_j + \langle d_j, (\ln W, \ln W^1, \ln G^1) \rangle + \langle h_j, \ln Y \rangle + e_{dj}, \quad (17)$$

where $\langle \cdot, \cdot \rangle$ is the inner product operation, d_j and h_j are vectors of parameters, and e_{dj} is the error term.

Separating out the supply relationship in equation 17, $\langle d_j, (\ln W, \ln W^1, \ln G^1) \rangle$, yields;

$$\ln S^1 = B_1 \ln W + B_2 \ln W^1 + B_3 \ln G^1 + e_s. \quad (18)$$

The system to be estimated becomes;

$$\ln P_j = \eta_{jR} \ln Q_j + d_j \ln S^1 + \langle h_j, \ln Y \rangle + e_{dj}, \quad (19)$$

$$\ln S^1 = B_1 \ln W + B_2 \ln W^1 + B_3 \ln G^1 + e_s. \quad (20)$$

The implication is that all firms use inputs in the same manner. Arts production may not be quite as homogeneous as the Brewery Industry that Baker and Bresnahan analyzed. The performing arts in particular may display a significant degree of product differentiation, thus both forms of the residual demand system (Equation 17, and Equations 19 to 20) are estimated. Government subsidies in this analysis, enter as production subsidies to enhance and promote increased supply or the quality of the supply. This method of subsidization is more common in the arts than are ticket subsidies that would enter through the demand side.

THE PERFORMING ARTS IN BROWARD COUNTY

Broward County, Florida, is home to three publicly owned performing arts facilities. These are Bailey Hall, with 1250 seats, located in the west-central section of the county on the campus of Broward Community College, the Broward Center for the Performing Arts (BCPA) with 2700 seats in the eastern central part of the county in downtown Fort Lauderdale, and the City Centre with 1526 seats in the northwest corner of the county in the city of Coral Springs. Other performance venues exist in the county such as Parker Playhouse in Fort Lauderdale with a seating capacity of 1100 seats and Sunrise Musical Theater in Sunrise, with 4000 seats, but have been under the control of private promoters for over two decades.

Bailey Hall opened in 1979 and operates under the auspices of Broward Community College as a shared facility under the Community Education Facilities Act of Florida, while the other two centers have been in operation since 1990. City Centre operated as a nonprofit organization managing hall rentals and presenting its own season of scheduled cultural arts events until 1994, when the city of Coral Springs turned the hall's operation over to the Pace Organization, a national "for profit" corporation. BCPA still operates as a nonprofit corporation, presenting its own season events, including a broad range of classical and popular (Broadway touring companies, etc.) events.

In South Florida, from October through May, for the period under analysis, there was an average of 77 live performances per week, including classical music, repertory theater, opera, popular music (rock and jazz), and community theater. Bailey Hall, BCPA, and City Centre, with between 2 and 3 events each per week, were responsible for approximately 11 percent of the total activity. If only professional cultural arts activities (e.g., ballet and modern dance, opera, and classical music) were factored by themselves, these three venues would account for 30 to 50 percent of the average weekly event totals.¹

Many factors affect the demand for the live performing arts: price, the price of substitute and competing activities, income, and education. Education and income are both highly associated with the consumption of musical and theatrical productions. Arts patrons tend to be relatively well-educated, and earn above the median income according to surveys conducted by Baumol and Bowen (1966), Cwi (1985), and the National Center of the Arts (1988). Cwi suggests that changing demographics in the United States, from a base of blue collar, less educated work force, to a base of white collar, and more highly trained technical employment, as well as the increase of women in the work force, has led to arts audiences being more representative of the general population (1985, 36-37).

Surveys conducted by the City Centre lend support to these general findings regarding audience demographic characteristics. Based upon their survey of 179 patrons conducted over a four month period, from November 23, 1991 to February 15, 1992, the City Centre found that 78.7% of the respondents were residents of Broward County, 21.3% were season subscribers to the City Centre. Additionally, 35% of respondents were between the ages of 40-59, 46% were over the age of 60, and 52% had annual household income of over \$45 thousand.

Data from the County Tourism Quarterly Report (Florida Department of Commerce, Division of Tourism, 1991) reveals that the average expenditures on entertainment activities was \$17.44 per day. According to the quarterly tourism survey, of 253 respondents, 6.1 percent participated in "Night Life" activities, while 0.5% visited cultural (i.e., museums) and special events during their stay in Broward County. Quarterly tourism estimates were approximately 902 thousand persons. Tourism in the county generates between 4500 and 54,000 attendance per quarter. According to the Broward Cultural Affairs Council (1991), approximately 1.98 million people were estimated to have attended the 4033 cultural events/activities in the county for the season year 1989-1990,

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with only 96,677 of those consumers subscription holders.

The performing arts rely on three sources of revenue C income from ticket sales, government grants and subsidies, donations from private sources (individual and corporate). For the period under analysis, 1990-92, the activities at Bailey Hall, BCPA, and City Centre were financed primarily through a combination of a government grants and subsidies in the form of operating and lump-sum artist fee budgets, revenues from ticket sales, facility rentals, and concession sales. Another important source of government grants came from Broward County tourism taxes, 10% of which are designated for the arts. Private donations were a relatively minor part of the budgets of the three facilities.

DATA AND DATA SOURCES

The period under analysis is the 1991-1992 arts season in Broward County. Data supplied from the three performing arts centers comprised over thirty events per facility. The events were then matched into weekly reporting periods, resulting in thirty consecutive weeks of events from all three centers. A summary of the variables is presented in Table 1.

Production costs will vary across performance venues because of facility characteristics such as building acoustics, stage size, backstage and loading areas, lighting grids, and other facility factors affecting the technical, production, and production personnel requirements. Artist's fees will vary as well between the centers depending on the popularity of the artist, the art form, and the size of the production company. Events are generally booked anywhere from six months to three years in advance of their actual presentation depending on the art form. In the short-run artist's costs are exogenous since they are contractually set far in advance of production, and payable regardless of whether the performance actually takes place.

Personnel production costs in this study are taken to be an average of total personnel costs per type of event at each of the three performing arts centers. Averaging these costs together yields an exogenous short-run personnel cost per type of event that is used whenever that particular art form is presented at any one of the three facilities. Output is measured as sold attendance per performance. Price per event is measured as the average price from ticket revenues to account for differences in price from season subscribers, nonsubscriber sales, and various types of discounts that may exist to different buying groups (i.e., senior citizen discounts and student discounts). Attendance, ticket sales, and cost data were provided by the three performing arts centers. While attendance, sales, and cost data for for-profit suppliers were not readily available, supply activity was available from the entertainment listings in the local newspaper, providing the basis for an index of nonprofit and for-profit performing arts supply in the county.

Demand side variables are income and population. Population is taken to be the total county population plus visitors to the county as estimated by the Florida Department of Commerce. Income estimates for the county were obtained from the Broward County Statistical Summary (1992), and monthly reports disseminated by the Florida Department of Labor and Employment Security to the Broward Economic Development Office. The income estimates derived from these sources may understate the actual level of income since they are indicative of primarily labor income.

ESTIMATION OF THE RESIDUAL DEMAND

In Section 2, the concept of residual demand facing an individual performing arts producer was developed. Each performing arts center's production decision is dependent on costs such as artist's fees, internal production costs, government subsidies, and the production decisions of its competitors. This analysis produced Equations 17, 19, and 20, the firm's residual demand function, and a supply relationship. The residual demand for the

three arts centers is initially estimated using three separate sets of equations in a “seemingly unrelated regression,” with one equation for each center under observation (Equations 21-23). It is then estimated using three residual demand equations with a common supply function in a simultaneous format (Equations 25-28). Lastly, it is estimated using a “seemingly unrelated regression” with restrictions on the supply coefficients and with a dummy variable for “star power”.

From Equation 17, the residual demand equation to be estimated for each firm (System 1) is (all variables are in log form):

$$P_{ia} = z_{0a} + z_{1a}q_{ia} + z_{2a}srvac_i + z_{3a}Fee_i + z_{4a}G_i + z_{5a}y_i + z_{6a}Pop_i + e_{ia} \quad (21)$$

for BCPA

$$P_{ib} = z_{0b} + z_{1b}q_{ib} + z_{2b}srvac_i + z_{3b}Fee_i + z_{4b}G_i + z_{5b}y_i + z_{6b}Pop_i + e_{ib} \quad (22)$$

for Bailey Hall

$$P_{ic} = z_{0c} + z_{1c}q_{ic} + z_{2c}srvac_i + z_{3c}Fee_i + z_{4c}G_i + z_{5c}y_i + z_{6c}Pop_i + e_{ic} \quad (23)$$

for City Centre. The variable P_i is ticket price, q_i is sold attendance, $srvac_i$ is short run average variable cost, Fee_i is the total of average artist fees per type of event per period divided by total seating capacity of the three facilities per period time the number of performances (TSCP), G is the total level of tourism taxes collected to go toward the arts per period, y_i is income per period, Pop_i is total population plus estimated tourism per period, z_0 is a constant, and e_i is an error term. Average variable cost is calculated from the average marketing costs (AMC) and average personnel production costs (APPC) per type of event in the form:

$$srvac_i = \ln \frac{[(AMC_t + APPC_t)_{ia} + (AMC_t + APPC_t)_{ib} + (AMC_t + APPC_t)_{ic}]}{TSCP_i} \quad (24)$$

where the subscript ‘t’ stands for event type.

In System 2, the cost and government subsidy components of equations 21-23 are replaced by the variable Supply, and equation 20 is added to the system yielding (all in logarithmic form):

$$P_{ic} = z_{0c} + z_{1c}q_{ic} + z_{2c}Supply_i + z_{5c}y_i + z_{6c}Pop_i + e_{ic} \quad (25)$$

for BCPA,

$$P_{ia} = z_{0a} + z_{1a}q_{ia} + z_{2a}Supply_i + z_{5a}y_i + z_{6a}Pop_i + e_{ia} \quad (26)$$

for Baily Hall,

$$P_{ib} = z_{0b} + z_{1b} q_{ib} + z_{2b} Supply_i + z_{5b} y_i + z_{6b} Pop_i + e_{ib} \quad (27)$$

for City Centre, and

$$Supply_i = Z_{bi} sravvc_i + b_2 Fee_i + b_3 G_i + e_3 \quad (28)$$

The level of supply is derived as an index of the total number of seats provided by both nonprofit and for-profit suppliers in the county, per weekly period for live entertainment and performing arts from the weekly calendar listings in the Fort Lauderdale News/ Sun Sentinel.

An alternate system is estimated, System 3, using Equations 21-23, but restricting the coefficients on $sravvc$ $z_{2a} = z_{2b} = z_{2c}$, on Fee $z_{3a} = z_{3b} = z_{3c}$, and on G $z_{4a} = z_{4b} = z_{4c}$. Additionally a performer notoriety dummy variable is estimated in the three demand systems. The regression results are summarized in Tables 2-4.

The major statistic of interest from these regressions is the elasticity coefficient of sold attendance. The other residual demand coefficients have no clear interpretation due to the possibility of direct and indirect effects from the adjustments of other firms on the firm's demand.

In reviewing the three forms of the regression, the coefficient of residual demand for Bailey Hall was estimated to be positive. According to Feldman (1992), where the price elasticity of demand is found to be positive and significant, the interpretation may be that price is an indication of quality. Higher priced activities may be regarded by patrons as higher quality productions. Bailey Hall, with the longest history of operation in the county, also had the largest block of subscription purchases, and the largest following among audiences. It is quite possible that audiences use ticket price as a quality indicator.

Following Baker and Bresnahan (1988), the inverse residual demand may be interpreted as an estimate of mark-up. The elasticity estimates for City Centre in Systems II and III, of -0.30275 and -0.25423 respectively, are consistent with general mark-up policies in use reported by the center's management.

In general, for all three model specifications, the coefficients in the BCPA equation were not significant. This is consistent with an organization that has not yet established itself in the marketplace and has no market power. The 1991-1992 season for BCPA resulted in large losses.

Income and population coefficients were consistently positive only in the Bailey Hall equations. The coefficient on population partially reflects the influence of tourism on arts attendance. Subscription rates at Bailey Hall were much higher than for City Centre and BCPA. Bailey Hall may have benefited from visitors accompanying season subscribers.

Interpreting the coefficient on income is more difficult since the measure of income used is from wages and salaries. Positive income coefficients may be considered an indication that performing arts attendance is a normal good. While negative income elasticity coefficients may be indicative of the time intensive nature of arts consumption, where it was estimated to be negative, it was not statistically significant.

The performer notoriety variable appeared to have the most impact in the City Centre equations. This result may be a reflection of the fact that City Centre presented a

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greater proportion lesser known artists, while the other facilities presented almost exclusively more well known performing groups and artists.

CONCLUSIONS

The real question underlying the analysis is whether the performing arts center's activities have an impact in the market. Arts managers may be able to expand their seasons by subsidizing less popular activities with increased revenues from more well known performers and performances. On the other hand, if their activities appear to have little impact in the market, facility managers may find advantageous to increase hall rentals and reduce their own seasonal activities.

The arts administrators greatest difficulty in producing a successful season is the difficulty in properly identifying the community's demand for the performing arts. Estimation and analysis of the residual demand facing the performing arts center would give arts managers a much clearer view of the market enabling them to coordinate facility rentals and direct presentation of regional touring artists, while reducing their reliance on local government subsidies.

While generalizing the results for Broward County is difficult given the short time period analyzed, subsequent local government decisions and market events lend additional credence and support to the usefulness of this analysis. Shortly after the data used in this study was released, City Centre was privatized, with the city of Coral Springs turning over the operations of the hall to a national promotions company. BCPA realigned most of its activity to its series of Broadway road shows. Only Bailey Hall has maintained its program of cultural arts. Overall parameter estimates for Bailey Hall were consistently significant, and indicated some degree of market power. Elasticity estimates for City Centre, and especially BCPA tended to show very limited degree of market power.

Arts demand is a process of habituation and cultivation of tastes. These processes require some time before the effects become noticeable and can be tested. The long lead times involved in scheduling many touring companies may make it difficult for a relatively new performing arts center to establish prevailing tastes within the community. Differences in demand in this study appear to arise due to product distinctions as well as age differences between the three arts centers which allowed for different levels of subscription and patron cultivation by arts administrators.

ENDNOTES

1. The figures presented are based upon listing from the weekend calendar listings of the entertainment supplement of the Fort Lauderdale News/Sun Sentinel for the years 1990-92.

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Table 1
Variables

Price and Qyantity		Source
q_a	Log of Sold Attendance, BCPA	BCPA
q_b	Log of Sold Attendance, Bailey Hall	Bailey Hall
q_c	Log of Sold Attendance, City Centre	City Centre
p_a	Log of Average Price per Ticket, BCPA	BCPA
p_b	Log of Average Price per Ticket, Bailey Hall Bailey Hall	Bailey Hall
p_c	Log of Average Price per Ticket, City Centre	City Centre
Cost Variables		
svvac	Log of average production and marketing costs	BCPA, Bailey Hall, City Centre
Fee	Log of average artist's fees	BCPA, Bailey Hall, City Centre,
G	Log of local government subsidies devoted to the arts	Broward County, Florida Department of Commerce, BCPA, Bailey Hall, City Centre
Instruments		
AMC	Average Marketing Costs per type of event	BCPA, Bailey Hall, City Centre
APPC	Average personnel and production costs per type of event	BCPA, Bailey Hall, City Centre
Other Variables		
Supply	Log of total live entertainment per period	Fort Lauderdale News/Sun Sentinnel
y	log of local income per capita	Broward County Statistical Summary, Florida Department of Labor and Employment Security
Pop	log of local population plus tourism	Florida Department of Commerce
AH	Dummy Variable for Performer Notoriety, BCPA: value = 1 if well known performer, 0 otherwise	BCPA
BH	Dummy Variable for Performer Notoriety, Bailey Hall: value = 1 if well known performer, 0 otherwise	Bailey Hall
CH	Dummy Variable for Performer Notoriety, City Centre: value = 1 if well known performer, 0 otherwise	City Centre

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Table 2
System 1 Regression Results

Variable	System 1	Standard Error	T-Ratio
<u>BCPA</u>			
Constant	231.47	237.30	0.97543
q_a	-0.03491	0.04342	-0.80407
Supply			
srvac	0.60451	0.68976	0.87640
Fee	0.69479	0.75654	0.91837
G	-0.032077	0.24671	-1.3002
Y	-8.8055	9.4813	-0.92873
Pop	-4.3843	6.0036	-0.73028
AH	0.07007	0.11604	0.60384
<u>Bailey Hall</u>			
Constant	-1415.7	412.71	-3.4302
q_b	1.6292	0.68871	2.3656
Supply			
srvac	2.6153	1.1624	2.2498
Fee	3.2016	1.2966	2.4693
G	0.13734	0.38886	0.35320
Y	56.137	15.697	3.5762
Pop	23.096	10.761	2.1463
BH	0.20043	0.15074	1.3296
<u>City Centre</u>			
Constant	143.22	710.81	0.20148
q_c	-0.15784	0.18579	-0.84959
Supply			
srvac	-1.9531	2.2196	-0.87993
Fee	0.31355	2.5725	0.12189
G	1.6269	0.76081	2.1384
Y	16.644	27.461	0.60609
Pop	-32.341	19.354	-1.6710
CH	0.45511	0.2460	1.850
<u>Supply</u>			
srvac			
Fee			
G			

Table 3
System 2 Regression Results

<u>Variable</u>	<u>System 2</u>	<u>Standard Error</u>	<u>T-Ratio</u>
<u>BCPA</u>			
Constant	84.830	294.27	0.28828
q_a	-0.35437	0.039928	-0.88751
Supply	-2.7260	2.5858	-1.0542
srvac			
Fee			
G			
Y	-0.33049	11.321	-0.029192
Pop	-7.6336	4.7512	-1.6067
AH	0.074931	0.10571	0.70886
<u>Bailey Hall</u>			
Constant	-1475.8	560.01	-2.6354
q_b	1.2475	0.74607	1.6721
Supply	-0.24409	4.6328	-0.05268
srvac			
Fee			
G			
Y	55.407	21.657	2.5584
Pop	28.955	8.8768	3.2619
BH	0.10617	0.15970	0.66479
<u>City Centre</u>			
Constant	336.90	1035.0	0.32551
q_c	-0.30275	0.18878	-1.6037
Supply	10.253	9.2674	1.1063
srvac			
Fee			
G			
Y	-4.8674	39.904	-0.12185
Pop	-8.3393	15.906	-0.52428
CH	0.65217	0.25652	2.5424
<u>Supply</u>			
srvac	0.017002	0.62126	0.27366
Fee	-0.10751	0.07123	-1.5092
G	0.0072612	0.010701	0.67855

Sample Size: N= 30

System Chi Square: 39.809 with 18 degrees of freedom

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Table 4
System 3 Regression Results

<u>Variable</u>	<u>System 3</u>	<u>Standard Error</u>	<u>T-Ratio</u>
<u>BCPA</u>			
Constant	2855.60	272.52	1.0480
q_a	-0.015257	0.049493	-0.30827
Supply			
srvac	0.77487	0.58631	1.3216
Fee	1.3451	0.64813	2.0754
G	0.12023	0.20353	0.59069
Y	-6.3293	10.878	-0.58187
Pop	-11.681	6.1355	-1.9038
AH	0.090787	0.13019	0.69734
<u>Bailey Hall</u>			
Constant	-1518.8	414.17	-3.6583
q_b	1.4140	0.71477	1.9782
Supply			
srvac	0.77487	0.58631	1.3216
Fee	1.3451	0.64813	2.0754
G	0.12023	0.20353	0.59069
Y	59.508	16.341	3.6417
Pop	26.338	8.8813	2.9656
BH	0.13967	0.15290	0.91347
<u>City Centre</u>			
Constant	-210.24	705.58	-0.29796
q_c	-0.25423	0.16526	-1.5384
Supply			
srvac	0.77487	0.58631	1.3216
Fee	1.3451	0.64813	2.0754
G	0.12023	0.20353	0.59069
Y	15.095	28.279	0.53377
Pop	-5.5122	13.757	-0.40067
CH	0.65463	0.23486	2.7873
<u>Supply</u>			
srvac			
Fee			
G			

Sample Size: N= 30

System Chi Square: 39.354 with 15 degrees of freedom
