The Politics of School Finance:

Passing School Bonds

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Abstract

School bond elections receive little attention in political science or education policy literature, and the research that does exist is based on the observations of a single or a hand full of elections. Given the importance of bond elections as a revenue generating mechanism for schools as well as being one of the only cases where citizens can directly make decisions in regard to school district policy, we believe that more attention should be paid to this important policy process. This paper adds to the sparse literature on school bond elections by analyzing the determinants of success for 695 bond elections in the state of Texas. We find that bond election success is sensitive to needs, costs, resources, and measures of self interest.

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School bond issue elections are an ignored arena in both political science and the politics of education. Wirt and Kirst (1997, 114-120) devote only seven pages to referenda style elections in their survey of educational politics. A recent special issue of *Educational Policy* (Opfer and Wong 2002) on "The Politics of Elections and Education" contained eleven essays on various aspects of elections and education, but not a single essay focused on elections to ratify the issuance of school bonds. The research on bond elections that does exist is based on the results of a single or a hand full of elections (see Hall and Peile 1976, Rubinfeld 1977, Caltado and Holm 1983, Button 1993, Tedin et al. 2001).

Additional attention to school bond elections is needed for four reasons. First, major urban school reforms, an education issue that has dominated the policy agenda, almost always require capital expenditures; and bond issues are a common way of funding nonincremental capital expenditures. Second, the percentage of bond elections that have passed declined from approximately 75% in 1960 to 35% in 1986 (Wirt and Kirst 1997, 116). Third, many commentators attribute the decline in the quality of the California's elementary and secondary education system to the passage of Proposition 13 and its restrictions on local property taxes (see Schrag 1998).[1] Fourth, school bond referenda are one of the only cases where citizens can directly make decisions in regard to school district policy (as opposed to indirectly via school board elections).[2]

This paper examines the results of 695 school bond elections in Texas between 1997 and 2001. First, the modest literature on school bond elections will be reviewed to generate a model of how individuals are likely to vote and thus what might determine if a school bond issue would pass. Second, we will measure key concepts and operationalize a logit model of

[1] Part of Proposition 13 is a requirement that bond issues would need a super majority rather than a simple majority to pass.
[2] Some districts vote on district budgets (see Hall and Piele, 1977)

school bond elections. Finally, the implications of this study for the politics of educational policy will be discussed.

Determinants of School Bond Elections

The sparse literature on school bond elections in recent years has focused on the study of individual school bond elections using survey data. This literature provides a starting point for our aggregate study. Essentially, the literature can be grouped into five sets of questions: does the school district have pressing needs, what will the bond issue cost, can the district afford the bond issue, has the district performed well with the money it has, and what is in the self-interest of the individual voter?

Needs. Seeking a bond issue is a risk. The superintendent who presents a bond issue risks the public rebuke of the citizens if the bond issue fails. Need can be demonstrated in a variety of ways, run down school buildings, over crowded schools, teacher shortages, etc. In this study the primary need variable is class size, measured as the ratio of students to teachers (see Tedin et al. 2001). As this measure gets larger, claims about the need for more space gain credibility. We expect that voters would be sensitive to this measure while making their decision. If districts are sensitive to need, then we would expect to find a positive relationship between class size and the likelihood of a successful bond election. The second need measure is maintenance costs. As buildings deteriorate or are being used beyond their intended capacity, the cost of maintaining these buildings should increase. We expect that as these costs increase, so does the need for bonds for repair or for new buildings. To capture this need, we include the percentage of expenditures that the district spends on plant operation and maintenance.

The makeup of the student body could also affect the public's perception of need. We include the percentage of low income students in a district to capture one such need. Schools with high percentages of low income students have historically been disadvantaged financially, due to finance systems that depended on local resources. These schools and districts, then, might have a higher need to pass bonds. MacManus (1995) found that the

public was in favor of plans that redistributed local tax dollars from rich districts to poor districts in order to alleviate financial inequities. We might also expect, then, that districts with high need in this category might be willing to pass bonds to raise revenue.

Costs. Needs, of course, must be considered in relationship to costs. After all, there is no free (school) lunch. Three costs variables are included. First, the primary cost variable is the per-pupil amount of the bond.[3] If districts are sensitive to costs, we should expect the likelihood of success to decrease as this value increases. Second, bonds also affect tax rates although the hypothesis is somewhat ambiguous. If districts are sensitive to high tax rates, then there should be a negative relationship between the tax rate and the likelihood for success. In other words, if taxes are high in a district, residents might not be willing to raise them higher to accommodate a bond measure. In contrast, high tax rates could also be a function of a district's willingness to raise taxes for government services. In this case, we would expect a positive relationship between tax rates and likelihood for success. Third, a district's debt could affect outcomes. If a district spends a significant portion of their budget paying off debt, then voters might not be willing to expand this portion of the budget since it would come at the expense of other budgetary items, such as expenditures on instructional categories. To capture this affect, we include the percent of expenditures spent on capital outlay.

Resources. The rational voter in examining a bond issue would juxtapose the questions of need and cost with the resources available. Can we afford this bond issue or are we paying for gold-plated schools? The per pupil property value is used to capture financial resources of a district (see Hall and Piele 1976). Districts with high property value are more likely to have resources to pay for bonds so that they require smaller tax rate increases to cover the bond compared to districts with low property values. In other words, districts with

[3] For the cases that were collapsed from several measures on a single ballot (see below), this value was the value for bonds that succeeded divided by the number of students, or in the cases where no bonds succeeded it was the sum of all bonds divided by number of students.

low property value would have to increase taxes more, compared to a district with higher property value, in order to raise the same amount.

Performance. The past performance of a school system is logically related to willingness to pay for future costs (Wirt and Kirst 1997, 119; Tedin et al. 2001). After all if a school system has performed well, the logic goes, voters will reward this stewardship with additional resources. The Texas data set has the advantage of including a wide range of performance indicators. These measures included the district pass rate for Texas' annual academic skills test, know as the TAAS and a district and school ranking system, the Academic Excellence Indicator System, which places districts and schools into one of four categories. Unfortunately, none of those measures had any influence on the outcome of bond issue elections. The lack of results for performance measures means that we include none of these measures in our model of school bond elections. The absence of findings raises several interesting questions about the role that bond elections play in the democratic control of school districts.

Self-Interest. Virtually all studies of school bond elections have operated under a model that attempted to measure the self-interest of various groups of voters (Wirt and Kirst 1997, 119; but see Hall and Piele 1976). Lacking survey data on the voters, demographic factors are frequently used as surrogates. We use several variables for demographics of the district at large to capture self interest. The first of these variables is the size of the district. Larger districts tend to be more heterogeneous, both racially, and by class. The immediate impact of a bond is more likely to be distant in a large district. Voters might be more likely support a bond if it builds a new school in their neighborhood, since it would likely benefit their own children or even raise their property value. In large districts, there would be more voters who would not receive an immediate benefit from a successful bond measure. This variable comes from the 2000 U.S. Census and is logged to deal with the skewed nature of the distribution. In order to capture the effect of racial heterogeneity more directly, we include a racial distance measure (see Glaser 2002). This is generated by subtracting the

percentage white students from the percentage of the voting age population who are white. As this measure gets larger, we would expect the likelihood of bond election success to decrease.

We also include the percentage of the voting age population who are teachers. This variable was created using the total number of teachers in a district and the population over the age of 18 from the 2000 Census. Rubenfield (1977) found that teachers are more likely to support school bond measures. We expect the teachers would be more likely to support bonds since they would benefit from new and improved facilities and decreases in class size. Also as this measure gets larger, teachers would likely have a larger impact of the rest of the community through interactions with their friends and neighbors. Parents of children in the public school system should also be more likely to support bonds since their children would benefit from new and improved schools (Cataldo and Holm 1983). In order to capture the effect of parents with children in the public school system, we include the percentage of the population, counted in the 2000 Census, that is enrolled in the school district. Generally speaking, as this variable increases, so should the number of eligible voters who have children in the district's school.

For two of the demographic variables, we use data from the 1990 U.S. Census since these variables are not yet available for the 2000 Census. These variables are the percentage of the population over the age of 55 (in 1990) and the percentage of households occupied by renters (see Tedin et al. 2001; Button 1993). We expect that seniors would be less likely to support bond measures due to several factors. One is that they are less likely to have children in the school systems, so there is no direct interest. They are also more likely to be living on a fixed income and so are more sensitive to raises in property taxes. We also expect that renters might not be as sensitive to raises in property taxes since they do not receive yearly tax bills from the county assessor. As the proportion of rented households increase, the likelihood of bond success should increase as well.

Although we have expectations about how these variables aggregate to the district level to affect election outcomes, we are careful to make the distinction that our results speak more to district characteristics associated with success than individual characteristics associated with vote decision. Several survey studies of single bond elections have found that age, sex and race affects vote decision (see Tedin et al., 2001; Cataldo and Holm, 1983; Rubinfeld, 1977). The distribution of age and race within a district should also affect elections outcomes. It is possible, though, that their individual level findings are not strong enough to affect election outcomes. Contextual effects can also alter individual decisions. The differences that Tedin et al. (2001) found related to age and race may have been affected by the particular characteristics of the district they studied, and the particular aspects of proposed bond. Our findings will offer a more general picture of determinants for successful bond measures across several districts. It is also important from a policy stand point to understand the differences across districts that are associated with bond election success. Equitable distribution of education finances across districts is a contentious issue for most states. Most studies on education finance look at state's attempt to decrease inequities in general expenditures (Underwood and Verstegen 1990, Evans Murray and Scwab 1997, Firestone et al. 1997, Reed 2001, Wood and Theobald forthcoming). Our analysis will shed light on distribution of finances for capitol expenditures.

The dependent variable for this study is whether or not a district passed a bond measure during an election, covering a 5 year span from 1997 to 2001. For districts that placed several bond measures on a single ballot, we collapsed the measures into a single observation. Many districts placed several bond measures on a single ballot, since often times districts would have one bond for new buildings, another for renovations, and possibly others for athletic facilities or programs. The number of bonds for a district during a single election varied from 1 to 8 (12 percent of elections during the period studied were multiple bond elections). The key difference between same-ballot bond measures was the purpose of the bond (for which this information is only available for the last two years of our data).

Without the purpose, leaving the observation as a single bond measure for a district creates several observations in which nearly all the determinants for a successful and failed bond--most multiple bond elections had mixed results--are the same for certain districts, causing problems for the model. So for our analysis, an observation is a bond election, which coded 0 for when a single bond or all bonds on a single ballot failed, and 1 if at least one bond on the ballot election succeeded. Over the period studied, 83 percent of all bonds proposals passed. Given the dichotomous nature of our dependent variable, we use logit regression for this study.

Data

Data for this study came from the Texas Bond Review Board, the Texas Education Agency, and the 1990 and 2000 U.S. Census. The Texas Bond Review Board keeps track of all bond election results starting in 1997. Specifically, they maintain information on whether or not a bond passes, the amount of the proposed bond, and from 2000 on, the purpose of the bond (building, renovations, athletics, programs and other). Student and district finance data comes from the Texas Education Agency. All data from the Texas Education agency was from the school year prior to the election. And finally, data on the demographics of school districts comes from the 1990 and 2000 U.S. Census.

The Results

The results of our analyses are presented in Table 1. The first result is that districts are sensitive to costs. The per pupil value of the bond is negatively associated with success. The last column in Table 1. shows the change in predicted probability as an independent variable changes from 1/2 standard deviation below its mean to 1/2 standard deviation above its mean, holding all other independent variables at their mean. So for the per-pupil amount, a standard deviation change in value decreases the probability of success by 3 percent.

Tax rate appears to have a positive affect on success, though it is not statistically different from zero. The fact that we find no evidence that high tax rates have a negative effect is likely a product of districts' dispositions towards taxes. Certain districts may be

more willing to raise taxes for public goods. Since the tax rate is a function of many years of policy and production of public goods, this result is probably capturing tastes for public goods instead of sensitivity to high tax rates.

For the other variable associated with costs, percentage of expenditures on capital outlay, the coefficient is in the unexpected direction, although the 95 percent confidence interval just captures zero. Increasing expenditures on capitol outlay appears to decrease likelihood of success. Like tax rate, though, these two are likely a function of history. Those districts that are more willing to pass bonds would likely be paying for past bond measures; so this relationship is would be a function of past bond success. With plant maintenance, districts that have problems passing bonds would have to spend more money to maintain over-used and deteriorating buildings. We suspect, then, that high maintenance expenditures is likely a function of certain districts' unwillingness to pass bonds.

District resources, in the form of property value, is positively associated with success. For this variable, a one standard deviation increase produces a 6 percent increase in likelihood for success. As noted above, bonds would have less of an impact on tax rate in districts with high property values when compared to districts with low property values.

In the need category, class size is significant and in the expected direction. Compared to other variables in the model, class size also has a strong effect on success. A standard deviation increase in class size produces a 15 percent increase in the probability of passing a bond measure, which is quite strong compared to most other variables in the model. It appears that districts, all else being equal, are sensitive to the desire to cut class size and that bonds serve this purpose. Given that class size is a frequent subject of state and national level debates on education policy, we should expect that voters in districts would be sensitive to this issue.

The percentage of low income students in a district is also significantly related to bond success. One standard deviation increase in the percentage of low income students produces a 5 percent increase in the likelihood for success. Given that Texas, along with

many other states, have been found in violation of its own state constitution due to inequitable funding of schools with disadvantaged students, this finding should come as a reassurance to policy makers.

Plant maintenance is significantly related to success, but instead of having a positive effect on success, increases in maintenance expenditures decreases the likelihood of success. Increasing expenditures on plant maintenance by one standard deviation decreases the probability of success by 3.7 percent. Although this measure indicates need, the results are probably capturing the effects of history. That is, districts that have a difficult time passing bonds are likely to have high maintenance costs.

For the demographics, racial distance and age do not appear to be a reliable indicator of bond success.[4] They are both in the expected direction but not statistically different from zero. Although the relationship between seniors and success is in the expected direction, it is not statistically significant. One reason for this non-finding could be that the demographics of the district changed between the time of the 1990 Census and the bond election. If this is the case, then the measurement error could be masking relationship between seniors and success. Tedin et al. (2001), however, only found age to be significant for whites. MacManus (1995) found that although seniors were adverse to increases in property taxes, they were generally in favor of raising revenue for schools. Finally, it could be that seniors may not turnout for bond elections even though they turnout in high numbers for other elections.

The proportion of rented homes is positively associated with bond success. For this measure, a one standard deviation increase increases the probability of success by 5 percent. Given that renters do not see a yearly property tax bill, and are probably not likely to perceive that property tax is a part of their rent, we would expect that renters would be less sensitive to cost.

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4 We also tried using an absolute distance, and a ratio of white students over whites over the age of 18. These measures were also in the expected direction, but not statistically reliable.

Another variable positively associated with success is the percentage of the population who are teachers. This variable also has a strong effect on the likelihood for success. Increasing the percentage of teachers by a standard deviation produces an 19 percent increase in probability of success. As noted, this variable works in several ways. One, we expect that teachers are self-interested such that they would prefer working in better buildings, and thus more likely to vote for bonds. Also, we should expect that they have higher turnout rates that the rest of the population. Finally, the more teachers there are, the more interactions there would be between teachers and non-teachers. This interaction would be more likely to persuade someone to vote for a bond measure than to vote against one.

The size of the district population is negatively related to bond success. A standard deviation increase in this measure produces a 6.4 percent decrease in probability that a bond passes. Similar to the teacher variable, this variable likely works in several ways. As noted, district heterogeneity should increase with increases in population. Increases in population also decrease the probability that any individual would directly benefit from the bond measure. All these factors contribute to the decrease in the likelihood of success.

The final measure in our model, percentage of the population in public schools, produces an unexpected result. We expected that increases in this measure would increase the likelihood for success. Holding all other values at their mean, however, increasing this measure decreases the likelihood for success. This result, though, is a product of this measure being collinear with the teacher measure. The teacher measure is the number of teachers divided by the population over the age of 18, and the student measure is the number of students divided by the total population. Since the number of teachers is a function of the number of students, and the population over 18 is related to the whole population, the .87 correlation between these two measures is not surprising. In fact, several of our variables—class size, percent of teachers in population, population, and percent of student in the population—are strongly correlated. Removing teachers from the model makes the sign on the coefficient of percent students variable change from negative to positive, although it is

not statistically significant. Removing population as well makes the students' variable positive and significant.

Increases in the students' measure does not produce linear increase of parents in the population, the group we were intending to capture. Increases in this measure is also a function of increases in the number of children per family. There is also a class and ethnic component to this measure because family size varies by both class and ethnicity. As noted above, the concepts captured in the population and teacher measures are expected to affect success in the same direction, negative for the population measure and positive for the teacher measure. When controlling for these similar and collinear measures, therefore, the remaining effect of the percentage of student variable is likely the result of the other concepts captured in the measure. Unlike the population and teacher measure, the other concepts captured in this measure negatively affect the likelihood for success. Increases in the percentage of students in the population, after controlling for population and teachers, are likely to be associated with increases in district heterogeneity in class and race.

Discussion

We find that bond election success is sensitive to needs, costs, resources, and measures of self interest. The results for the tax, maintenance, and capital outlay indicate that history plays a role in the likelihood of success. That is, high tax rates and capital outlays are at least in part an indicator of willingness to pay for government services. High maintenance costs are likely a functions of certain districts' inability to raise funds for new buildings. Districts will have a difficult time passing bonds if there is not a willingness within the district to use taxes to pay for the production of public goods.

Several authors (Hamilton and Cohen, 1974; Flanigan et al. 1995; and Boschee and Holt, 1999, Tedin et al. 2001) argue that the campaign for a bond and the information presented during a campaign plays a critical role in the success of a bond election. Districts, then, might be able to raise support for bonds by arguing that costs associated with not passing a bond, such as increased maintenance costs, affect other expenditures, such as

instructional expenditures. Districts appear sensitive to need from the relationship found between class size and success. Unlike class size, most voters probably do not know about how much districts spend on plant maintenance. Couched in the terms of need, proponents of a bond measure may be able to use this information to increase support for a bond measure.

Teachers also appear to play a vital role in the passage bonds. Their influence on election outcomes goes beyond their own vote, such that they can also be effective advocates for bond measures. Hamilton and Cohen (1974) found a favorable perception of teachers by those who both favored and opposed bonds. The public's perception of administrators, though, differed between the two groups, such that those who favored a bond viewed administrators favorably and those opposed to the bond did not. Districts, then, would likely be better off if they used teachers as advocates for a bond, since voters may be more likely to trust and support teachers than they would trust administrators.

Several other factors associated with the passage of bond measures are not under the control of districts, such as the size of the district, its wealth, or the number of renters in a district. Though these variables cannot be controlled by administrators, knowledge of how they affect election outcomes can be useful for implementing a successful bond campaign. In large districts, bond proponents may need to focus on getting out the vote in areas that would be directly affected by a passage of a bond measure. Districts can also emphasize how bonds can have a positive effect district-wide by decreasing class-size in surrounding schools, as well as decreasing the need for busing in order to alleviate over crowding in schools.

In conclusion, the findings of this study generally support the findings from studies that were limited to one or few elections. By studying a large number of elections, we help to make these findings more generalizable. Texas, though, has been generous to its school district, such that during the period of our study 83 percent of all bonds proposed passed. Other states have not been so lucky. Certainly laws requiring super majority pass rate affect

election outcomes. The decision and planning process required to place a bond on the ballot could also be an important determinant for success. Further studies of bond elections in other states will contribute to our knowledge of this important policy area.

Table 1. Logit Regression for Determinants of Bond Success

Variable	Coefficient	95% Conf. Interval	+-1/2 S.D.
Amount[a]	-0.0398	[-0.0778 -0.0171]	-0.0268
	(0.0194)		
Tax Rate	1.4210	[-0.3398 3.1819]	0.0256
	(0.8984)		
Capital Outlay	0.0593	[-0.0030 0.1216]	0.0327
	(0.0318)		
Property Value[a]	0.0015	[0.0002 0.0028]	0.0575
	(0.0007)		
Class Size	0.6094	[0.2553 0.9635]	0.1513
	(0.1806)		
Low Income	0.0184	[0.0034 0.0334]	0.0459
	(0.0077)		
Maintenance	-0.1709	[-0.3006 -0.0412]	-0.0370
	(0.0662)		
Seniors	-0.0173	[-0.0579 0.0234]	-0.0149
	(0.0207)		
Race Distance	-0.0256	[-0.0588 0.0076]	-0.0230
	(0.0169)		
Renters	0.0474	[0.0138 0.0810]	0.0532
	(0.0171)		
Population	-0.3846	[-0.7370 -0.0323]	-0.0645
	(0.1798)		
Teachers	2.0063	[0.1877 3.8248]	0.1826
	(0.9278)		
Students	-0.2190	[-0.4536 0.0156]	-0.1199
	(0.1197)		
Constant	-5.1385		
	(2.4969)		

Number of obs. = 695
Log likelihood = -285.250
LR chi2(13) = 59.520
Prob > chi2 = 0.000
Pseudo R2 = 0.095
Standard errors in parentheses
a. Coefficient multiplied by 1,000 to facilitate presentation

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