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Effects of Subsidies on Symphony Orchestra Repertoire

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Introduction

Symphony orchestras have the classic cost structure leading to market failure and the nonprofit organizational form. As a nonprofit, revenue sources include ticket sales, donations, government support, and other endeavors, leaving the determination of organizational goals uncertain. Quality programming, often part of the symphony mission statement, is associated with the nature of the repertoire. Works of the classics, e.g., Mozart, Beethoven, Strauss, Shostakovich, Rachmaninoff, are assumed to be more “quality” orientated than less “popular” works. Indeed, since the classics are the most popular, it is difficult to determine whether organizations with repertoires heavily biased towards the classics are quality, attendance, or budget maximizers. Three recent articles examine the effect of government grants on the repertoire of performing arts organizations and provide some evidence concerning the effects of these subsidies on the behavior of the organizations.

J. Lamar Pierce (2000) explores the effect of culture, politics, and government funding on the decisions made by American opera companies regarding the choice of repertoire over the period 1989-1994. Following DiMaggio and Stenberg (1985), Pierce develops Conventuality or Conformity Indices for 65 opera companies, 32 of which are included in his empirical work. The Index for an opera company is based on the average number of times an opera produced by one company is produced by all companies in the group. For example if there are three

companies in an opera group and they produced 24 operas by three different authors, the Index of Conformity would be equal to 8, ignoring the fact that one opera might be performed 20 times. Higher values for the Index indicate greater degrees of conformity.

Pierce regresses the conventionality index for the opera company on its budget, per capita city income, the percentage of revenue from non-federal public sources, the percentage of revenue from the National Endowment for the Arts (NEA), and indices of conservatism and inflexibility for each city in which the opera is located. While local government funding tends to promote more conventional programming, NEA funding has the opposite effect. Pierce notes that these results are consistent with expectation, arguing that the NEA has a reputation for supporting more controversial and newer artistic productions and not pressuring recipients for certain types of behavior. Local officials, Pierce argues, are more likely to apply pressure to support programs that appeal to wider audiences, which accounts for the finding that local government funding results in more conventional programming.

James Heilbrun (2001) provides evidence of a decline in repertoire diversity in American opera companies. The data show that since the early 1990's, U.S. Opera companies have shifted their programming to a more popular repertory. Using data provided by Opera America, Heilbrun constructs Indices of Conformity and Herfindahl Indices for six opera seasons between 1982/83 and 1997/9. He concludes that over the time period examined, opera companies in America have been shifting performances toward more popular and less demanding repertory.

John O'Hagan and Adriana Neligan (2005) also examine the effect of public subsidies on the nonprofit theater in England. Their emphasis is on determining whether the public subsidies affect decisions regarding the composition of the repertoire presented in recipient theaters. By regressing the Conventionality Index for 40 grant-aided English theaters on the size of the subsidy relative to total income, the size of the theater, the theater's location, and the population and average income in the area, they show that increases in state subsidies result in less conventionality in the English theaters.

Current evidence supports the proposition that both the amount and source of funding affect decision-makers' goals and changes in funding are likely to affect their choice of repertoire. Following these authors, we examine the effect of public lump-sum subsidies (unrestricted government grants) on orchestra repertoire. The data, supplied by the League of Symphony Orchestras (formerly the American Symphony Orchestra League) also allow us to

determine whether lump-sum grants by businesses and individuals have similar effects as those provided by public agencies. We attempt to determine the effect of these grants on the preferences of orchestra directors to perform the more popular works with more audience appeal and the contemporary works composed within the last 25 years.

Data and Model

The League of Symphony Orchestras (LSO) gathers detailed information on all sources and types of revenues and expenses, orchestra repertoire, and attendance by type of concert for member orchestras. The repertoire data, which are available on the Leagues' web-site, contain the complete programs of each orchestra including composers, selections, and performance dates. Highlighted in the summary are the top twenty composers with the largest number of selections scheduled (Mozart is the Babe Ruth of this group), and the "contemporary" composers (works composed within the past 25 years). From the orchestra schedules we can identify which orchestras are playing the popular works and which are showcasing the contemporary pieces.

Financial data used in this paper are from the confidential reports filed by member orchestras and compiled by the LSO each year. Among the data contained in these reports are the amounts and sources of all unrestricted funds received by each orchestra. Included are funds from federal, state, and local government, individuals, businesses, investments, community groups, and other sources. LSO have provided us with these data on a confidential basis for our research purposes. Combining the data from LSO with some socioeconomic and demographic data from the census allows the estimation of numerous equations designed to test the effects of unrestricted (lump-sum) grants from various sources on the choice of symphony orchestra repertoire.

We compute a set of ratios designed to approximate the Conventionality Index mentioned above. Specifically, like Heilbrun, we compute Herfindahl Indices for each orchestra. Virtually every performance includes works by the most popular classical composers; larger Herfindahl Indices would be associated with greater conventionality in programming. We also construct a second index of conventionality based on the average number of times the twenty most popular composers' works are performed per concert for each orchestra. Larger indices are indicative of more conventional programming. To represent less conventional programming, we construct an index based on the average number of times the contemporary composers' works are performed

per concert by each orchestra. The measure is an attempt to determine whether lump-sum grants allow greater freedom or flexibility in orchestra programming, and which types of orchestras are more likely outlets for the works of newer composers.

The explanatory variables that best explained orchestra repertoire include the unrestricted grants received from federal, state, and local governments as a percent of orchestra total operating budgets. The percent of individuals over age sixty-five and the percent of the population with at a Bachelors Degree in the orchestra's market area are also included in our model. Finally, the number of selections played per concert, the number of "pop-concerts" and the number of regular concerts performed by each orchestra are included as explanatory variables. Descriptive statistics of all variables are presented in Tables 1 and 2.

Empirical Results

Table 3 contains the estimates of the models designed to capture the effects of lump-sum grants from government sources and other control variables on the average number of times the most popular composers are performed per concert. In Table 4, we present results including the same independent variables on the number of contemporary works per concert. All models are corrected for hetroskedasticity. We do not report the results of the models estimating the determinants of the Herfindahl Index for each orchestra because our efforts proved fruitless.

The column labeled Model 1 in Table 3 presents the estimates of the model for all 105 orchestras in our sample. The remaining columns in Table 3 include the results for orchestras grouped by the size of the operating budget. Based on the full sample, government grants appear to have no effect on orchestra repertoire. The number of pieces per concert and the total number of regular series concerts are the only significant factors in explaining the preference for the classical composers. An increase in the number of pieces played per concert and the length of the season will increase the number of popular selections per concert.

Given the range of size of the members of the League of Symphony Orchestras, we consider the impact separately for large, medium, and small size orchestras. While many of the descriptive statistics are similar across orchestra size, there is a striking difference in the number of total concerts in a season, which was a significant determinant of the popular pieces in the repertoire. When the sample is broken up by orchestra size, the number of concerts is no longer

a significant determinant of repertoire. The number of pieces per concert remains significant; more pieces per concert increases the number of popular pieces per concert across the board.

For the larger orchestras, with operating budgets greater than \$10 million, the remaining significant factor affecting the choice of the popular classics is the age of the population. The larger orchestras will select a repertoire more slanted towards the classics in markets with a more elderly population. If the patrons reflect the composition of the population this may reflect the taste of the elderly for the classics.

For orchestras with operating budgets less than \$10 million, models 3-5 in Table 3, the results show a significant impact of state government support on repertory selections. For both medium and small orchestras, greater state government support decreases the number of “popular” selections, perhaps allowing more unconventional programming. This result is somewhat undermined for the medium sized orchestras when considering the impact of federal unrestricted grants. From column 5 (model 4), an increase in unrestricted federal grants significantly increases the number of popular pieces included in the repertoire. If government grants allow more unconventional, less popular repertory selections, we would expect to see a significant, negative impact at both the state and federal level. For smaller orchestras, with operating budgets less than \$3 million (model 5), education has a significant impact on repertoire. As the education level of the population in the market area increases, the orchestras play fewer popular selections per performance. Perhaps more educated patrons prefer less conventional selections or composers.

Table 4 contains the estimates of the effects of government grants and the control variables on the “Unconventionality Index,” the number of contemporary pieces per concert. In model 1 (column 2) of Table 2, we present the results for the full sample of 105 orchestras. The results are weakly supportive of the proposition that federal and state grants encourage less conventional programs, while local grants tend to discourage such activity. The results for the larger orchestras (column 3) add support to the proposition that local government grants are aimed at more conventional, less innovative programs. As Pierce argued, local support is probably aimed at increasing audience size and less likely to be interested in supporting less conventional programs.

The results for the medium and small orchestras (models 4 and 5) show that federal and state grants do have the effect of nudging the repertoires of these orchestras toward less

conventional programs. As with the popular selections, more pieces per concert allow more contemporary pieces to be played. While age has no influence, education has a significant impact for both the large and medium size orchestras. A more educated population in the market area significantly increases the selection of contemporary pieces. This is consistent with the findings for the model of popular pieces for the smaller orchestras, that more educated patrons may prefer more innovative programming.

Conclusion

The hypothesis that we wished to test in this paper is that unrestricted lump-sum grants allow for more innovative programming. If the orchestra is heavily dependent on ticket sales they may be forced to perform the popular classics that have greater audience appeal. While orchestras may wish to pursue more innovative programming featuring newer composers, revenue requirements may force a selection of pieces that are more recognizable and “easy” to listen to. For orchestras to showcase the newer composers they require outside, unrestricted funding such as federal and state lump-sum grants.

The models and empirical results are not consistently supportive of this hypothesis. While state lump-sum grants decrease the number of popular pieces performed by medium and small orchestras, the impact of government support on contemporary programming is rather weak. There is a lot of variation in the programming across the full sample of orchestras, yet the effect of government funding on these repertory choices is uncertain. The uncertainty may be a result of the model specification, estimation method, variable measurement, or the hypothesis itself.

Assuming the hypothesis is correct, that the mission of the orchestra directors may be at odds with the taste of the patrons, one problem in testing this hypothesis may be the measurement of conventionality. From the LSO reports, we have assumed that “popular” pieces reflect conventional repertories that align with the preferences of the patrons. Patrons are assumed to prefer the familiar classics, generating greater revenue and financial stability. We have assumed that one of the goals of the orchestra director is to promote the newer, innovative composers. If this is at odds with the tastes of the patrons, then revenue would suffer. This innovative “unconventional” programming is measure by the number of contemporary pieces played. It may not be the case that “contemporary” pieces capture the artistic ideal postulated as

part of the nonprofit mission. In fact, contemporary may include pieces that are not “quality” but are current and popular and included for their audience appeal.

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Table 1: Descriptive Statistics – Full Sample

Variables:	Mean	Median	Maximum	Minimum	Std. Dev.	Obs
Popular/Total Concerts	1.47	1.33	3.25	0.42	0.66	105
Contemporary/Total Concerts	0.17	0.13	0.65	0.00	0.14	105
Federal Govt. Support	38,524	0	1,644,175	0	163,918	105
State Govt. Support	195,587	47,795	2,791,791	0	507,640	105
Local Govt. Support	187,378	28,550	2,770,597	0	383,149	105
Total Operating Budget	12,698,674	3,503,667	122,000,000	152,794	21,831,294	105
Federal/Operating Budget	0.32%	0.00%	8.15%	0.00%	1.02%	105
State/Operating Budget	2.25%	1.41%	23.41%	0.00%	3.42%	105
Local/Operating Budget	2.60%	0.85%	53.99%	0.00%	5.86%	105
% Over Age 65	12.44%	11.69%	32.68%	7.36%	3.88%	105
% With Bachelor Degree	27.02%	26.18%	58.79%	8.98%	7.35%	105
Pieces per concert	2.64	2.40	7.25	0.67	1.18	105
Number of Pop Concerts	9.30	6.00	79.00	0.00	11.99	105
Number of Regular Concerts	28.17	15.00	116.00	4.00	27.73	105
Total Concerts	37.48	22.00	165.00	5.00	33.96	105

Table 2: Descriptive Statistics –Mean Values Individual Samples

Variables:	Model 1 Obs=105	Model 2 Obs=34	Model 3 Obs=71	Model 4 Obs=24	Model 5 Obs=47
Popular/Total Concerts	1.47	1.44	1.48	1.31	1.56
Contemporary/Total Concerts	0.17	0.19	0.16	0.18	0.14
Federal Govt. Support	38,524	97,372	10,344	21,164	4,819
State Govt. Support	195,587	492,944	53,191	104,593	26,944
Local Govt. Support	187,378	436,285	68,183	153,105	24,818
Total Operating Budget	12,698,674	33,479,972	2,747,066	5,424,360	1,379,937
Federal/Operating Budget	0.32%	0.31%	0.32%	0.39%	0.29%
State/Operating Budget	2.25%	2.53%	2.11%	1.77%	2.29%
Local/Operating Budget	2.60%	1.96%	2.91%	2.44%	3.15%
% Over Age 65	12.44%	11.40%	12.93%	12.31%	13.25%
% With Bachelor Degree	27.02%	28.32%	26.39%	25.49%	26.85%
Pieces per concert	2.64	2.37	2.77	2.23	3.04
Number of Pop Concerts	9.30	17.76	5.25	11.71	1.96
Number of Regular Concerts	28.17	59.62	13.11	19.92	9.64
Total Concerts	37.48	77.38	18.37	31.63	11.60

Model 1: Full Sample

Model 2: Budget>10 million

Model 3: Budget<10 million

Model 4: Budget <10 million and >3 million

Model 5: Budget< 3 million

Table 3: Dependent Variable - Popular Pieces Per Concert

Coefficient Estimates – t statistics in parenthesis

	Model 1	Model 2	Model 3	Model 4	Model 5
Independent Variables:					
Federal/ Operating Budget	-0.0905 (-0.03)	2.2449 (0.38)	-0.0574 (-0.01)	11.3105 (1.65)	-0.8984 (-0.15)
State/Operating Budget	-0.8857 (-1.07)	-0.6962 (-0.95)	-4.3304 (-1.91)	-8.5054 (-2.17)	-6.4279 (-2.12)
Local/Operating Budget	-0.7428 (-1.10)	-0.3760 (-0.28)	-0.4616 (-0.52)	-1.8798 (-0.73)	1.2006 (1.09)
Percent over age 65	0.8308 (1.61)	0.8179 (1.71)	1.4791 (1.30)	1.9085 (1.12)	-1.4868 (-0.89)
Percent with BA Degree	0.0025 (0.01)	0.6583 (0.89)	-0.5349 (-1.02)	-0.8645 (-0.71)	-1.1079 (-1.69)
Pieces Per Concert	0.5030 (16.72)	0.5611 (11.06)	0.4582 (11.30)	0.6193 (8.64)	0.3932 (8.22)
Number Pop Concerts	-0.0031 (-1.30)	-0.0018 (-0.72)	-0.0082 (-1.69)	-0.0013 (-0.18)	-0.0153 (-0.99)
Number Regular Concerts	0.0034 (2.72)	0.0019 (1.20)	0.0071 (1.58)	0.0106 (1.34)	0.0178 (1.45)
Constant Term	0.0108 (0.08)	-0.2350 (-1.06)	0.2149 (1.01)	-0.1381 (-0.38)	0.8306 (2.76)
Number of Observations	105	34	71	24	47
R-squared	.73	.90	.70	.93	.66
Model 1: Full Sample					
Model 2: Budget>10 million					
Model 3: Budget<10 million					
Model 4: Budget <10 million and >3 million					
Model 5: Budget< 3 million					

Table 4: Dependent Variable - Contemporary Pieces Per Concert
Coefficient Estimates – t statistics in parenthesis

	Model 1	Model 2	Model 3	Model 4	Model 5
Independent Variables:					
Federal/ Operating Budget	2.2583 (1.66)	-2.7283 (-1.13)	2.6592 (1.59)	7.7043 (2.85)	0.0388 (0.02)
State/Operating Budget	0.5187 (1.56)	0.2885 (0.96)	0.7977 (0.92)	-1.5900 (-1.02)	2.6995 (2.68)
Local/Operating Budget	-0.4215 (-1.55)	-1.4080 (-2.56)	-0.2985 (-0.87)	0.5801 (0.57)	-0.5134 (-1.40)
Percent over age 65	-0.1874 (-0.91)	-0.0658 (-0.34)	-0.3223 (-0.74)	-0.3758 (-0.56)	0.7388 (1.34)
Percent with BA Degree	-0.0084 (-0.05)	0.8630 (2.84)	-0.1088 (-0.54)	1.1875 (2.47)	-0.2488 (-1.15)
Pieces Per Concert	0.0548 (4.53)	0.0871 (4.20)	0.0511 (3.28)	0.0419 (1.48)	0.0644 (4.05)
Number Pop Concerts	0.0012 (1.25)	-0.0007 (-0.66)	0.0029 (1.56)	-0.0007 (-0.24)	0.0010 (0.20)
Number Regular Concerts	0.0001 (0.19)	-0.0011 (-1.60)	-0.0006 (-0.35)	-0.0023 (-0.74)	-0.0001 (-0.03)
Constant Term	0.0276 (0.48)	-0.1491 (-1.65)	0.0625 (0.77)	-0.1340 (-0.93)	-0.1245 (-1.25)
Number of Observations	105	34	71	24	47
R-squared	.089	.499	.058	.553	.172
Model 1: Full Sample					
Model 2: Budget>10 million					
Model 3: Budget<10 million					
Model 4: Budget <10 million and >3 million					
Model 5: Budget< 3 million					