

BUREAUCRACY AND ORGANIZATIONAL PERFORMANCE:
CAUSALITY ARGUMENTS ABOUT PUBLIC SCHOOLS

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Bureaucracy and Organizational Performance:

Causality Arguments About Public Schools

Abstract

One key policy dispute in the school choice debate concerns whether the education bureaucracy is a cause or a consequence of poor performance. This dispute is striking because both sides accept the same neo-institutionalist organization theory. This paper uses a large panel of school districts to address the dispute. The evidence suggests that poor performance results in a growing bureaucracy not vice versa. Further evidence then shows that the growth in bureaucracy is associated in an increase in teachers and smaller class sizes; in short, bureaucracy increases as schools take actions that are linked to improved performance.

Bureaucracy and Organizational Performance:

Causality Arguments About Public Schools

Few contemporary public policies are as controversial as school choice. School privatization advocates argue that market-based school systems can educate students better than public schools. Chubb and Moe (1988; 1990), for example, contend that the institutional features of the public school system--particularly its bureaucratic structure and democratic governance--make it an ineffective organization that depresses student performance. Their remedy is to convert schools into more market-based institutions with less bureaucracy and less democratic control (Chubb and Moe 1988; 1990). Opponents of school choice contend the proponents' arguments lack empirical support, fail to consider the multiple goals of public education, and support policies that generate more costs than benefits (Henig 1994; Paris 1995; Witte 1992; Smith and Meier 1995).

Lost in the public debate is the realization that some points of dispute are important theoretical questions in their own right. Both Chubb and Moe (1990) and their harshest and somewhat intemperate critics (Smith and Meier 1994) use neo-institutional arguments derived from organization theory. Some issues at dispute, as a result, are relevant not only to public policy debates but are also testable propositions that promise theoretical insight into how institutions respond to and influence their environments (Thompson 1967; March and Olsen 1989).

This research examines one small, but crucial, empirical question in the school choice debate--what is the relationship between levels of bureaucracy and organizational performance? Chubb and Moe (1990) contend that bureaucracy leads to poor performance on the part of public schools. Smith and Meier (1994), in contrast, argue that bureaucracy is an adaptation to poor performance, that when organizations recognize their failures, they often take actions that, at least in the short run, generate more bureaucracy.

Our research strategy addresses the link between bureaucracy and

performance in five steps. First, we outline the institutional theory of Chubb and Moe (1990) as it relates to bureaucracy. Second, using a unique panel data set of over 1000 school districts for a seven year period, we empirically test this key relationship in both organization theory and the real world of education policy. Third, we address the politics of responsiveness by assessing how these organizations respond to different types of students. Fourth, we continue the logic of the institutional theory to determine if the bureaucratic growth that does occur could affect future student performance. Finally, we note the implications of our findings for both organization theory and education policy.

Institutional Theory and School Choice

Often lost in the highly contentious debate over school choice is the theoretical contribution made by Chubb and Moe (1990). They ground their advocacy of competition as a solution to the ills of public schools in a well developed neo-institutional theory of the policy process. Public schools are open systems with overhead democratic control. Because they are so open to the environment, a wide variety of demands are pressed on schools by teachers, unions, citizens, legislators, parents, employers, and countless others. These democratic processes by themselves might even result in the design of ineffective organizations (Moe and Wilson 1994).

In the case of schools, ineffectiveness might not be conscious. Consistent with the basic principal-agent model, each interest seeks to institutionalize its demands on the school system by establishing rules, designing procedures that permit monitoring, and restricting discretion in the school system. Thus, democracy produces rules and leads to rigidity. Faced with multiple demands and a plethora of restrictions, public schools become too bureaucratic to respond to parents' demands for quality education. Bureaucracy, thus, leads to poor performance. As Brown (1992,288) contends, "The reason bad schools are bad include poor management....In some popular critiques of public schools this kind of inefficiency is blamed on the

presence of bureaucracy."

Chubb and Moe (1990) further argue that private schools, and some public schools in relatively homogeneous environments, are leaner and more agile in their response to demands for quality education. Such schools, they contend, outperform over-bureaucratized public schools that face heterogeneous demands. Their solution is to create market incentives and permit competition to generate an education system more responsive to parental demands.

Although the bureaucracy argument is only one part of Chubb and Moe's proposal, it is a crucial element because it reinforces the notion that public sector organizations are less likely to respond to their environments (read consumer demands) than private sector organizations (see Savas 1987). Smith and Meier (1994) concede that bureaucracy is correlated with lower performance by schools but argue that bureaucracy should be viewed as an effort to respond to environmental demands. They assert that public schools are more bureaucratic because they are faced with more complex task environments. Rather than indicating an unresponsive organization, a larger bureaucracy component, in Smith and Meier's (1995) view, is a sign of a responsive organization that is trying to meet environmental demands by designing new programs and policies to deal with its problems. Their argument is similar to Simon's (1947) notion that organizations take complex tasks, break them into smaller components, and process these tasks in a parallel mode (assuming that the tasks can be isolated from each other; see O'Toole 1996). Bureaucracy is essential to coordinate parallel-processed tasks. Public schools, according to Smith and Meier (1995), have larger bureaucracies because they are trying to solve more difficult problems.

This alternative hypothesis--that poorly performing schools produce more bureaucracy in an effort to solve problems--is rarely entertained by the school privatization movement. In fact, many poorly performing schools are located in areas of poverty and non-English speaking communities. These conditions often require special efforts such as Communities in Schools,

bilingual education, and other compensatory programs. Additional programs require additional administrators. Schools with problems such as these often need more teacher time per student to be effective; in such cases bureaucrats are needed a) to free teachers of administrative tasks so that they can spend their time teaching or b) to coordinate the larger number teachers. In effect, the alternative hypothesis suggests that a greater number of bureaucrats is a response to need.

The empirical analysis of Smith and Meier (1994) does not directly address this question (see Bohte 2000; Smith 1994). They find that bureaucracy (measured as central bureaucracy relative to the overall organization) is associated with more complex demands, yet their own models that incorporate these demands fail to eliminate the negative relationship between bureaucracy and organizational performance. They fall back on the notion that bureaucracy is related negatively to performance simply because negative performance generates an organizational response (see Downs 1967) and that response is quite likely to require additional bureaucrats to organize, coordinate, and implement.

The alternative hypothesis of Smith and Meier (1994) is more than just an assertion that other factors determine bureaucracy. The key point of contention between Chubb and Moe (1990) and Smith and Meier (1994) is at its core an argument about causality. Does bureaucracy cause low performance or does low performance create pressures for new programs and thus for additional bureaucrats to administer them? If bureaucracy is a response to, rather than a cause of, poor performance, the growth in bureaucracy is really the result of an organization trying to reform itself. Resolving this "which came first" dispute, therefore, has major implications for public administration.

Quasi-markets and the Marginal Consumer

Both Chubb and Moe (1990) and Smith and Meier (1994) agree that public schools are open systems and, thus, responsive to environmental demands. Chubb and Moe contend, however, that public schools have responded to so many

demands, that they are no longer capable of competing for students in an education market where quality concerns are paramount. The recent work of Mark Schneider and colleagues (Schneider et al. 1998; 1997; Teske et al. 1993) uses public school choice programs to provide insight about how education markets are likely to work. Given the low level of information possessed by parents, Schneider et al. (1998) contend that competitive, market-like behavior will exist even if only a small subset of parents act as rational consumers. These "marginal" consumers, they contend, are more involved and of higher socio-economic status. As such they are highly desirable parents in the eyes of school officials, and schools will compete to attract them.¹

The work of Schneider has implications quite similar to other work on education and urban politics (see Meier and Stewart 1991). If public schools respond to demands for quality with additional programs and teacher time, and thus additional bureaucracy, that response is likely to be biased toward a select group of parents. These might either be Schneider's marginal consumers or those individuals with the political efficacy and the knowledge to put effective pressure on the school system (who might well be the same as the marginal consumers). In multi-racial school districts, the implication of both arguments is that poor performance by Anglo students is more likely to trigger a response from public schools than is poor performance by minority students.² Anglos have higher rates of political participation (see Leighley and Vedlitz 1999), and Schneider et al.'s (1998) marginal consumer is also

¹This argument should also hold for central city school systems given that a quasi-market exists between city schools, private schools, and suburban schools.

²Schneider et al. (1998) argue that this elite marginal consumer, by getting the public organization to respond, will generate better education for all students. This assumes that schools will not engage in tracking and other methods to create tiered systems of education (see Oakes 1985).

more likely to be Anglo.

Data and Methodology

An ideal environment to examine this question is Texas school districts. Texas school districts have substantial enrollments of Anglo, African-American and Latino students in their 1,000+ school districts.³ Our school district data come from two main sources: The Texas Education Agency and the School District Data Book, 1990 Census School District Special Tabulation, Summary File Set 1 Extract. Our units of analysis are the universe of school districts in Texas. Data are available for eight years from 1991 through 1998; we pool these data and use a lagged dependent variable, resulting in a total of 7301 cases and seven years. Missing data on specific items reduces this number, especially when analysis is run for schools with minority populations.

Pooled models frequently are affected by problems of serial correlation and heteroscedasticity. To control for serial correlation, we include a set of six dummy variables in the model.⁴ With 7301 cases, even a slight degree

³ If bureaucracy is really a response to organizational needs, then we will learn little by examining organizations with few environmental demands (that is, predominantly white middle-class suburban districts). Districts that face a wide variety of different environments provide a much better set of organizations for such a study.

⁴Serial correlation is a significant problem. After a large drop in standardized test scores for these districts in 1992 (reflecting changes in the test), they generally followed an upward trend. The use of dummy variables to correct for such problems is the traditional correction for short pools such as this one (Stimson 1985). The lagged dependent variable will not necessarily correct serial correlation problems if the serial correlation does not fit a first order autoregressive process. At times people use dummy variables for the individual units to deal with heteroscedasticity. We do not use fixed effects in this model for three reasons. First we have over 1000

of heteroscedasticity will generate a statistically significant test result even if assessed within the framework of the pool.⁵ Residual scatter plots revealed a generally homoscedastic pattern relative to each independent variable.⁶ The modest existing heteroscedasticity was related to our bureaucracy measure. When the models were reestimated with weighted least squares to correct for this heteroscedasticity, the results in Tables 1 and 2

school districts making the process itself extremely cumbersome. Adding 1000 additional independent variables would generate a great deal of collinearity with the present set of variables. Given that the dummy variables themselves have little theoretical import, the cost of this approach greatly exceeds the benefits. Second, the inclusion of a lagged dependent variable adjusts for the possibility that each district has a unique intercept by incorporating it via last year's value. Third, using both a lagged dependent variable and fixed effects is likely to generate biased coefficients (Hsiao 1986, 73-5).

⁵We used the White test for heteroscedasticity on each of the cross-sections and then averaging these results for the seven years. This procedure considers the panel nature of the data. An average coefficient of determination of only .015 for each year generates a significant test (for the entire pool the standard is only .003).

⁶To verify our concerns, we also calculated panel corrected standard errors as suggested by Beck and Katz (1995). These standard errors were virtually identical with the ordinary least squares standard errors. This also supports our conclusion that the degree of heteroscedasticity was statistically significant but substantively trivial. In assessing other work with essentially the same characteristics as this data set but far fewer cases, Beck and Katz (1996: 28-9) conclude that ordinary least squares standard errors serve relatively well.

were similar, albeit with slightly larger t-scores.⁷

Dependent Variables: Student Performance and Bureaucracy

Texas uses an annual standardized test called the Texas Assessment of Academic Skills [TAAS]. TAAS test measures the mastery of basic skills. While basic skills are not the only educational objective of public schools, they are a crucial element and thus a reasonable measure of performance. The percentage of students who pass these tests in each school district is one of the dependent variables in our model.

The second dependent variable is our measure of bureaucracy. We use the total number of full-time administrators per 100 students as our measure of bureaucracy. This ratio specifically adjusts for organizational size by considering bureaucracy in relation to the number of students (or task size). The ratio is a better measure than just the percentage of administrators employed (see Smith and Meier 1994; Bohte 2000) because well-funded districts are likely to have both more teachers and more bureaucrats.

Bureaucracy, is without question, a multidimensional concept that includes not just administrative personnel but also redtape, restrictive rules, and procedural constraints (Downs 1967). While our measure only taps one dimension of the concept, we believe the measure has substantial face validity.⁸

Independent Variables: Controls

We include several control variables found to influence education

⁷Results are available from the authors. Given the robustness of the findings to different estimation techniques and different specifications (see below), heteroscedasticity is unlikely to be a major problem.

⁸Critics of bureaucracy rarely provide specific empirical measures of the term. The term itself is value-laden (see Goodsell 1983) and generally lacks precision. A precise definition, such as ours, is required for the concept to have value in empirical research.

performance in other studies; all are frequently used in education production functions. The typical production function includes student characteristics, measures of resources applied to the process and district policies designed to improve performance (for a review of literature see Burtless 1996).

In education policy, a strong, consistent relationship has been found between poverty and student performance. Poverty generally means students lack access to learning tools in the home (computers, pre-K programs, etc.) and also correlates with a less stable and less supportive home environment (e.g., single parent households, high rates of teen pregnancy, and low educational expectations; Necochea and Cune, 1996; Fuller, et. al., 1996). Our measure of poverty is the percent of students eligible for free or reduced price school lunches. The relationship to performance should be negative.

Resources in education include money and human capital. While a long-standing debate disputes the relationship between expenditures and student achievement (Hanushek 1996, 1989), more recent longitudinal studies have found that money does matter. Murray (1995) and Evans, Murray and Schwab (1997) found that districts that increased expenditures subsequently improved performance. We use three expenditure measures in our analysis: per pupil expenditures for instruction, the average teacher salary, and the percentage of money each district receives from state funds. The per-pupil instructional measure is used to focus on classroom education, not football fields or capital investment. Education is personnel intensive; most expenditures pay the salaries of teachers and other staff. In general, economic theory suggests that higher salaries should attract better qualified persons to a profession (Hanushek and Pace 1995); thus, we use the average teacher salary measure. Not all districts are created equal in terms of wealth. State aid can compensate for inequities in local tax bases. Given the large variations in wealth of Texas school districts, and the long history of the state in both federal and state courts on this issue (*San Antonio Independent School District v. Rodriguez*, 1973; *Edgewood Independent School District v. Kirby*,

1987; See also Weiher 1988), recent decisions to provide more state funds to poor school districts could also affect student performance. We expect all three relationships to be linked positively to test scores.

Our human capital measure involves teachers. Teachers are exceedingly important to the educational success of students. We expect that the greater the experience of teachers, the better the learning environment for students. Our measure is the average years of teacher experience, which we expect to relate positively to student performance.

We include two policy measures: class size and gifted classes. We expect schools with smaller class sizes to have an advantage, if only at the margin (see Pate-Bain et al. 1992; Nye et al. 1992; Hedges and Greenwald 1996; Hanushek 1996, 54). A well-designed policy experiment with several thousand students recently confirmed this relationship (Wenglinsky 1997). Our measure is the number of students per teacher in the district. Gifted classes are generally conceded to be the best education that a school system offers (See DeHaan 1963). We expect the percent of students in gifted classes to be related positively to performance and class size to be related negatively to student achievement.

Findings

The hypotheses suggest that bureaucracy could lead to poor performance or that poor performance can lead to greater bureaucracy. These two hypotheses cannot be disentangled with ordinary linear regression on a cross-section of organizations. Using the panel nature of the data set, however, we can address the question with a panel analysis form of Granger causality (Granger 1969; Durrat 1988). The Granger causality approach tests two contrasting hypotheses. If bureaucracy is a cause of poor performance, then bureaucracy at time 1 should be negatively correlated with performance at time 2 even when controlling for performance at time 1. If bureaucracy is not a cause of performance, we would expect performance from time 1 to time 2 to change randomly with respect to bureaucracy. Similarly, if poor performance

causes the expansion of bureaucracy, then performance at time 1 should be negatively correlated with bureaucracy at time 2 controlling for bureaucracy at time 1.⁹ The null hypotheses, which are those actually tested, hold that bureaucracy at time 1 is not correlated with performance at time 2 and performance at time 1 is not correlated with bureaucracy at time 2. This set of tests is conducted controlling for other relevant variables that might also affect either bureaucracy or student performance.¹⁰

The hypotheses about bureaucracy and student performance are tested in Table 1. In the first regression, the student pass rate on the mandatory state exam is regressed on the lagged student pass rate (one year lag), the lagged number of bureaucrats (one year lag), and our control variables. In terms of the choice hypothesis, the number of bureaucrats does not significantly affect future student pass rates.

[Table 1 About Here]

The alternative hypothesis--that the size of the bureaucracy is a response to poorly performing schools--is tested in the second regression in Table 1. As before, the equation contains both a lagged form of the dependent variable as a right-hand side variable and a lagged term of the student achievement measure along with the set of control variables. As can be seen in the table, we can reject the null hypothesis. Poor performing schools

⁹A Granger analysis within the context of pooled data presents no unique problems. For examples of using a panel in this manner see Durrat (1988), Meier and Smith (1994), and Wood (1992).

¹⁰Specification error is always a possibility although the inclusion of the lagged dependent variable makes it less likely. Few variables change quickly enough to influence the dependent variable without having its effect incorporated in the lagged variable on the right hand side of the equation.

subsequently hire more bureaucrats. Although the size of the coefficient is not large, it indicates an effort by the school system to respond to low student achievement.¹¹

Table 1 assumes a causal lag of one year. The results of panel analysis are often ambiguous if the panel timing is longer or shorter than the causal lag. Bureaucratic institutions contain an element of inertia; rapid change is not only unlikely but in some cases might even be harmful if change is too frequent (Hess 1999). Because test scores are released in late spring, a one year lag gives a district only a few months to respond before plans for the next school year must be finalized. A school district faced with poor test scores is likely to study the problem for a while and seek alternative solutions. Even a satisficing search procedure (Simon 1947) might well take longer than a few months. To allow more time for remedial action, Table 2 replicates the analysis in Tables 1 but increases the time lag to two years.

[Tables 2 About Here]

The results using the two year lag are also unambiguous. The coefficient for bureaucracy in Table 2 is smaller than its standard error, resulting in the failure to reject the null hypothesis that bureaucracy does not cause lower student performance. The coefficient for student performance in Table 2, however, has confidence limits bounded well away from zero, leading us to reject the null hypothesis. Low student test scores are associated with an increase in bureaucracy in subsequent years, a relationship consistent with the arguments that school systems respond to poor performance by increasing programs and thus adding bureaucrats to oversee these new

¹¹The impact, however, is not trivial. Because the lagged dependent variable distributes the impact of changes over a period of time, a one percentage point change in test scores is associated with about a .3 percent change in bureaucrats per 100 students. Given the standard deviation of test scores is about 16, the potential growth in bureaucracy could be substantial.

programs.

Although panel analysis techniques generally use a causal lag, they are not required to if the relationship between the variables is shorter than any feasible lag length. To allow for this possibility, we assumed that the relationships between the key variables did not occur over a time lag and estimated the relationships simultaneously with two-stage least squares using all control variables and lagged dependent variable as instruments. In that case, the coefficient associated with bureaucracy "causing" poor performance was not distinguishable from zero (see table 3). The hypothesis that poor performance resulted in an increased bureaucracy, however, was again supported by the results.

[Table 3 About Here]

Regardless of the assumptions regarding the temporal relationships between bureaucracy and student performance, the results are always consistent with the contention that poor student performance results in the creation of more bureaucracy. The results are robust to specification or method. We re-estimated these equations including only those school districts with more than 500 students (data reporting problems are more frequent in smaller school districts); the results were identical to those presented here. We included other control variables, most prominently the percentage of black and Latino students and school size (enrollment). Again our conclusions remained the same. We also estimated the equations without the gifted class variable which might not be completely endogenous. Again there was no difference.¹²

The Nature of the Organizational Response

¹²These alternative estimations can be obtained directly from the author. Data and documentation to replicate all analysis can be found at the National Public Management Research Archive on the web at [<http://www-bushschool.tamu.edu/pubman/>].

A theoretically interesting question is whether school districts respond to all students or only those with parents capable of exerting political pressure. Meier and Stewart (1991), for example, argue that politics in multi-racial situations is highly competitive with one ethnic group seeking to gain benefits at the expense of other groups (but see McClain and Karnig 1990). In such circumstances, school districts often distribute educational benefits according to the degree of political influence (Meier and Stewart 1991). Schneider et al.'s (1998) marginal consumer also supports the hypothesis of differential responsiveness. Both arguments imply that disaggregating student test scores by race and ethnicity has important policy and theoretical ramifications.

To investigate the question of to whom public schools are responsive, we took the reported pass rates by race/ethnicity and entered all three variables into the base equation from table 1. As Table 4 reveals, consistent with our arguments, school districts appear to respond only to low test scores for Anglo students. Test scores for both Latinos and blacks are not correlated with subsequent increases in bureaucracy.

[Table 4 About Here]

The analysis in Table 4 was limited to only those districts with sufficient minority and Anglo students to have test scores reported by the state of Texas. Not all districts are multi-racial, and so our conclusions only apply to a subset of school systems. The marginal consumer argument of Schneider et al. (1998) and the competition hypothesis of minority group politics, however, suggest that the dynamics of response might well be different in school districts where the student population is not tri-racial. In such circumstances, low pass rates for any large group of students should trigger a response. As the composition of the student body changes, the political balance of power in the district and the composition of the marginal consumer are also likely to change.

Table 5 reports the individual test score coefficients for each racial

group when entered as the sole pass rate in our general equation. The findings confirm our hypotheses. Bureaucracy grows in response to Anglo pass rates in districts with Anglo students, and it grows in response to Latino pass rates in districts with Latino students. The black relationship is an anomaly in its insignificance; however, that lack of significance is directly attributable to a few districts distorting the regression line. When that equation is reestimated with robust regression, bureaucracy is significantly related to black student pass rates.¹³

[Table 5 About Here]

The relative size of the regression coefficients is also informative. The largest response appears for Anglo students, the next largest for Latino students, and the smallest for black students. These response patterns may be linked to the political skills and participation levels of the various groups in these districts (see Leighley and Vedlitz, 1999). The results may also reflect the politics of coalition building in multi-racial jurisdictions (Meier and Stewart 1991). A full examination of the reasons for the relative size of these relationships, however, is beyond the scope of this paper, but could provide insight into racial politics in the United States.

Thus far, we have demonstrated that school districts respond to low student test scores with subsequent increases in bureaucracy. Is there any evidence that this growth in bureaucrats is related to actual efforts to improve student performance? Some indirect evidence on this position can be found. If poor performance triggers an effort to improve, then increases in bureaucrats should be correlated with other factors linked to performance. One likely relationship is that between bureaucracy and teachers. A school system seeking to correct problems by investing in special programs would also increase its investment in teachers. Special programs often have smaller

¹³The type of robust regression used was Andrews' sine weights with a single iteration.

class sizes, and even decreasing regular classes is associated with better performance in rigorous experimental studies (Wenglinsky 1997). More bureaucrats are then needed not only to supervise the increase in teachers but also to absorb administrative burdens so that teachers can spend their time actually teaching.

The first regression in Table 6 sets up a panel test of the bureaucracy-teacher relationship (the test does not contain a lag for bureaucracy but running the same equation with a lag produces even stronger results). Even controlling for the number of teachers last year, the number of bureaucrats per 100 students is positively associated with the number of teachers per 100 students. Much of this relationship, we feel, comes from an effort to reduce class size. The second regression in table 6 shows the strong linkage between an increase in teachers and a resulting decrease in class size. Even though such actions might not produce the positive results these school districts seek (and many reforms do fail, see Hess 1999), the pattern of results is consistent with the Smith and Meier (1995) theory about organizational responsiveness. Poor performance spawns efforts to change the organization. This change results in more bureaucrats in the school system; more bureaucrats, however, are also associated with a growth in teachers and subsequently a reduction in class size. The negative relationship between large classes and student performance in tables 1, 2, and 3 implies that these reforms may have future positive impacts on student performance.

[Table 6 About Here]

Conclusions

Understanding the relationship between bureaucracy and academic performance in the school choice policy debate is, at its core, a dispute about causality. Chubb and Moe (1990) make an institutional argument that bureaucratic organizations cannot respond to parental demands and thus, bureaucracy "causes" low student performance. Smith and Meier (1995) counter that poorly performing schools are likely to respond with new programs, and

these efforts will generate more bureaucracy to coordinate the reforms. Bureaucratic growth, in other words, signals that the school system is responding to environmental demands. This dispute can only be resolved with panel data that assess how changes in one variable result or do not result in subsequent changes in the other.

Using seven years of panel data from over 1000 school districts, we find that bureaucracy has little impact on student performance in future years. Poor performance by students, however, did result in bureaucratic growth in subsequent years. Although we cannot determine from the data whether the bureaucratic growth was reform-oriented, the growth following poor performance was consistent with the reform hypothesis specified by Smith and Meier (1995). Additional analysis revealed that the growth in bureaucrats was also associated with a growth in teachers relative to students and smaller classes.

This analysis also examines arguments from the urban education literature on the type of students that will generate an organizational response. Both the marginal consumer hypothesis of Schneider and the racial differences in political efficacy suggest that school districts, all other things being equal, will respond to low test scores for Anglo students, but not low test scores for minority students. Regression results confirm this hypothesis in multiracial school districts. In school districts that were not tri-racial, however, the school districts responded to low performance by any substantial subset of students--Anglo, African-American, or Latino. This pattern suggests some interesting questions about equity in multiracial school districts that have ramifications for theories of minority politics.

This study also contributes to the literature on organization theory. Chubb and Moe (1990) essentially make an organizational overload argument, that organizations are pulled in so many directions that they lack the ability to respond to environmental demands. Their hypothesis is especially important because it implies that reform requires the simplification of the organization's environment. Choice is one possible institutional structure to

simplify environments by letting schools select specialized niches.

Smith and Meier (1995) present a view of organizations from traditional open systems theory. They expect schools to respond to all environmental demands, including those demands for higher quality education (whether from parents or from politicians). Low test scores are likely to generate environmental pressure, especially if comparisons can be made to other schools. Competing goals might limit the response, but organization theory holds that open systems respond to environmental demands.¹⁴ This research does not mean that Chubb and Moe's organization theory is wrong in all circumstances, only that a large number of public school districts do not fit their hypothesis. In many cases, a growth in bureaucracy is a sign that the school system is trying to respond to low levels of performance.

¹⁴Organizations, of course, need resources to be able to respond. If the organizations do not have the resources to hire more teachers and bureaucrats, then responsiveness as outlined here is not possible.

Table 1. The Relationship of Bureaucracy and Performance:

One Year Lag

Independent Variable	Dependent Variable =			
	Student Pass Rate Slope	Pass Rate Error	Bureaucracy Slope	Bureaucracy Error
Lag of Student pass rate	.674	.008 (80.80)	-.619	.230* (2.69)
Lag of bureaucrats	-.096	.275 (.35)	.702	.007 (93.70)
Low Income Students	-.109	.006 (19.50)	.000	.000 (.14)
Teachers Salaries (000)	.067	.056 (1.20)	-.010	.002 (6.52)
Teacher Experience	-.006	.046 (.13)	-.001	.001 (1.03)
Gifted Classes	.098	.022 (4.54)	.0012	.0006 (1.93)
Class Size	-.218	.052 (4.16)	-.015	.0014 (10.08)
State Aid Percentage	-.003	.004 (.59)	-.433	.119* (3.63)
Funding per Student (000)	-.100	.177 (.57)	.068	.005 (13.83)
Adjusted R-Square	.83		.80	
F	2304.2		1877.96	
Standard Error	6.80		.19	
N of Cases	7271		7282	

*coefficients and errors multiplied by 1000 to facilitate interpretation.
coefficients for annual dummy variables not included.
t-scores are in parentheses.

Table 2. The Relationship of Bureaucracy and Performance:

Two Year Lag

Independent Variable	Dependent Variable =			
	Student Pass Rate Slope	Pass Rate Error	Bureaucracy Slope	Bureaucracy Error
Lag of Student pass rate	.577	.010 (60.32)	-.867	.278* (3.12)
Lag of bureaucrats	.250	.314 (.80)	.574	.009 (64.17)
Low Income Students	-.137	.007 (20.97)	.192	.191* (1.01)
Teachers Salaries (000)	.141	.065 (2.18)	-.016	.002 (8.23)
Teacher Experience	-.064	.054 (1.18)	-.905	1.577* (.57)
Gifted Classes	.134	.026 (5.21)	.0021	.0007 (2.87)
Class Size	-.288	.060 (4.80)	-.021	.0017 (12.09)
State Aid Percentage	.002	.005 (.42)	-.679	.147* (4.64)
Funding per Student (000)	.081	.202 (.40)	.094	.006 (16.01)
Adjusted R-Square	.76		.73	
F	1399.46		1202.36	
Standard Error	7.39		.22	
N of Cases	6231		6240	

*coefficients and errors multiplied by 1000 to facilitate interpretation.
coefficients for annual dummy variables not included.
t-scores are in parentheses.

Table 3. The Relationship of Bureaucracy and Performance:

Simultaneous Estimation

Independent Variable	Dependent Variable =			
	Student Pass Rate Slope	Pass Rate Error	Bureaucracy Slope	Bureaucracy Error
Lag of Student pass rate	.674	.008 (80.84)	NA	NA
Student Pass Rate	NA	NA	-.808	.300* (2.69)
Lag of bureaucrats	NA	NA	.702	.007 (93.68)
Bureaucrats	-.137	.391 (.35)	NA	NA
Low Income Students	-.109	.006 (19.50)	.021	.155* (.14)
Teachers Salaries (000)	.066	.057 (1.16)	-.010	.002 (6.53)
Teacher Experience	-.006	.046 (.13)	-1.310	1.281* (1.02)
Gifted Classes	.099	.022 (4.54)	.0013	.0006 (2.07)
Class Size	-.220	.054 (4.08)	-.015	.0015 (10.12)
State Aid Percentage	-.003	-.004 (.60)	-.451	.120* (3.77)
Funding per Student (000)	.110	.187 (.58)	.068	.005 (13.80)
Adjusted R-Square	.83		.79	
F	2304.16		1877.96	
Standard Error	6.80		.19	
N of Cases	7271		7282	

*coefficients and errors multiplied by 1000 to facilitate interpretation.
coefficients for annual dummy variables not included.
t-scores are in parentheses.

Table 4. School System Responsiveness by Ethnicity:

One Year Lag

Dependent Variable = Bureaucrats per 100 Students

<u>Independent Variable</u>	<u>Slope</u>	<u>Error</u>	<u>t-score</u>
Lag Anglo pass rate	-.879*	.240	-3.67
Lag Latino pass rate	.136*	.157	.86
Lag Black pass rate	.095*	.139	.68
Lag of bureaucrats	.659	.012	56.35
Low Income Students	.128*	.121	1.06
Teachers Salaries (000)	-.009	.001	6.87
Teacher Experience	.002	.001	1.85
Gifted Classes	-.392*	.566	.69
Class Size	-.018	.002	11.11
State Aid Percentage	-.192	.103	1.86
Funding per Student (000)	.030	.005	5.88
Adjusted R-Square	.75		
F	635.21		
Standard Error	.10		
N of Cases	3536		

*coefficient multiplied by 1000 to facilitate interpretation

coefficients for annual dummy variables not included.

Table 5. Responsiveness of School Systems:

One Year Lag**

Dependent Variable = Bureaucrats per 100 Students

<u>Independent Variable</u>	<u>Slope</u>	<u>Regression Std Error</u>	<u>N of cases</u>
<u>Groups Entered Separately</u>			
Lag Anglo pass rate	-.721* (3.33)	.217	7144
Lag Latino pass rate	-.313* (2.03)	.154	6018
Lag Black pass rate	-.168* (1.30)	.129	4015
Robust Regression Estimate Lag Black pass rate	-.126* (2.01)	.063	3940

*Coefficient multiplied by 1000 to facilitate interpretation

**Control variables omitted from table.

t-scores are in parentheses.

**Table 6. Increased Bureaucracy Results in More Teachers
and Smaller Class Size**

Independent Variable	Dependent Variable =			
	Teachers Ratio		Class Size	
	Slope	Error	Slope	Error
Bureaucrats	.421	.028 (15.03)	NA	NA
Lag of Teachers Ratio	.575	.007 (77.77)	NA	NA
Teacher Ratio	NA	NA	-.543	.012 (44.26)
Lag of Class Size	NA	NA	.569	.007 (82.80)
Low Income Students	-1.964	.441* (4.45)	-.990	.557* (1.78)
Teachers Salaries (000)	-.105	.005 (20.20)	.026	.007 (3.86)
Teacher Experience	.016	.004 (3.69)	-.011	.055 (1.99)
Gifted Classes	.011	.002 (5.46)	.0071	.0026 (2.72)
State Aid Percentage	1.909	.411* (4.64)	-3.922	.511* (7.67)
Funding per Student (000)	.843	.017 (48.53)	.016	.025 (.65)
Adjusted R-Square	.90		.91	
F	4508.33		5086.43	
Standard Error	.66		.83	
N of Cases	7295		7295	

*coefficients and errors multiplied by 1000 to facilitate interpretation.
coefficients for annual dummy variables not included.
t-scores are in parentheses.

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