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Art of the State:
Explaining State-Level Appropriations to Arts Agencies

Douglas Noonan

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School of Public Policy

Georgia Institute of Technology
D. M. Smith Building
Room 107
685 Cherry Street
Atlanta, GA 30332 - 0345

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Assistant Professor
School of Public Policy
Georgia Institute of Technology

Doug.Noonan@pubpolicy.gatech.edu

I. Introduction

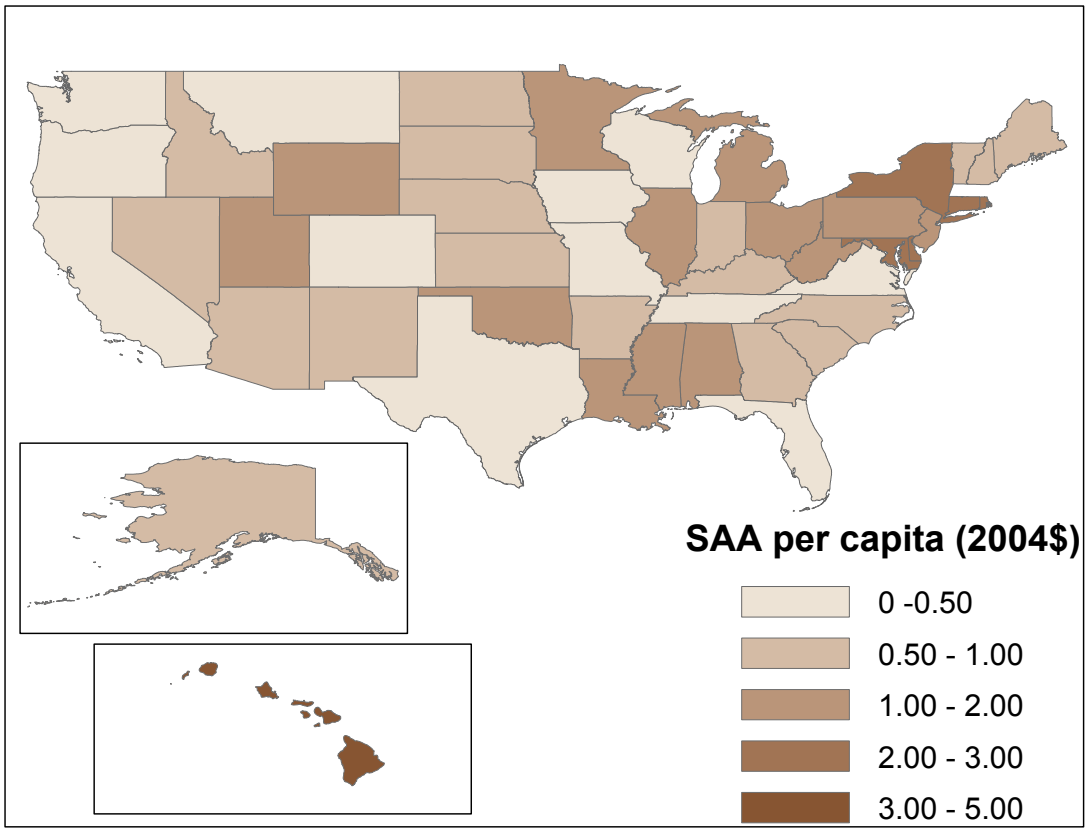
This report focuses on appropriations to state arts agencies (SAAs), a primary figure in arts and cultural policy in the United States. It examines a specific category of state government expenditures using variation over time and across states to identify the different influences on SAA appropriations. The statistical model sheds light on the fiscal, institutional, and demographic determinants of appropriations.

By 1974, all states had established an SAA. Although a few are much older, most SAAs were created largely to accept grants from the National Endowment for the Arts (NEA) after its creation in 1965 (Lowell 2004, Netzer 1978). The history and operations of SAAs have been thoroughly described elsewhere (Lowell 2004, Mulcahy 2002, Schuster 2002). SAA funding levels vary greatly across states. Per-capita SAA funding in 2004 ranged from $4.49 per person in Hawaii to $0 per person in Missouri, with an average of $0.99 per capita.[1] See Figure 1, below. Over the past 36 years, Hawaii has the highest average per-capita SAA appropriations ($4.48), while Texas has the lowest ($0.19). SAA funding derives from several sources, although state appropriations account for the lion's share. Grants from the federal government, via the NEA, amount to approximately $24.3 million per year in the past decade. The NEA, which is currently required to give 40% of its budget to SAAs, allocates its grants to states based on several criteria. Congress has altered the formula substantially on several occasions. Currently, about 81% of SAA budgets derive from state appropriations, plus only about 10% from NEA grants (Olsen

[1] Dollar figures throughout this paper are given in 2000 US$, unless otherwise noted.

2004). Millions of artists and over 20,000 organizations are funded by SAAs (Lowell 2004, NASAA 2005), making them a major force in public support of arts and culture.

Figure 1: SAA Funding per Capita, 2004

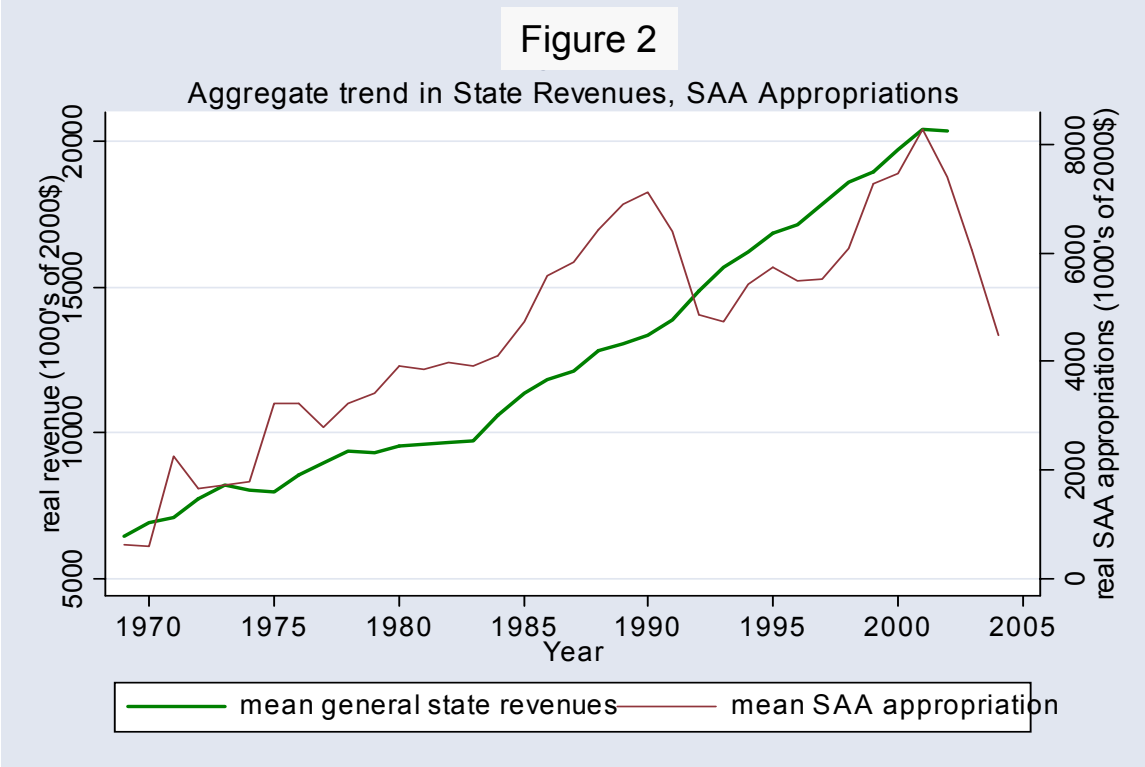


During the past 40 years, state budgets have undergone substantial transformation. Since 1969, real state revenues have climbed by 336% on average. This rapid expansion of state budgets has outstripped the average increase in gross state product (GSP), which increased by 234% on average. All but one state has introduced some form of balanced budget requirement that limits the flexibility of states to respond to fiscal shocks (Poterba 1994, Sheffrin 2004). Yet, the economic downturn since 2001 has affected state budgeting significantly, with some states particularly hard hit. Various authors offer explanations for this most recent "fiscal crisis," with most attention being paid to states'

changing revenue bases states and slowness in raising taxes (e.g., Sheffrin 2004, Maag et al. 2003).

In light of the recent fiscal crisis for states, public funding of the arts becomes even more intriguing. With SAAs accounting for almost 30% of all public arts funding (Mulcahy 2002), arts and cultural programs may be particularly sensitive to conditions of state budgets. Yet the relationship is hardly reciprocal. On average, states allocate less than 0.05% of their annual budgets to SAAs (NASAA 2005). Often considered a luxury or nonessential publicly provided good, arts programs may be particularly vulnerable in times of recession. There is also disagreement over the constituency served by SAAs (Lowell 2004, Jacobs 2004). Previous observers have characterized the constituency of public arts funding as rather elite (Grampp 1989), narrow (Lewis and Brooks 2005), highly networked (Barsdate 2001), and diversifying (Schuster 2002). The nature of SAA constituencies should affect the SAAs' susceptibility to budgetary shocks.

While the fiscal trends for states can be casually linked to SAA budgets, this paper seeks to formally explain the factors that account for states' differential funding patterns over time. The aggregate trend in Figure 2 indicates that SAA budgets are responsive to general state revenues, while growing even faster in the past three decades. Yet the aggregate trends mask complex variation in the disaggregated data. This report explores these different influences on SAA budgets, a policy area that simultaneously dominates direct public arts funding and borders on irrelevance in terms of overall state budgets.



To explore the determinants of state arts agency appropriations, the remainder of this report is organized as follows. Section II reviews the relevant literature on state expenditures and SAAs budgets in particular. This section also sketches a theoretical model of SAA appropriations. Section III presents the results of the statistical analyses and hypotheses tests. Finally, a discussion of the results concludes in Section IV. (Appendix A describes the data used, while Appendix B outlines the empirical estimation procedure and full results.)

II. Literature Review and Theory

Previous literature on state budget-setting has focused on overall levels of spending by state governments and occasionally on spending in broad categories. Besley and Case

(2003) review much of this literature. They discuss some effects on spending of party competition, demographic composition, and institutional rules. They acknowledge that more research is needed to better understand these relationships. Sheffrin (2004) also recently summarizes much of this literature. He and many others have emphasized the role of institutional rules of political parties on state-level spending. (See, for example, Alt and Lowry 1994, 2000; ACIR 1987; Poterba 1994; Craig et al. 1988; Maag and Merriman 2003, Merrifield 2000, and Payne 1998.) This previous research is largely empirical and tends to focus on general state-level expenditures or spending in major categories (e.g., Dye and McGuire 1992, McCarty and Schmidt 1997). A few researchers have examined spending on specific, priority areas for state budgets. For example, Taggart (1989) looks at spending on corrections, Manwaring and Sheffrin (1997) explore spending on education, and Besley and Case (2003) model spending on family assistance and workers compensation. This paper report further narrows the scope of analysis in the state budgeting research to the appropriations to a specific state agency (the SAA).

Although a small program area, state arts agencies have attracted much scholarly attention. In their very early analysis of SAA appropriations, Hofferbert and Urice (1985) find SAAs an excellent "small-scale policy" area. Later, Netzer (1992) also explores determinants of SAA budget levels in 1987. The following analysis exploits over 30 years (rather than just five for Hofferbert and Urice and just one for Netzer) in a considerably more robust statistical framework.

A handful of economists have discussed the institutional factors, relevant constituencies, and incentives facing decision-makers regarding SAA funding. Grampp (1989) identifies the opportunity for and evidence of interest groups obtaining subsidies via arts funding. The possibility of arts agencies' "capture" at the hands of interest groups is emphasized by Lingle (1992), Peacock (1994), and Rizzo (1998). Frey (2000) and others have long wondered how publicly funding the arts will alter the types of arts produced. Rushton (2001) notes the lack of inquiry into the process by which interest group politics translates into changes in arts policy. He questions the notion that arts funding results from elites lobbying for subsidies, as arts programs may enjoy wide support from the public.

The approach taken here starts with Besley and Case (2003) to formally or explicitly model SAA appropriations.[2] For details of the approach, see Appendix B. The basic idea is a state's appropriations to its SAA in any given year depends on several factors. These factors fall under three categories: political composition, institutional context, and economic and demographic characteristics affecting policy preferences. The potentially complex policy processes that determine appropriations are then explained in a statistical model that incorporates these political, social, and economic conditions in each state in each year. For SAA budgets, the political composition variables include a description of the party control of the state legislature and the governor's office. The institutional context variables include an indicator of each state's balanced budget rules, the age of its

[2] Merrifield's (2000) model of spending might also be used here. He models SPEND = *f*(marginal utility of public office, marginal perceived benefits of spending, marginal perceived costs of spending, income, tastes, decision-making constraints). Such an approach can lead to comparable empirical tests.

SAA, and the statewide voter turnout rate. Many economic and demographic characteristics should be included, such as population, population density, minority populations, school-age and elderly populations, education levels, and per-capita income. Fiscal variables are also likely to play a prominent role in explaining appropriations. Accordingly, the analysis controls for previous year's appropriation levels as well as current and previous years' revenue, debt, and NEA grant levels.

The report uses a wide array of factors to explain SAA appropriations. This allows testing of several of key claims in the literature on public funding of the arts. Most of these findings emphasize the role of fiscal pressures, institutional context, and constituency efficacy. Lowell (2004) argues that SAAs are particularly vulnerable to budget cuts during fiscal crises. Olsen (2004) and NASAA (2005) echo this by noting that fiscal conditions are the single largest determinant of SAA appropriations. Hofferbert and Urice (1985) claim that "policy norms" (measured by state-level spending in certain areas) explain much of the appropriations. Debate over government-funded arts follows closely along party and ideological lines, although links to actual policy decisions are less clear (Lewis and Brooks 2005). Getzner (2002) tests for the influence of party control on public cultural expenditures in Austria and finds none. The location of the SAA within state governance (in cultural affairs department, in economic development department, etc.) may affect its political autonomy (Mulcahy 2002) and also its appropriations.

Beyond fiscal and institutional factors, constituencies are frequently expected to exert influence over agency budgets. Lowell (2004) observes an important role of constituents in securing SAA funding, even while the SAA constituency appears to be changing over recent decades. Arts patrons, the educated (and urban) elite, supported SAA funding while actual and potential grantees conducted most lobbying efforts (Lowell 2004). Barsdate (2001) observes how advocacy networks developed alongside growing SAA budgets in the 1990s. On the other hand, Rushton (2003) suggests that recently declining public arts funding may be due to rising transaction costs, especially those associated with increasing cultural diversity in the nation. In that case, we might expect to see a general erosion or diffusion of the SAAs' constituency base over time. Hofferbert and Urice (1985) find that constituency variables do not play a large role in SAA appropriations, while agency age and NEA funding had some impact.

III. Results

As explained above, the objective in the statistical analysis is to best explain the annual SAA appropriations in each of the fifty states over the timespan 1969 – 2002. Several factors are expected to possibly contribute to the appropriations in a state year, either in a positive or a negative way. For instance, last year's appropriations are likely to be positively related to this year's appropriations, on average. The same goes for state revenues this year. On the other hand, NEA grants to the state may be negatively related to state SAA appropriation, on average, if NEA funds crowd out state funds and budget-makers take federal grants as an opportunity to reduce their funding. Likewise, if Republican leadership traditionally opposes public arts funding, Republican

governorships or legislatures may be negatively associated with SAA appropriations, on average. To test for these relationships, data for 50 states and 33 years is used as described in the appendices.

The statistical analysis can be undertaken in a variety of ways. This report focuses on two different models. The first model, Model 1, is the base. Model 2 is the same as Model 1, except that each state is allowed have its own baseline growth rate in appropriations. Each state might be expected to grow faster or slower than another state. For Model 2, New York serves as the baseline to which each state is compared.[3] These state-specific growth rates might be interpreted as the net effect – above and beyond the other fiscal, institutional, and demographic factors already explicitly accounted for – on SAA budgets of being located in that state. Thus, if Tennessee just funds SAAs differently than Arizona, for whatever reason, this is captured by the state effects in Model 2. Model 1 treats all states as having the same baseline SAA growth rate. The estimates presented below are robust to a variety of issues that plague statistical estimations of this sort (e.g., endogeneity of historic funding levels, heteroskedasticity, serial correlation in the errors).

Table 1 presents a summary of the results for Model 1 and Model 2. Where a variable contributes (positively or negatively) to annual SAA appropriations, on average, an "effect" value is given. Where a variable does not make a contribution significantly

[3] State-specific effects are also not directly estimated for Utah and Nebraska, because they are collinear with other variables in the analysis. In the case of Nebraska, its unicameral legislature makes it unique and, by controlling for party control of different houses of the government implicitly controls for Nebraska's state effect. Similarly, for Utah, its SAA is extremely old (founded in 1899), and controlling for age of SAA serves capture Utah's state effect.

different than zero, a zero is listed.[4] The effect values listed carry important practical interpretations, too. For each variable, the effect indicates the expected increase (or decrease) in SAA appropriations if a state increased its value of the variable by the amount listed in column 2. Hence, for *Year* in Model 1, we can see that each additional year is association with a 2% decline in SAA appropriations. For *Income* in Model 1, on the other hand, Table 1 indicates that a 10% increase in per capita income is associated with a 7.8% rise in SAA appropriations in that state. For some variables, the effect is measured relative to some other category. In Model 1, for instance, a unified Democratic government funds SAA's 6% more, on average, than state with Democratic governors and Republican legislatures.

The results for Model 1 paint an interesting initial picture of SAA funding dynamics. The lion's share of a SAA's appropriations is determined by the previous year's funding. If appropriations changed by 10%, up or down, the agency can expect their budgets in the following year to also be 7.5% higher or lower, everything else held constant. State debt from two years prior has a small positive effect on SAA appropriations. Interestingly, changes in NEA grants to the state, both in the current year and two years prior, affect present SAA appropriations – and there does not appear to be any crowding out. If NEA grants rise by 10% in the current year, SAA appropriations from the state (which are measured exclusive of NEA grants to the agency) are expected to rise 1% in the current year and again by 1% two years later. State governments do not take the opportunity to

[4] Appendix B presents the same results for Table 1 and Table 2, except that the 0's are replaced with the expected or average effect, even when this effect is estimated with so much noise that we cannot confidently say that the effect is not truly zero. A 10% level of significance is used in Table 1 and Table 2, meaning that only those effects that we can be 90% confident that their true effect is not zero are reported.

reduce their appropriations. If the proportion of the population that is school-aged declines by 0.01, SAA appropriations tend to rise by 2.4%. A youthful population negatively contributes to SAA funding. For instance, if the share of school-aged population in a state drops from 30% to 29%, the SAA budget can expect to fall by 2.4%. Similarly, large elderly populations appear negatively related to SAA appropriations. Controlling for everything else, a state that rapidly ages from 30% of its population to 40% of its population being elderly can expect a 1.9% drop in SAA appropriations. Wealthier states have significantly higher SAA appropriations, with each 10% rise in per capita income reflected in a 7.8% rise in appropriations.[5]

Institutional and political variables also figure prominently. Party control of the state government also plays an important, but perhaps unexpected, role. Relative to the type of partisan control most common between 1969 – 2002 (i.e., Democratic governor with a Republican legislature), certain types of governments fund SAAs more generously. States with a Republican governor, with Democratic or a divided legislature, appropriate 10% or 9% more funds to SAAs than the default category, respectively. A unified Democratic government appropriates 6% more, compared to the same state with a Republican-controlled legislature. A negative 2% growth rate for SAA appropriations prevails, although strong growth in income and state revenues obviously make up for this downward trend. Older arts agencies get funded less (although this effect largely

[5] The income effect estimated here compares fairly well with another commonly cited income elasticity measures for arts funding. The estimate in Model 1 resembles a general relationship between income and willingness-to-pay (WTP) for arts programs. In the sample of original contingent valuation studies identified in Noonan (2004), the average WTP rises 7.4% for each 10% increase in the mean income of the study sample. Likewise, here, states appropriate 7.8% more funds for each 10% increase in income.

captures effects specific to Utah). Finally, states with stricter balanced budget requirements tend to appropriate more to the arts agencies.

Yet the analysis in Model 1 is limited in that it restricts each state to have the same underlying growth rate in SAA appropriations. Some states, for reasons not captured in the many economic or demographic variables included in the analysis, may treat SAAs quite differently. Model 2 accounts for this by letting each state have its own, state-specific growth rate in SAA appropriations – exclusive of the contributions of the other variables listed in Table 1. (These state effects are reviewed below, in Table 2.) The rightmost column in Table 1 indicates that allowing for each state to have its own appropriations growth rate influences the role of several of the variables. When the effect changes substantially from Model 1 to Model 2, this suggests that the effect in Model 1 was due to treating every state as the same.

The results from estimating Model 2, as shown in Table 2, paint the most statistically robust picture of SAA appropriations dynamics. Here, SAA funding is again closely linked to previous year's funding. The role of current and previous year's overall state revenues, however, play a much greater role. A state that receives a 10% increase in overall revenues, all else held constant, can be expected to increase SAA appropriations by 1.7% that year, by 2.0% the next year, and 0.7% in the year after. This ripple effect through time suggests that SAAs, like other government programs, adjust slowly to fiscal pressures and cyclical economic shocks. State debt levels also influence SAA appropriations, although not immediately. The effect of greater debt is negative one year

removed, yet this effect "corrects" itself in the next year. The effect of NEA grants is similar to that in Model 1. States with greater density tend to fund their SAAs better, consistent with growing urban constituencies achieving some lobbying success. The negative effect of youthful populations observed in Model 1 is even stronger in Model 2, while elderly populations' effect diminishes. More people graduating from high school in a particular year is also associated with lower SAA budgets.[6] As the income of a state rises by 10%, their SAA appropriations can be expected to rise by almost 9%. Once state-specific effects are controlled for, the influence of the variables accounting for partisan control of state government declines. Model 2 shows that, relative to a state with a Democratic governor and a Republican legislature, only a state with a Republican governor and a Democratic legislature can be expected to have significantly different SAA appropriations. In this case, the divided government with a Republican governor (as opposed to a divided government with a Democratic governor) tends to appropriate 8% more to SAAs. The negative growth rate is even stronger in Model 2, with states' appropriations falling by 6% annually on average, all else equal. Moreover, similar to Model 1, SAA appropriations tend to fall by 6% in the first year of each presidential term. Again, states with stricter balanced budget rules tend to fund their SAA more generously.

[6] Education levels, which are commonly found to be strong predictors of support for the arts (e.g., Peterson et al. 2000), exhibit the reverse effect in Table B. This warrants further investigation with better measures of education levels.

Table 1: Determinants of SAA Appropriations, 1969 – 2002.

Variable	An increase in Variable of …	Model 1 Has this effect…	Model 2 Has this effect…
Appropriations last year	10%	7.5%	6.4%
State revenues this year	10%	0	1.7%
State revenues last year	10%	0	2.0%
State revenues two years ago	10%	0	0.7%
State debt level this year	10%	0	0
State debt level last year	10%	0	-0.6%
State debt level two years ago	10%	0.5%	0.6%
NEA grants to state this year	10%	1.0%	1.0%
NEA grants to state last year	10%	0	0
NEA grants to state two years ago	10%	1.0%	1.2%
Population	10%	0	0
Density	1 person/acre	0	6.6%
Percent black	0.1	0	0
Percent nonwhite, non-black	0.1	0	0
Percent aged 19 or less	0.01	-2.4%	-6.4%
Percent aged over 65	0.1	-1.9%	0
Percent of population graduating high school this year	1 diploma/1,000 residents	0	-0.2%
Income, per capita	10%	7.8%	8.9%
GOP governor, split legislature	relative to "Dem. governor, GOP legislature"	9.0%	0
Dem. governor, split legislature		0	0
GOP governor, Dem. legislature		9.6%	8.2%
GOP governor, GOP legislature		0	0
Dem. governor, Dem. legislature		5.9%	0
Voter turnout	0.1	0	0
Year	1 year	-2.4%	-6.4%
First year of presidential term	relative to fourth year	-5.2%	-6.2%
Second year of presidential term		0	0
Third year of presidential term		0	0
Year that SAA was founded	10 years (newer)	0.2%	0
Strictness of balanced budget rule	1 unit stricter[a]	0.5%	2.2%
State effects		None	See Table 2

[a] This is a scale from 0 – 2, where 2 is the strictest, based on ACIR (1997).

It is worthwhile to note the variables that do not appear to influence SAA appropriations. Interestingly, total population and the proportion of minority populations are unrelated to funding levels. These variables indicate that lobbying efforts are not closely linked to racial composition in a particular state. Voter turnout and, when controlling for state-specific effects, age of agency also have no influence on appropriations. This suggests that SAA lobbies may not be closely linked to general political involvement and may not be improving over time for a given SAA.

Table 2: State Effects on Changes in SAA Appropriations

State	Effect	Location	State	Effect	Location
AK	0	Education	MT	-1.5%**	Independent
AL	0	Independent	NC	-3.1%***	Culture
AR	0	Culture	ND	2.6%**	Independent
AZ	3.5%*	Independent	NE		Independent
CA	0	Independent	NH	2.8%**	Culture
CO	0	Independent	NJ	-5.8%***	State
CT	0	Independent	NM	2.1%*	Culture
DE	-1.9%*	State	NV	6.5%***	Culture
FL	-3.1%*	State	NY[a]		Independent
GA	-2.1%**	Governor's office	OH	0	Independent
HI	0	Accounting & General Services	OK	0	Independent
IA	0	Culture	OR	2.3%**	Indep./ Econ. Dev.
ID	2.7%***	State	PA	1.5%**	Governor's office
IL	2.0%**	Independent	RI	-4.3%***	Independent
IN	-1.6%**	Independent	SC	-3.0%***	Independent
KS	0	Independent	SD	0	Econ. Dev.
KY	0	Commerce Cabinet	TN	-2.5%***	Independent
LA	0	Culture	TX	0	Independent
MA	0	Independent	UT[a]		Econ. Dev.
MD	0	Econ. Dev.	VA	0	Independent
ME	0	Independent	VT	0	Independent
MI	2.1%***	Culture	WA	2.0%**	Independent
MN	3.1%***	Independent	WI	2.9%***	Independent
MO	0	Econ. Dev.	WV	-2.8%***	Culture
MS	1.8%**	Independent	WY	2.5%***	Culture

[a] Nebraska, New York, and Utah were omitted due to multicollinearity with other covariates. All effects are measured relative to these states.

Table 2 indicates the state-specific effects from Model 2 (but not listed in Table 1). Recall that these effects are measured relative to New York (and Nebraska and Utah, although these two states' effects are captured by other variables in the model). Hence, each effect listed in Table 2 represents the average difference in growth rates, positive or negative, between the state listed and New York. This means that Idaho's SAA appropriations tend to grow 2.7% faster, while Georgia's grow 2.1% slower. These effects are average effects, controlling for all of the other variables listed in Table 1. Thus, they capture anything else specific to the state that doesn't vary over time. In a sense, this quantifies the "Idaho-ness" or "Georgia-ness" of a state's SAA funding.

Large positive values are found in states that tend to fund their SAAs above average (e.g., Nevada, Arizona, Minnesota), while larger negative values are associated with states that are less "arts-friendly" (e.g., New Jersey, Rhode Island, Florida). Because these state effects are "net" of the other factors included in this analysis, the values in Table 2 are not mere reflections of the values in Figure 1. A state might fund the arts relatively poorly on a per capita basis, such as Wisconsin, yet tend to fund it much better than its peer states once you control for the other factors that influence SAA appropriations (e.g., fiscal variables, demographics, party control).

The analysis above allows the testing of various hypotheses put forward by other commentators and analysts of public arts funding. Many of these claims were reviewed in Section II, above. First, the "flypaper effect" of NEA grants to states can be assessed. The flypaper effect refers to the tendency of an earmarked intergovernmental grant to not merely result in a compensatory reduction in funding by the recipient government (Hines and Thaler 1995). For instance, if the federal government increases its grant to a SAA by $1 million, the state could then reduce its appropriations to that SAA by an equal amount and take that $1 million in savings to spend on other projects or tax reductions as desired by the legislature (despite the fact that the $1 million was originally earmarked for the SAA). In practice however, even without requirements that states match federal earmarked grants, states do not tend to reduce funding to areas that receive federal grants on a one-to-one basis. Substantial portions of the federal grants "stick" to the earmarked project, hence the name "flypaper effect." The effect of NEA funding observed in Model 1 and Model 2 is even more interesting in light of the matching requirements to NEA

grants to states. Because the share of SAA budgets from NEA grants dipped by 50% decades ago, states clearly want to fund their SAAs at levels far beyond the level subsidized by federal funds. Yet the median effect in 2004 of another dollar of federal NEA grants is to boost SAA appropriations from the state by $0.38. Thus, for each additional dollar received by a typical SAA from the NEA, their state government will appropriate another $0.38 that year. This positive multiplier on NEA basic state grants suggests that NEA funds have more than a strong flypaper effect – they also attract additional state funds.[7]

Second, a common perception that public arts funding grows more under Democratic leadership can be tested with Table 1. The impression that Democratic states fund the arts more generously derives, at least partly, from the tendency of Democratic governments to press for increased state spending (Sheffrin 2004) and from the liberal leanings of arts supporters (Lewis and Brooks 2005). Yet Table 1 shows that the story is not quite so simple. Republican governors with a Democratic legislature is the best situation for SAA appropriations, with a Republican governor and a split legislature being the second-best situation. A unified Democratic government ranks as third-best. There is no significant difference in appropriations among the other situations. One plausible factor explaining the absence of a clear positive relationship between Democratic leadership and SAA budgets is the substitution between public and private

[7] Because the effects of NEA grants are estimated as an average across the timeframe 1969 – 2002, this positive multiplier may be driven in large part by the matching requirements of NEA grants, which actually bound some states during the earlier years of SAA history.

funding sources. Democratic states may not fund the arts more via SAA appropriations, in part because they fund the arts better via private channels.

Third, the institutional context of SAAs plays a role. The department of state government in which the SAA is located is thought to influence its ability to secure funding. The current departmental location of each SAA is listed in Table 2. Most SAAs are located in state, cultural, or economic development departments, or are independent agencies. Those agencies located in economic development or cultural departments tend to have their appropriations grow at a slower rate than SAAs in other departmental locations. Stricter budget rules are associated with faster growth in SAA appropriations, rather than slower growth as Barsdate (2001) suggests. The inability of SAA funding to keep pace with inflation presents another challenge for SAA budgets and SAA supporters (who do not appear to be building an increasingly effective lobby, at least relative to other interests).

Fourth, hypotheses about a changing constituency base over time can also be tested. Rushton (2003) suggests that increasing diversity may lead to declining public support for the Arts. Lowell (2004) also emphasizes the SAAs' shifting constituency base. Taken individually, no time trend is evident in the influence of population, density, or racial composition. On the other hand, larger proportions of the population that is elderly was associated with lower SAA appropriations initially, but this negative effect is attenuated over time so much so that its effect on appropriations becomes positive by 1981. The high school graduations rate's negative effect on appropriations also fades

over time such that it becomes positive (i.e., more graduations per capita occur in states with greater SAA appropriations) by 1990. The relationships between SAAs and their constituents do appear to be changing over time.

Finally, income and revenue elasticities warrant more detailed investigation in light of the common perception that SAA appropriations may do well in times of economic growth, but suffer disproportionately in recessions. This possible asymmetry is tested by modifying Model 1 to allow for state revenues and per capita income to have different effects depending on whether they were growing or declining from the previous year. Like in Model 1, no significant effects of state revenue changes, up or down, are detected except for revenues two years ago. It seems that, when revenues fall by 10%, SAA appropriations two years later are expected to fall by 1.2%. The most interesting result comes from changes in per capita income, not overall state revenues. Here, a 10% growth in income is associated with a 11.2% increase in SAA appropriations. Conversely, a 10% decline in income is associated with a very small change in appropriations – one that is not statistically significantly different than zero. These results lend little support to those who fear that SAAs fare particularly badly during recessions. SAA appropriations are indeed sensitive to state revenue levels, and the effects of changes can be felt for several years. Yet, in the years 1969 – 2002, there is no evidence that SAA appropriations are particularly sensitive to recessions. If anything they are particularly sensitive to times of increasing economic prosperity.

V. Discussion

In summary, the appropriations to SAAs follow a somewhat predictable pattern. Previous year's funding levels and other fiscal variables account for much of the variation in SAA appropriations. In particular, general state revenues from up to two years ago affect current SAA funding, and NEA grants complement state arts appropriations. Statewide demographic trends also guide SAA funding. Denser populations, with fewer youths and elderly, predict larger SAA budgets, just as rising prosperity is a driving force in rising SAA appropriations. The party composition of state governance plays an important, but complex, role as well. Democratic legislatures and divided state governments bode well for SAA funding. Temporal effects are strong also, with SAA budget growth suffering a downward time trend and cyclical declines associated with the first year of presidential terms.

These findings significantly add to our understanding of SAA budgeting processes. Perhaps most importantly, the results indicate that NEA funding leverages even more state appropriations. Crowding out from federal aid is not observed. Moreover, SAAs are sensitive to shocks to overall state budgets, and the effects of changes in general revenues ripple through SAA budgets for several years. The claim that SAA budgets are particularly vulnerable during state fiscal crises finds only limited support here. Revenue declines have a significant, negative effect on SAA appropriations with a two-year lag, but revenue gains do not appear to have a similar effect on appropriations. Party politics matters, but it is not as simple as Republicans seeking to cut SAA budgets. The growth in SAA budgets over time owes greatly to the growth in overall state budgets and

increasing prosperity – both of these strong trends have outweighed the underlying negative growth rate of SAA budgets.

Several variables that might have been expected to influence SAA funding do not. Voter turnout and racial composition show no significant relationships even when state effects are included. Surprisingly, education levels are not positively related. More disconcerting for arts education advocates, perhaps, is the negative relationship between youthful populations and SAA appropriations. Only a few states stand out as especially strong or weak funders of their SAAs. Finally, the locus of the SAA within state government has a modest influence on state governments' funding growth rates.

The empirical analysis demonstrates the impact of particular fiscal pressures, institutional rules, and constituents on state agency funding over the past three decades. The results bring robust empirical evidence to debates concerning public arts funding via SAAs, a major source of direct government support for the arts in the United States. Agency budgets are particularly sensitive to past appropriations, past state revenues and NEA grants, some demographic variables, party control of state government, and state budgeting rules. While the influence of some demographic variables may be shifting over time, income (and income growth in particular) continues to explain much of SAA appropriations. From a public policy standpoint, these findings offer a useful vantage to assess public arts funding. Fiscal pressures, institutional rules, and changing constituencies all play important roles in state arts agency funding.

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Appendix A: Data Description

The state-level variables in this panel dataset are listed in Table A.[8] Various sources provide the data for the empirical estimation. The data range from 1969 to 2002, with some missing values (generally for those states without SAAs prior to 1974). Historical fiscal variables include SAA appropriations, state revenue, state debt, and NEA grants. Political composition and institutional variables include dummy variables for different situations of party control of state government, voter turnout, strictness of state balanced budgeting rules, the year of SAA establishment, and fixed effects of years in a four-year presidential term. Economic and demographic factors consist of population, density, race, age, education, and income variables.

[8] Additional variables were tested in this model, but their role was found to be minimal or not enough years were available. They were excluded for the sake of parsimony. These variables include public school expenditures, percent Hispanic, additional age categories, gross state product, gross state product from federal sources, and additional variables describing state budgeting rules.

Table A: Variable Descriptions and Sources

Variable	Description	Source
SAA_t	log of real SAA appropriations in year *t*	NASAA (2004)
$Revenue_t$	log of real general revenues in year *t*	(a), various years
$Debt_t$	log of real debt outstanding in year *t*	(a), various years
NEA_t	log of real NEA grants to state	NASAA (2004)
Population	log of population (estimates for intercensal years)	(b)
Density	Population per acre	(a), 2005
Black	proportion of population that is Black	(b)
Other	proportion of population that is nonwhite, and non-Black	(b)
Youth	proportion of population that is aged ≤ 19	(b)
Elders	proportion of population that is aged > 65	(b)
HS grad rate	number graduating public high school, per capita	(a), U.S. DOE (1998, 2005)
Income	log of real personal income (per capita)	BEA (2005)
RGovGrid	dummy for Republican governor, divided legislature	(a), various years
DGovGrid	dummy for Democrat governor, divided legislature	(a), various years
RGovDiv	dummy for Republican governor, Democrat legislature	(a), various years
DGovDiv	dummy for Democrat governor, Republican legislature [omitted category]	(a), various years
RUnified	dummy for Republican governor, Republican legislature	(a), various years
DUnified	dummy for Democrat governor, Democrat legislature	(a), various years
Turnout (%)	voter turnout (%) for last presidential election	(a), various years
Origin Year	year state established its SAA – 1969	various SAA websites
BalanceBudg	categorical [0 – 2], with 2 indicating strictest budget rules	ACIR (1987), cited in NCSL (2004)
Term Year 1, Term Year 2, Term Year 3	dummy for first, second, or third year in the presidential term (e.g., Term Year 2=1 for 2005)	
Key: (a) *Statistical Abstract of the United States*, years as indicated. (b) US Census website. www.census.gov		

Appendix B: Methods

The empirical analysis here estimates a model of state SAA appropriations using panel data. The SAA budget level in a given state-year depends on the previous year's budget level, other past and current fiscal variables, and other exogenous variables. This model structure raises concerns about the autoregressive nature of the data and exogeneity of explanatory variables. Simple OLS may be biased and inconsistent because of the presence of an endogenous (lagged dependent) variable as a regressor.

The empirical model employed here considers annual SAA appropriations to be a function of several factors according to the following equation:

$$Y_{it} = \alpha_i + \beta_t + \rho Y_{it\text{-}1} + \psi C_{it} + \omega I_{it} + \gamma T_{it} + \tau H_{it} + v_i + \eta_{it} \,. \qquad (1)$$

$Y_{it\text{-}1}$ represents the previous year's SAA appropriation in state i. As before, political composition, institutional context, and economic and demographic factors constitute vectors C, I, and T, respectively. H_{it} is a vector of historical variables other than $Y_{it\text{-}1}$. A state-level disturbance term, v_i, is also included. There is a white noise error term, η_{it}, which is assumed to be serially uncorrelated (i.e., $E[\eta_{it}\ \eta_{is}] = 0$, for any $t \neq s$). Similar dynamic specifications with a lagged dependent variable can be found in Manwaring and Sheffrin's (1997) partial adjustment model of state school expenditures, McCarty and Schmidt's (1997) VAR model of state expenditures by category, and Getzner's (2002) model of public cultural expenditures in Austria.

The estimation strategy employed here uses Arellano and Bond's (1991) dynamic panel-data estimator. Even with serially uncorrelated errors η_{it} in (1), right-hand side regressor

$Y_{it\text{-}1}$ remains correlated with v_i, leaving ordinary estimators biased and inconsistent. Taking the first differences, equation (1) becomes:

$$Y_{it} - Y_{it\text{-}1} = \beta + \rho(Y_{it\text{-}1} - Y_{it\text{-}2}) + \psi(C_{it} - C_{it\text{-}1}) + \omega(I_{it} - I_{it\text{-}1}) + \gamma(T_{it} - T_{it\text{-}1}) + \tau(H_{it} - H_{it\text{-}1}) + \eta_{it} - \eta_{it\text{-}1}. \quad (2)$$

First-differencing equation (1) eliminates v_i but leaves the difference in lagged Y_{it} correlated with the error term via $\eta_{it\text{-}1}$. Many instruments are available to estimate (2), based on moment conditions that follow from standard assumptions that η_{it} is uncorrelated with Y_{i0}, v_i, and other η_{is} for all $s \neq t$ (Ahn and Schmidt 1995). The Arellano and Bond estimator uses lagged levels of the dependent and predetermined variables, as well as differences in strictly exogenous variables, as instruments. The validity of using lagged values of Y_{it} as instruments for differenced equations for later periods hinges on the moment conditions implied by assuming η_{it} to be serially uncorrelated.

Estimating (2) using lags of the endogenous (Y) and exogenous (C, I, T) and predetermined (H) variables via GMM yields estimates for β, ρ, ψ, ω, γ, and τ. Instruments for (2) derive from lagged levels of endogenous and predetermined variables and differences of strictly exogenous variables from all time periods. Notice that, for the differenced equation in (2), the instruments must come from lags at least three periods prior (i.e., for $H_{it\text{-}s}$, $s \geq 3$). The construction in (2) differences out the time-invariant state fixed effects. By constructing T_{it} carefully, however, state fixed-effects on changes in levels of Y_{it} (but not state fixed-effects on levels of Y_{it}) can be identified.[9] Moreover, the

[9] Specifically, partition T_{it} into (T_{1it} T_{2it}) with state fixed-effects $T_{1it} = T_{1is}$, for all $t \neq s$. Let the corresponding vector of parameters for T_{1it} vary over time at a constant rate. Estimating (2) with state fixed-effects T_{1it} reveals parameters γ_1, which correspond to state-specific rates of change.

constant term in the GMM estimation can be replaced with a constant time trend, interpreted as annual change in Y_{it}, *ceteris paribus*.

Several specification tests are employed for the estimation of equation (2). Tests for the lack of serial correlation and possibly over-identifying restrictions, following Arellano and Bond (1991), are needed to verify whether the estimator is consistent. First, a second-order autocorrelation test (m_2) is performed based on average covariance in the residuals. The consistency of Arellano and Bond's GMM estimator depends on $E[(\eta_{it} - \eta_{it\text{-}1})(\eta_{it\text{-}2} - \eta_{it\text{-}3})] = 0$ even when $E[(\eta_{it} - \eta_{it\text{-}1})(\eta_{it\text{-}1} - \eta_{it\text{-}2})] \neq 0$. Second, a Sargan test of over-identifying restrictions is performed. Large statistics for these tests suggests that the assumption of no serial correlation may be inappropriate for this sample. A small value for Sargan's *s* lends support to the validity of the instruments used in this approach.

Results

Table B depicts the results of the dynamic panel-data estimation. Each model is estimated using the Arellano-Bond one-step estimator with asymptotic standard errors robust to general time series and cross-section heteroskedasticity. The instruments include all lagged levels of $SAA_{t\text{-}2}$, the lagged levels of the fiscal variables, and all the first differences of the remaining regressors. The models in Table B explain most of the variation over time and across states in SAA appropriations. Model 1 is the base model, with Model 2 adding state fixed effects and Model 3 adding additional *T* variables. The reported test statistics, the m_2 and Sargan's test, are suitably close to zero in all models to not imply that the model is misspecified. Serial correlation in the errors is not evident.

The choice of instruments and the Arellano and Bond approach appear to be appropriate for these data.

Table B: Determinants of SAA Appropriations, 1969 – 2002.

Variable	An increase in Variable of …	Model 1 Has this effect…	Model 2 Has this effect…
Appropriations last year	10%	7.5%***	6.4%***
State revenues this year	10%	0.8%	1.7%**
State revenues last year	10%	0.7%	2.0%**
State revenues two years ago	10%	-0.4%	0.7%**
State debt level this year	10%	-0.3%	-0.4%
State debt level last year	10%	-0.4%	-0.6%**
State debt level two years ago	10%	0.5%*	0.6%*
NEA grants to state this year	10%	1.0%*	1.0%*
NEA grants to state last year	10%	-0.4%	-0.3%
NEA grants to state two years ago	10%	1.0%***	1.2%***
Population	10%	2.9%	-8.2%
Density	1 person/acre	0.6%	6.6%***
Percent black	0.1	-5.0%	44.9%
Percent nonwhite, non-black	0.1	3.7%	0.9%
Percent aged 19 or less	0.1	-23.6%**	-63.8%***
Percent aged over 65	0.1	-1.9%*	-1.5%
Percent of population graduating high school this year	1 diploma/1,000 residents	-0.1%	-0.2%*
Income, per capita	10%	7.8%**	8.9%***
GOP governor, split legislature	relative to "Dem. governor, GOP legislature"	9.0%**	7.9%
Dem. governor, split legislature		2.0%	-0.6%
GOP governor, Dem. legislature		9.6%***	8.2%**
GOP governor, GOP legislature		3.8%	-0.5%
Dem. governor, Dem. legislature		5.9%*	4.6%
Voter turnout	0.1	-1.3%	-1.2%
Year	1 year	-2.4%**	-6.4%***
First year of presidential term	relative to fourth year	-5.2%**	-6.2%***
Second year of presidential term		2.3%	1.5%
Third year of presidential term		1.7%	1.7%
Year that SAA was founded	10 years (newer)	0.2%*	0.1%
Strictness of balanced budget rule	1 unit stricter[a]	0.5%*	2.2%***
State effects		None	See Table C

[a] This is a scale from 0 – 2, where 2 is the strictest, based on ACIR (1997).
***, **, * indicate significance at the 1%, 5%, 10% levels, respectively.
N = 1521, for 50 states. The m_2 statistic is –0.61 and –0.79 for Models 1 and 2, respectively. Sargan's statistic is $\chi^2(2005) = 27.53$ for Model 1 and is less than 0.001 for Model 2.

Model 2 in Table B shows the estimated model after controlling for state fixed-effects, while Table C shows the individual states' effects. This might be taken as a measure of states' time-invariant, omitted "SAA friendliness." The estimates for Model 2 are given,

relative to an omitted category of "other" (i.e., Nebraska, New York, and Utah). The rightmost column represents the departmental location of the SAA within state government as of 2004. It appears that agencies located in departments of state tend to have larger and negative state fixed-effects. From Model 2, New Jersey and Rhode Island's SAA appropriations exhibited the slowest growth rates, whereas Nevada and Arizona had the fastest.

Table C: State Effects on Changes in SAA Appropriations

State	Effect	Location	State	Effect	Location
AK	0.8%	Education	MT	-1.5%**	Independent
AL	-0.1%	Independent	NC	-3.1%***	Culture
AR	0.2%	Culture	ND	2.6%**	Independent
AZ	3.5%*	Independent	NE		Independent
CA	-0.5%	Independent	NH	2.8%**	Culture
CO	-0.3%	Independent	NJ	-5.8%***	State
CT	0.1%	Independent	NM	2.1%*	Culture
DE	-1.9%*	State	NV	6.5%***	Culture
FL	-3.1%*	State	NY[a]		Independent
GA	-2.1%**	Governor's office	OH	-1.1%	Independent
HI	-0.7%	Accounting & General Services	OK	0.8%	Independent
IA	0.5%	Culture	OR	2.3%**	Indep./ Econ. Dev.
ID	2.7%***	State	PA	1.5%**	Governor's office
IL	2.0%**	Independent	RI	-4.3%***	Independent
IN	-1.6%**	Independent	SC	-3.0%***	Independent
KS	0.7%	Independent	SD	-1.0%	Econ. Dev.
KY	-1.1%	Commerce Cabinet	TN	-2.5%***	Independent
LA	0.2%	Culture	TX	1.5%	Independent
MA	0.7%	Independent	UT[a]		Econ. Dev.
MD	0.5%	Econ. Dev.	VA	-0.8%	Independent
ME	-0.7%	Independent	VT	1.6%	Independent
MI	2.1%***	Culture	WA	2.0%**	Independent
MN	3.1%***	Independent	WI	2.9%***	Independent
MO	-0.4%	Econ. Dev.	WV	-2.8%***	Culture
MS	1.8%**	Independent	WY	2.5%***	Culture

[a] Nebraska, New York, and Utah were omitted due to multicollinearity with other covariates. All effects are measured relative to these states.