The Economics of Performing Shakespeare

James H. Gapinski


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The Economics of Performing Shakespeare

By James H. Gapinski*

The play's the thing
Wherein I'll catch the conscience of the
King.

Hamlet

With an origin dating back to David Garrick's Shakespeare Jubilee of 1769 held at the Bard's birthplace Stratford-upon-Avon, the Royal Shakespeare Company (RSC) made a formal debut in 1961, the year of its christening by Her Majesty the Queen. Besides As You Like It, its early repertoire included King Lear, Macbeth, and Richard III variously starring such notables as Peggy Ashcroft, Vanessa Redgrave, Diana Rigg, and Paul Scofield and staged at the Shakespeare Memorial Theatre in Stratford or the Aldwych Theatre in London. From these two proscenium, the former also known as the Royal Shakespeare Theatre, the RSC played to more than a half million people annually until 1982, when it moved from the modest and cramped quarters of the Aldwych to the lush and vast surroundings of London's newly completed Barbican Centre.

A nonprofit group, the Company is one of four such performing arts organizations in Britain to be designated as "national." Its designation seems to be apt because historically the Company has endeavored to reach beyond the artistic and physical limits of its twin headquarters. Since the mid-1970's, for instance, it has been offering experimental theater from The Other Place in Stratford and from The Warehouse—now relocated to The Pit—in London. It regularly stages productions in Newcastle-upon-Tyne, and it frequently broadcasts its efforts over television. It also tours internationally, its latest overseas achievements including the New York engagement of the marathon Life and Adventures of Nicholas Nickleby and the Broadway run of Good.

From all of its artistic activities, Shakespearean and otherwise, the Company succeeded in keeping its earned income ahead of inflation. According to Table 1, real earned income rose from £1.40 million in financial year 1965–66 (April 1965 to March 1966) to £1.84 million in 1979–80, and throughout that decade and a half, it grew at an average yearly rate of 1.34 percent. On the opposite side of the accounting ledger, however, stand the Company's expenses, which have continually outstripped earned income by a wide margin as the table reveals. That discrepancy, called the income gap and acknowledged as a hallmark of the nonprofit lively arts operating on either side of the Atlantic (William Baumol and William Bowen, 1966, pp. 147–50; 474), has been countered by patronage originating principally from the Art Council of Great Britain. Over time patronage has become an increasingly important component of RSC income, but, despite its magnitude, large year-end deficits have proven to be the rule.

Given its long tradition, its international presence, and its budgetary magnitude, the RSC must be recognized as a major cultural force. Nonetheless, very little has been done to determine the economic underpinnings of its operations. The Company uses labor and capital to generate output; yet its production function has escaped study. It sells output in the marketplace; yet its demand curve has remained hidden. It relies heavily on subsidy; yet the consequences of that support have not been quantified. Do the laws of production apply to the RSC? Do the laws of demand apply? Does the benefit from the

*Florida State University, Tallahassee, FL 32306. I thank Gordon Andrews of the University of Birmingham, Margaret D'Andrade of the Royal Shakespeare Company, George Darroch of the Arts Council of Great Britain, Trevor Gambling of UB, I. M. Hutchings of the Department of Inland Revenue, and Graham Jenkinson of the Department of Trade for help in developing the data file. I also thank Edward McIntyre of FSU and, once again, Gordon Andrews for help in making some sense of it. Thanks likewise go to Frederick Bell of FSU, and to an anonymous referee for comments on the initial draft of this paper. The responsibility for views and errors herein rests, I regret, solely with me.
subsidy outweigh its cost? These issues form the subjects of the present paper.

Section I is devoted to the production question. Section II takes up the demand matter while Section III makes the patronage inquiry. Section IV collects conclusions and offers comments. Because of severe data limitations involving RSC activities beyond the Memorial Theatre—hereafter referred to as Stratford—and the Aldwych, all analyses are restricted to those centers.

I. The RSC Production Structure

Work on the production structures of U.S. nonprofit lively arts (see my 1980 article) adopted the transcendental production function, whose special case of the Cobb-Douglas may be written as

\[ Q_{it} = \beta_1 e^{\beta_2 Z_{it}} e^{\beta_3 L_{it}^{\beta_3} K_{it}^{\beta_3}}, \]

where \( Q_{it} \) represents the quantity of cultural experiences generated by organizational unit \( i \) at time \( t \), while \( L_{it} \) denotes the quantity of labor, and \( K_{it} \) the quantity of capital used by \( i \) at \( t \). The subscripts \( i = A \) and \( i = S \) indicate Aldwych and Stratford, respectively. The \( Z_{it} \) signifies a dichotomous shift variable introduced to account for structural differences across the two theaters; in particular, \( Z_{it} = 0 \) and \( Z_{it} = 1 \) for all \( t \). Technical progress is posited to be disembodied and to be occurring at the rate \( \beta_3 \). Moreover, by virtue of the Cobb-Douglas formulation, factor proportions are taken to be variable to an extent specified by a unitary elasticity of substitution. It is true that a Hamlet is not quite the same without poor Yorick's skull, and that a Macbeth loses in a translation that omits the witches' cauldron. But, although a given play may require fixed proportions, a repertory entity does have the option of altering proportions during a season by substituting among the plays to be staged. Hence a unitary elasticity need not be at odds with the nature of the production process.\(^1\)

\(^1\)A unitary elasticity in the two-factor case actually conforms to estimates obtained for theater in the three-factor instance. The substitution elasticities reported in my earlier article (p. 584) for the labor and capital combinations lie on either side of one and average .94, a value close to the Cobb-Douglas mark.
The data required to estimate equation (1) came from several sources. Cultural experiences, interpreted as paid attendance in units, were counted by the Arts Council and were reported by financial year from 1965–66 to 1980–81. Although a few holes appeared in the series for each theater, they were quickly filled with the aid of information supplied directly by the RSC. Labor and capital numbers were prepared from nominal cost figures tabulated by Trevor Gambling and Gordon Andrews (1982). Examining the ten years 1968–69 to 1977–78, and thereby narrowing the present data set to the same period, Gambling-Andrews identified eight divisions of the RSC: players, senior management, administration, production, stage operations, theater operations, publicity, and miscellaneous. Except for the senior management, administration, and miscellaneous categories, RSC costs in the various divisions were apportioned between the Aldwych and the Stratford by Gambling-Andrews to gauge the activity originating from each center individually.

In quantifying the labor input for present purposes, it seemed prudent to regard at the outset RSC personnel as representing two different types of labor: artists and staff. Artists consisted of the players and the senior management inasmuch as the latter group included the: artistic director, directors, and designers. Although senior management costs had not been apportioned by Gambling-Andrews, that task was easily accomplished by appealing to the distribution of player remuneration between centers. Staff included everyone else: from carpenters to painters, from dressers to showmen electricians, and from program sellers to secretaries. This component required the apportioning of administrative and miscellaneous costs, and the procedure followed rivaled the one used for senior management: it relied on the distribution of nonartist remuneration.2

What eventually emerged for each theater were the expenditures on artists and staff by financial year. These expenses, expressed in units of pounds, were converted into units of man-hours through division by the average hourly earnings in manufacturing and other industries recorded in Regional Trends of the Central Statistical Office (CSO).3 To capture the regional variation of British wages, the hourly rates pertinent to the South East were adopted for the Aldwych, while those applicable to the West Midlands were selected for the Stratford. Drawn in units of pounds, the wage rates were translated into a financial-year basis before the calculations were made. Artist and staff man-hours were then summed to give the labor variable for each theater.

The capital variable fashioned for each center was a portmanteau measure including those expenses in the Gambling-Andrews data not classifiable as labor costs. Rent, utilities, taxes, insurance, repairs, depreciation, royalties, postage, and materials among other items found their way into the capital category consonant with the notion of service flow.4 Each theater’s capital expenses, in units of pounds, were then divided by a U.K. capital-price index (KPI) constructed as an average of the indices relevant to the costs of housing (including rent, taxes, utilities, and repairs), clothing, furniture, radio and electrical goods, books and newspapers, and motor cars. The components, derived from nominal and real consumer expenditure series appearing in the CSO Annual Abstract of Statistics, had a base value of 1.00 in calendar year 1975; they were reexpressed in terms of the financial year.

Estimating equation (1) in logarithms by ordinary least squares (OLS) on the 20 observations comprising the pooled data file for

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2To determine the sensitivity of the estimated production function to the apportionment rule chosen, a second rule was tried. Specifically, the costs of senior management were allocated according to the number of plays staged in each theater, and the costs of administration and miscellaneous were divided according to the number of performances. The differences in rules led to negligible differences in the estimated function.

3Instead of the average hourly earnings in manufacturing and other industries, those in theater or, more generally, in service industries would have been preferred as the conversion factor. They were not available, however.

4On the matter of rent, Stratford posed a problem because, unlike the Aldwych, it paid none, and therefore no rental costs were charged against it in the Gambling-Andrews report. To estimate that charge, the Aldwych rental figures were adjusted to allow for Stratford’s greater seating capacity, and the average of the derived figures was treated as a fixed annual mortgage payment.
the Aldwych and the Stratford from 1968–69 to 1977–78 disclosed a consistent pattern: \( \hat{\beta}_1 \) and \( \hat{\beta}_3 \), with \( \beta_1 \) symbolizing \( \ln \beta_1 \) and with the circumflexes signifying estimates of the respective parameters, were insignificant, regardless of whether the constant and the time variable were retained in the regression separately or jointly. The estimated rate of technical progress, \( \hat{\beta}_3 \), was especially weak. Its showing, which agrees with the argument by Baumol-Bowen (pp. 162–67) and with the finding by myself (pp. 582–83), ostensibly says that not much had been done to organizational patterns at the Aldwych and the Stratford during the years under consideration.

This lackluster performance of the constant and the time variable recommended that equation (1) be rerun without them, the result being posted in Table 2. Because the data underlying the fitted equation have both time-series and cross-section dimensions, checking for autocorrelation and heteroscedasticity seems to be obligatory.

Table 2 addresses the first issue. There the Durbin-Watson statistic (\( D-W \)) suggests the absence of positive and of negative autocorrelation at the 1 percent level, and this suggestion receives confirmation from a two-sided test of the residuals' sign pattern (N. R. Draper and H. Smith, 1966, pp. 95–97). That test statistic \( V \), a normal deviate, falls well below the critical value at the 2 percent level thereby pointing to acceptance of the null hypothesis of random sign arrangement.

Checking for heteroscedasticity follows the lines sketched by J. Benus et al. (1976, p. 133). The residuals are first separated into three different configurations based on the values of the dependent variable, \( \ln Q_{it}(=q) \). One configuration consists of three partitions: those residuals corresponding to the 7 lowest \( q \), those corresponding to the 7 middle \( q \), and those corresponding to the 6 highest \( q \). Another configuration follows a 7–6–7 split. A third entails two partitions; namely, the residuals associated with the 10 smallest \( q \) and those linked to the 10 largest. This 10–10 configuration amounts to a grouping by theater: the residuals for the Aldwych vs. the Stratford, respectively. For each configuration, variances of the residuals in the partitions are calculated and compared pairwise by an \( F \) test (John Freund, 1962, pp. 271–74) to determine if they differ significantly. Of the seven two-sided tests conducted across all configurations at the 2 percent level, none reject the null hypothesis of variance homogeneity.

The estimated Cobb-Douglas appears to be free from both autocorrelation and heteroscedasticity. It also performs well in other respects. Its \( \hat{R}^2 \) and regression \( F \) are quite respectable, and each of its coefficients is significantly different from zero. Its shift parameter assumes a positive value confirming the impression that the Stratford generates more output than does the Aldwych, ceteris paribus. Both output elasticities fall in the usual range, but labor's is almost twice

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**Table 2—Regression Results for the Production and Demand Functions**

<table>
<thead>
<tr>
<th>Descriptor</th>
<th>Production Function</th>
<th>Demand Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \hat{\beta}_2 )</td>
<td>.39341</td>
<td></td>
</tr>
<tr>
<td>( \hat{\beta}_4 )</td>
<td>.62405</td>
<td></td>
</tr>
<tr>
<td>( \hat{\beta}_3 )</td>
<td>.33191</td>
<td></td>
</tr>
<tr>
<td>( \xi_1 )</td>
<td>( .417 \times 10^{-2} )</td>
<td></td>
</tr>
<tr>
<td>( \xi_2 )</td>
<td>( -.199 \times 10^{-2} )</td>
<td></td>
</tr>
<tr>
<td>( \xi_4 )</td>
<td>( -.819 \times 10^{-5} )</td>
<td></td>
</tr>
<tr>
<td>( \bar{R}^2 )</td>
<td>.87</td>
<td>.96</td>
</tr>
<tr>
<td>( F )</td>
<td>41.32</td>
<td>199.02</td>
</tr>
<tr>
<td>( \hat{\rho} )</td>
<td>-.40</td>
<td></td>
</tr>
<tr>
<td>( D-W )</td>
<td>1.95</td>
<td>2.19</td>
</tr>
<tr>
<td>( V )</td>
<td>.279</td>
<td>-.553</td>
</tr>
<tr>
<td>Sample Size</td>
<td>20</td>
<td>28</td>
</tr>
</tbody>
</table>

---

*\( t \)-values are shown in parentheses.
capital's, supporting the intuitive notion that art is primarily the artist's—or, more broadly, labor's—medium. The sum of the elasticities indicates decreasing returns to scale: it is significantly less than one.

Customary laws of production evidently hold for the RSC, and in this additional respect the Company resembles its nonprofit cousins on the far side of the Atlantic (see my earlier article, pp. 582–86).

II. Demand Analysis

Cultural experiences, which cannot be inventoried, are sold at the moment of their production. Under the standard precepts the quantity \( Q_{ijt} \) of experiences demanded at time \( t \) by individual \( j \) from theater \( i \) may be represented as

\[
Q_{ijt} = \xi_1 + \xi_2 P_{it} + \xi_3 U_{it} + \xi_4 Y_{jt},
\]

where \( P_{it} \) denotes the real price of an experience from \( i \) at \( t \), \( U_{it} \) signifies the real price at \( t \) of an experience that substitutes for one from \( i \), and \( Y_{jt} \) represents the individual's real income at \( t \). Again \( i \) equals \( A \) for Aldwych and \( S \) for Stratford. Summing \( Q_{ijt} \) for each theater across \( N_i \) individuals and consolidating the separate aggregations for the Aldwych and the Stratford into a single expression yield

\[
Q_{it}/N_i = \xi_1 + Z_{it} + \xi_2 P_{it} + \xi_3 U_{it} + \xi_4 Y_{it}/N_i,
\]

where \( Q_{it} = \sum_j Q_{ijt} \) and \( Y_{it} = \sum_j Y_{jt} \). The \( Z_{it} \) continues as a dichotomous shift variable satisfying the condition \( Z_{Ai} = 0 \) and \( Z_{Si} = 1 \) for all \( t \).

As noted in Section I, the data on quantity came from the Arts Council and the RSC, and covered the financial years 1965–66 to 1980–81. Nominal own-price, derived by dividing attendance into box-office receipts inclusive of the value-added tax, originated from the same sources; it was expressed in units of pounds. Nominal substitute price took three different forms. In one version it was the price index for entertainment and recreational services, while in a second it was the average nominal price of admission to cinemas in Great Britain. The third version resembled the second except that it captured regional price variation; in particular, it consisted of cinema prices pertinent to the South East (for \( i = A \)) and the West Midlands (for \( i = S \)).

The Annual Abstract of Statistics served as authority for all three. The entertainment price index was based at 1.00 in calendar year 1975, and both cinema prices were denominated in unit pounds. Nominal income, defined as after-tax total personal income in Great Britain and calibrated in unit pounds, was drawn mostly from Regional Trends although some entries had to be obtained directly from the Department of Inland Revenue. To deflate the nominal measures, the Retail Price Index (RPI) prepared by the Department of Employment was selected. Like the entertainment price index, the RPI had a base of 1.00 in calendar year 1975. Great Britain population counts, in units, included all age groups, their source being Regional Trends. Series which were not supplied in a financial-year format were converted to that format. Due to the unavailability of some numbers beyond 1979–80, it was necessary to truncate all series at that point, and consequently the data file closed spanning the fifteen years from 1965–66 to 1979–80.

Equation (3) was fitted by OLS to the pool of 30 observations for the Aldwych and the Stratford. Run sequentially under the three definitions of substitute price, it left distinct

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5 Two elaborations of equation (3) were specified. One allowed for partial adjustment while another allowed the coefficients of own-price, substitute price, and per capita income to join the intercept in varying across theaters. Both elaborations failed at the regression stage.

6 Granted that such substitute prices are not without precedent in studying the demand for nonprofit theater (Susan Touchstone, 1980, pp. 36–37), they nevertheless leave something to be desired here because theatergoers may not regard golf or "Superman III" as a replacement for a live performance of Richard III. They may instead choose among the lively arts opting for symphony, opera, dance, or other theater rather than the RSC. Price series for several performing arts organizations that likely compete with the Company were constructed from Arts Council data, but they did not contain enough observations to warrant retention in the regression work.
traces of negative autocorrelation and cautioned about the significance of the intercept and the substitute-price coefficient. To address the autocorrelation problem and at the same time to pursue the significance issue, variations of equation (3) were estimated over a grid of values for the first-order Markov coefficient \( \rho \). The variations treated emerged by deleting the intercept and the substitute price individually and together, and given three price definitions, eight expressions were produced. At a cost of one observation per theater, each expression was transformed by the rule \( T - \rho T_{-1} \) for any variable \( T \), and it then was estimated under twelve alternative \( \rho \) values ranging from \(-.10 \) to \(-.90 \). The preferred fit was the one that minimized the residual sum of squares over the dozen, its \( \rho \) being designated \( \hat{\rho} \). All eight preferred renditions that obtained—one for each of the eight variations of equation (3)—corresponded to internal \( \rho \), and all were free from autocorrelation and heteroscedasticity. However, seven of the eight could be dismissed because of intercept or substitute-price insignificance. Only one rendering remained; it is reported in Table 2. \(^{10}\)

As the table indicates, the demand equation has acceptable \( \bar{R}^2 \) and regression \( F \) values. In keeping with a property discovered for the production function, the demand shift parameter is positive. The own-price coefficient is negative while the income coefficient is positive. All coefficients differ significantly from zero. Calculated at the means for the period 1965–66 to 1979–80, the price and income elasticities amount to \(-.657 \) and \(1.327 \), respectively. Apparently demand is price inelastic, and an RSC cultural experience is a luxury item. These results accord with intuition.

III. Subsidy: Its Effects, Benefit, and Cost

Information contained in the production and demand functions listed in Table 2 per-

mits an inquiry into the effects of patronage received by the RSC. It also enables a quantification of the benefit arising from the subsidy and a comparison of that benefit with its cost.

Appealing to the two equations and to their underlying data, Table 3 presents profiles of the Aldwych and Stratford operations in actual practice. An overbar indicates a mean value calculated from the common period of the production and demand analyses, 1968–69 to 1977–78. A tilde signifies a number calculated from the means. For example, \( \bar{Y} = \bar{X} / \bar{R} \), \( \bar{W} = \bar{W} / \bar{R} \), and \( \bar{M} = \bar{M} / \bar{R} \), where \( X \) and \( R \) denote nominal income and the RPI, respectively, and where \( W \) and \( M \) represent the nominal wage rate and the KPI, respectively. All denominations applicable earlier continue. Again, \( Z = 0 \) for Aldwych, and \( Z = 1 \) for Stratford.

Corroborating some evidence offered in Sections I and II, Table 3 acknowledges the Aldwych to be the smaller of the two outfits under actual conditions. It is smaller in labor and capital and thus in output, its output being roughly half that of Stratford’s. Both theaters, however, use labor intensively as the capital-labor ratios reveal. Both also show the marginal product of labor \( A \) to exceed the marginal product of capital \( \Omega \), a result echoing the sentiment, gathered from the output elasticities, that art is mainly labor’s medium. Real price, which is lower at the Aldwych, combines with quantity to determine real total revenue \( \Phi \), Aldwych’s being about half of Stratford’s. For each theater that revenue is insufficient to prevent real profit \( \Pi \) from assuming a large negative value: the Aldwych and the Stratford operate with sizable losses!

How do these profiles differ from those that would occur if the centers conducted business on a profit-maximizing basis? With \( \bar{W} \) and \( \bar{M} \) taken as predetermined, maximizing real profit separately at the Aldwych and the Stratford subject to the production and demand functions in Table 2 yields eight equations in eight unknowns: for each theater, real ticket price and the quantities of labor, capital, and cultural experiences. The results of such optimization appear in Table 3. The values \( \bar{K} \) and \( \bar{L} \) are now interpreted as

\(^{10}\) Examination for autocorrelation and heteroscedasticity during the search process involved the two autocorrelation tests and the 10–10, now 14–14, heteroscedasticity check described previously. The demand function in Table 2 was also subjected to 9–9–10 and 9–10–9 heteroscedasticity inquiries and passed both.
Table 3—Operations Profiles of the RSC under Actual and Profit-Maximizing Conditions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Aldwych Theatre Actual Conditions</th>
<th>Profit Maximization</th>
<th>Stratford Theatre Actual Conditions</th>
<th>Profit Maximization</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\bar{L}$</td>
<td>491,040</td>
<td>29,592</td>
<td>580,280</td>
<td>234,640</td>
</tr>
<tr>
<td>$\bar{K}$</td>
<td>299,680</td>
<td>20,053</td>
<td>373,870</td>
<td>162,402</td>
</tr>
<tr>
<td>$\bar{R}/\bar{L}$</td>
<td>.610</td>
<td>.678</td>
<td>.644</td>
<td>.692</td>
</tr>
<tr>
<td>$\bar{Q} = e^{\beta_4 Z}\bar{L}^{\beta_5} \bar{K}^{\beta_3}$</td>
<td>234,045</td>
<td>16,528</td>
<td>414,281</td>
<td>178,536</td>
</tr>
<tr>
<td>$\bar{L} = \beta_6 \bar{Q}/\bar{L}$</td>
<td>.297</td>
<td>.349</td>
<td>.446</td>
<td>.475</td>
</tr>
<tr>
<td>$\bar{Q} = \beta_7 \bar{Q}/\bar{K}$</td>
<td>.259</td>
<td>.274</td>
<td>.368</td>
<td>.365</td>
</tr>
<tr>
<td>$\bar{P} = (\bar{Q} - \xi Z \bar{N} - \xi_4 \bar{Y})/(\xi_2 \bar{N})$</td>
<td>1.77</td>
<td>3.78</td>
<td>2.19</td>
<td>4.38</td>
</tr>
<tr>
<td>$\bar{\Phi} = \bar{P} \bar{Q}$</td>
<td>414,260</td>
<td>62,532</td>
<td>907,275</td>
<td>781,326</td>
</tr>
<tr>
<td>$\bar{\Pi} = \bar{\Phi} - \bar{WL} - \bar{MK}$</td>
<td>-504,571</td>
<td>5,181</td>
<td>-213,843</td>
<td>316,848</td>
</tr>
</tbody>
</table>

the optimal input levels and not as the sample means. The other endogenous variables are reinterpreted accordingly. Relative to a profit-maximizing stance, the RSC in actual practice overproduces experiences at both centers. Aldwych overproduces by more than a factor of 14; Stratford, by more than a factor of 2. The labor and capital inputs are used to excess at both. Given the conventional shape of the demand curve facing each theater, real ticket prices fall below the profit-maximizing levels. Optimization would require prices to more than double at the Aldwych and to exactly double at the Stratford. Nevertheless, obeying the maximization principles would turn a box office profit. At the Aldwych, real profit would rise from £505,000 to £5,000 while at the Stratford it would soar from £214,000 to £317,000.11

Patronage, then, leads to lower prices, to increased cultural experiences, and to additional inputs. More people are exposed to Shakespearean theater, and more artists, carpenters, dressers, and secretaries are employed than would be true without the subsidy. Figure 1 depicts the comparison. There, as in Table 3, price is denominated in unit pounds. Cultural experiences, however, are expressed in thousands of units, and labor is set in thousands of man-hours. Points $I$ and $J$ identify the actual demand positions of the Aldwych and the Stratford, respectively, while points $I'$ and $J'$ site the corresponding production positions; $G$ and $H$ are the profit-maximizing demand points and $G'$ and $H'$ are the optimum production points.

The subsidy going to the RSC has the expected desirable effects. But are those

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11 It may bear repeating that the large differences noted come from comparing actual values of the RSC with target values defined by the optimum for a hypothetical profit maximizer. They neither say nor require that the optimality conditions, which are cast in terms of marginals, hold for large changes in the relevant variables.
effects justified in view of their cost? Does the benefit of the gift exceed its cost?\textsuperscript{12} To answer that question the benefit must be quantified, and one method for doing so treats the gift’s benefit as the resulting gain in consumer’s surplus.\textsuperscript{13} If the RSC were an unsubsidized profit maximizer, it would locate the Aldwych’s price and quantity at $G$ in Figure 1, creating a real consumer’s surplus represented by the triangle $CGD$: £1,266. Locating instead at point $I$, the Aldwych engenders a real surplus of CIF or £253,841. For the Stratford, profit maximization would yield the surplus triangle $AHB$ as opposed to the actual triangle of $AJE$, £147,712 vs. £795,341, respectively. Hence the RSC subsidy increases real consumer’s surplus by £900,204. Mean nominal patronage for the period 1968–69 to 1977–78 registers £610,616, which becomes £761,937 in real terms. It follows that RSC patronage has a benefit-cost ratio of 1.18: each £1.00 of subsidy returns £1.18 in benefit. The subsidy more than “pays” for itself, and by the customary argument it is justified.\textsuperscript{14}

IV. Conclusions and Comments

Economic laws hold at the Royal Shakespeare Company. The relationship between inputs and output obeys a well-behaved, standard production format; the linkages among quantity, price, and income observe established demand principles; and the subsidy received affects activity in the anticipated way. By its economics the Company closely resembles nonprofit lively theater in the United States.\textsuperscript{15} It has an output elasticity for labor that exceeds the output elasticity for capital and a marginal product of labor that exceeds the marginal product of capital. It evidences decreasing returns to scale, and it heeds an elasticity of substitution that seems to at least approximate unity. It appears to have missed the advance of technology. It faces a demand schedule that is price inelastic and income dependent, but one that is perhaps unaffected by pricing events in other leisure pursuits. It uses labor and capital to excess from a profit-maximizing standpoint, it underprices the cultural experience that it offers, and it occasions huge losses financed largely through patronage. By virtue of these similarities between the RSC and nonprofit theater in the United States, the findings reported here have a scope that goes beyond the boundaries of a single organization.

Nonprofit performing arts lend themselves to formal and traditional economic modeling. This trait should be consoling to public authorities because their decisions on the arts have economic consequences—consequences for price, quantity, employment, and capacity. Arts models have much to say about what those consequences might be, and thus they represent a useful tool for policy formulation. They may be especially useful at a time when public officials seek ways to cut a government deficit. The arts might be viewed in the legislative and executive branches as clear candidates for austerity because they seem to provide a luxury item for the few. The view from this paper is not at all that clear, inasmuch as decreased funding of the arts would reduce employment and output, would raise price, would destroy surplus, and would compromise a government program that has merit on economic grounds. The issue is hardly one-dimensional.

Research papers often close with an admission that much more must be done. This

\textsuperscript{12}Benefit-cost analysis is popular for evaluating the provision of public goods, and inasmuch as an RSC cultural experience can be construed as being at least partly public (Baumol-Bowen, pp. 380–86), the application of such analysis in the present circumstance seems to be appropriate.

\textsuperscript{13}Support for using consumer’s surplus to gauge the benefit in the applied context can be deduced from, say, Arnold Harberger (1971).

\textsuperscript{14}If the patronage figure were calculated as the mean of the reals reported in Table 1 rather than as the quotient of the means of nominal patronage and RPI, it would read £685,038, and the benefit-cost ratio would be 1.31, thereby strengthening the case for the subsidy. That case would be further strengthened if the subsidy number entering the arithmetic were the one pertinent to Aldwych and Stratford activities alone. Isolating Aldwych and Stratford patronage from total patronage was not attempted because the information on patronage allocation proved to be incomplete.

\textsuperscript{15}The U.S. experience is described in Baumol and Bowen (pp. 147–50; 162–67), my article (pp. 582–84), and Touchstone (pp. 36–39).
paper closes with a recognition that not much more can be done—not without new, comprehensive data. A decade ago the Ford Foundation (1974) made available a rich source covering the U.S. nonprofit lively arts, but that material has become tired and worn. Nothing as ambitious has been undertaken since, and nothing of its kind has ever been undertaken in the United Kingdom. Instead, research has had to proceed on the basis of individual efforts at collecting small samples, the sum of which fails to yield anything even remotely related to a consistent whole. Development of a consistent whole likely requires the support of agencies such as the Arts Council and the National Endowment for the Arts. Those entities are principal ones to decide if an appreciable furthering of cultural economics is to be or not to be.

REFERENCES


_____, Regional Trends (formerly Regional Statistics and Abstract of Regional Statistics), London: HMSO, various years.
