State Politics & Policy Quarterly (2024), **24**: 1, 53–76
doi:10.1017/spq.2023.26

CAMBRIDGE UNIVERSITY PRESS

ORIGINAL ARTICLE

Voter Approval of Bond Referendums: The Role of Bond Amount and Ballot Characteristics

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(Received 03 March 2022; revised 23 November 2022; accepted 10 January 2023; published online 15 January 2024)

Abstract

Municipal and state governments are often constitutionally bound to ask voters to approve new government debt through voting on bond referendums. Generally, politicians expect voters to balk at higher-cost bonds and be more willing to approve lower-cost bonds. However, there is minimal research on how the amount of a bond affects voter support. We implement a survey experiment that presents respondents with hypothetical ballots, in which the cost of proposed bonds, the number of bonds on the ballot, and the order in which they are presented, are all randomized. Our results suggest that support is not responsive to the amount of the bond, even when the cost is well outside what is typical and within the bounds of what the government can afford. In contrast, we find other aspects of the ballot matter significantly more for bond referendum approval. The more bonds on the ballot and being placed lower on the ballot both reduce support significantly.

Keywords: direct democracy; voting behavior; bond referendums; ballot question wording; bond amounts; ballot referendums; survey experiment

Introduction

In 2018, state governments proposed bonds worth $21.1 billion, and voters approved bond referendums totaling $12.25 billion. Many millions more were proposed and approved in municipal-level bond elections (Ballotpedia, 2018). State and local bonds range greatly in value. For example, California proposed a $8.9 billion bond for water-related infrastructure and environmental projects, New Mexico proposed $6 million for new school buses, and the town of Warwick, Rhode Island proposed a school improvement bond for $77,000.

Political scientists have long questioned the ability of the average voter to understand the issues contained in complex referendums (e.g., Downs 1957, Reilly and

Richey 2009), not to mention the mechanisms by which they are funded and paid for over time (Lang *et al.* 2022). Public preferences on bonds are also understudied, particularly the role that stated costs play in voter decision-making. Economic theory suggests that voters should be responsive to costs with higher household-specific costs decreasing support (Burkhardt and Chan 2017; Lang, Pearson-Merkowitz and Scott Forthcoming). Political scientists have also suggested that other factors may sway voters toward a support or oppose decision including the wording of titles or descriptions, and the length and ordering of ballots (i.e., Augenblick and Nicholson 2016; Bowers and Chen, 2015; Grant 2017; Matsusaka 2012; 2016; Reilly and Richey 2009).

We use causal analysis to investigate how the amount of bond factors into voter decision-making and how it compares with other aspects of the ballot. We consider the dollar amount of the bond, the amount of the bond in comparison to other amounts on the ballot, bond question ordering, and the number of bonds on the ballot. We seek to understand the extent to which states and localities are constrained by how much they can ask voters to approve not because of their ability to pay back the bond but because voters will balk at the amount requested. Are voters responsive to the dollar amount of bonds? Or are voters price-insensitive? How does price responsiveness compare to the effect of other characteristics of the ballot?

We investigate the role of four ballot characteristics and support for bond referendums: individual bond dollar amounts, relative bond dollar amounts, bond question order, and the number of bonds proposed. We use an original survey experiment to investigate these factors and their association with bond approval. The experiment randomized the number of bond referendums on the ballot, the cost of each referendum, and the order of the bonds. We also used different bond project types to increase the reliability of our estimates.

Our results suggest that the bond amount negatively affects support, but the magnitude is incredibly small. The lack of cost responsiveness holds regardless of ballot length and bond topic. Further, we find very little evidence that the dollar amounts listed for other bonds on the ballot affect support. In contrast, we find that the order that bonds are presented and the number of bonds on the ballot have a large and meaningful impact on support. These results indicate that legislators and elected officials should be cognizant of the order in which they list bonds on the ballot, listing the most important (and/or potentially least popular) first, but that the dollar amounts of bonds are less important to voter approval.

How do bond amounts and ballot characteristics affect voter approval?

Relatively little literature investigates voter decision-making on state and local bond referendums and even less uses causal methods to test hypotheses. In the political science realm, much of the previous literature has examined voting behavior that can be influenced by ballot characteristics, but none have investigated the "price tag" of the bonds on the ballot. Moreover, most of the literature has used aggregated votes or non-experimental survey data to investigate bond referendum support (e.g., Altonji, Lang, and Puggioni 2016; Augenblick and Nicholson 2016; Brunner, Robbins, and Simonsen 2018; Pearson-Merkowitz and Lang 2020; Zimmer *et al.* 2011).

One important attribute not associated with the dollar amount of a bond is the order in which items are presented. Evidence from studies of candidates and ballot questions suggest that voters are responsive to the order in which items appear and/or voters begin to tire as ballots get longer (e.g., Bernardo, Pearson-Merkowitz, and Macht 2022; Grant 2017; Matsusaka 2016; Reilly and Richey 2009). Recent literature

https://doi.org/10.1017/spq.2023.26 Published online by Cambridge University Press

has also used causal or quasi-causal mechanisms of analysis and found mixed results. For example, Binder and Kousser (2014) use experimental survey methods on a sample of Florida residents to randomize the order in which ballot propositions are asked and find mixed evidence of order effects. Augenblick and Nicholson (2016) used natural variation in ballot length that is plausibly random for a causal approach with observational data and found that approval rates are lower for propositions listed further down on the ballot. Each notch lower on the ballot, they estimate, results in about 0.12 percent fewer "yes" votes. Matsusaka (2016) used an impressive dataset of California referendums from 1958 to 2014 and Texas from 1986 to 2015, both of which offered exogenous variation in ballot length and referendum order at the local level. Matsusaka's analysis found no evidence of ballot order effects but found that longer ballots produced lower approval rates. However, in each of these cases, the analyses were unable to examine referendum cost as a factor of approval. Finally, Grant (2017) looks at candidate elections and finds large ballot order effects. On the whole, the results are mixed: some find large ballot order effects (Grant 2017), others find null effects for order and strong effects for length (Matsusaka 2016) and others find non-linear effects for order (Binder and Kousser 2014). The jury is still out as to the relative influence of referendum cost, referendum order, and ballot length. As a result, we add to this literature by simultaneously examining the effect of cost, length, and order using experimental methods. Further, we do so in the context of bond referendums, which are particularly common in municipal and state elections.

Although political scientists have not usually modeled the effect of bond cost on support, in economics, scholars have examined the influence of bond amounts on support using real-world referendums and vote outcomes. Economists assert that the presence of fiscal or cost information influences support for government services. Several studies find that across services, support is lower when respondents are informed about the tax implications (e.g., Robbins, Simonsen, and Feldman 2004; Simonsen and Robbins 2000). A few studies look specifically at how funding mechanisms affect support for bonds as well. Some of these make comparisons across jurisdictions and assess how aggregate support varies with the funding vehicle (e.g., property tax, bond) and the amount of revenue to be raised (Banzhaf, Oates, and Sanchirico 2010; Kotchen and Powers 2006). Another strategy has been to examine statewide referendums and how precinct-level average household cost correlates with average voter support (Burkhardt and Chan 2017; Vander Naald and Cameron 2017). Although these real-world settings offer powerful data due to the consequentiality of the real votes cast, they are limited because the referendum costs are set by policy makers and may be correlated with observed and unobserved community factors, which could in turn lead to biased conclusions about voter preferences.[1]

Several studies have used survey experiments to investigate bond and initiative support that are also relevant. For example, Burnett and Kogan (2015) and Brunner, Robbins, and Simonsen (2021) find that wording and salience of information can impact approval, specifically in referendums dealing with school construction and funding. Burnett and Kogan (2015) find that campaign effects of certain elections can serve to eliminate or mitigate the effects of wording, order, and length. Certainly, in

[1]A second critical assumption is that aggregate voting data can be used to recover individual preferences. Lang and Pearson-Merkowitz (2022) examine this issue and find aggregate voting is likely to produce biased estimates.

https://doi.org/10.1017/spq.2023.26 Published online by Cambridge University Press

high-profile voter initiatives, campaign effects and framing may be a factor (but see Dyck and Pearson-Merkowitz 2019). However, our focus is the cost of the bond and other aspects of the ballot that election administrators can control. Moreover, bonds rarely, if ever, have significant campaigns associated with them. Given the low salience of bond elections and the rare presence of campaigns for or against them,[2] we hypothesize that ballot order and ballot length may have strong effects in bond elections where voters may tire of approving spending over and over.

Perhaps the most relevant to our study is Brunner, Robbins, and Simonsen (2021) who use a survey experiment to investigate the impact of explaining property tax impacts of bonds to voters. Their study tested different wording about how the bond would affect property taxes and found that "making the tax implications explicit" significantly increases the likelihood that a respondent votes "no" and that the magnitude was largest among respondents who received information about equivalent taxes in real dollars and not just a comparison tax rate. This research indicates voters are tax responsive, but they are most responsive when the financial impact is clear. However, this study kept the cost to the voter constant across the cue manipulations. As a result, it is unclear if *higher* dollar amounts lead to *lower* support under normal ballot presentations. Given the overwhelming tendency of bond referendums to only state the total amount, this research is very relevant to the real world.

We innovate on the current literature by randomizing ballot content at the individual level for the bond amount, the number of bonds, and the order of different bonds on the ballot, thereby using a causal design to evaluate each factor.

Bond amount

In standard economic theory, as the dollar amount of the bond increases, demand should decrease, *ceteris paribus*. However, this relationship is more complex with voting for several reasons. First, *ceteris paribus* does not hold. An increase in dollar amount could increase the goods and services provided, which could have a positive effect on support, meaning an increase in the financial size of the bond has an ambiguous effect on support (Banzhaf, Oates, and Sanchirico 2010). Using real-world referendums and making comparisons across municipalities and states, prior literature has found that referendums with higher dollar amounts have less support, with elasticities on these bonds ranging from −0.10 to −0.15 (Babcock, Egan, and Dwyer 2020; DeBartolo and Fortune 1982; Rubinfeld 1977). However, these studies examine aggregate voting behavior which might be correlated with community factors and individual preferences and hence obscure the true relationship.

Relative dollar amounts

Bond referendums often do not appear in isolation on the ballot, and the dollar amounts of other bonds may affect approval of individual bonds. Voters might

[2]For example, according to data collected by Ballotpedia, from 2016–2021, Maine and Rhode Island held a total of 27 statewide bond elections, far more than any other state. In none of these elections was any money spent to defeat the bond. In California, there have been five statewide bond elections since 2014, in only one of these, a bond regarding stem cell research funding, was there any spending against the bond and even in this case only $1,350 was spent to defeat it, compared to over 24 million dollars in support of the bond.

https://doi.org/10.1017/spq.2023.26 Published online by Cambridge University Press

compare or aggregate different bond amounts to determine the overall cost, and which bonds they not only want to approve, but which they think the jurisdiction can afford. Standard economic theory would suggest that each voter does a benefit–cost calculation for each referendum separately, though budget constraints may influence decisions if bond spending is onerous. However, a behavioral economics framework would suggest voters may behave consistent with mental accounting (à la Thaler 1999) and have a pre-determined amount in mind that is appropriate for public spending, and approval would decline as the cumulative amount increases. Other bond amounts may also serve as reference points to which the bond of interest is compared. If one bond is very expensive, support for another bond may increase because it appears relatively cheaper. The only similar study to be conducted to our knowledge, is the exploratory analysis presented in Matsusaka (2016, 274) who looks at four bond referendums in California and finds no evidence of mental accounting leading to decreased "yes" votes. However, Matsasuka (2016) was concerned with the order of the bonds (e.g., do bonds further down the ballot receive fewer votes, regardless of if they are more or less expensive than the ones that preceded them) only, and not the cost of the bonds. As a result, our study fills a gap in this literature in that it is the first to look at the effect of the stated amount of the bond and support using causal methods.

Ballot length and order

Ballot design factors are important predictors of voter approval (Bowers and Chen, 2015). Question order may be important as voters face sometimes wordy and lengthy ballots, which may lead to confusion, voter roll-off, and voter errors (Bernardo, Pearson-Merkowitz, and Macht 2022; Bowers and Chen, 2015 King and Leigh 2009; Song 2019). Grant (2017), for example, uses a natural experiment of Texas candidate elections and finds strong and meaningful order effects, particularly on low-salience candidate races. But Matsusaka (2016), also using real-world natural experiment data of Texas ballot question elections and a comparative poll-to-real vote comparison in California ballot question data, does not find order effects.

The mechanism for order effects is unclear. As Matsusaka (2016) notes, when voters get tired of voting, it makes sense that races further down the ballot would receive fewer votes due to voter roll-off. But it is less clear why there would be an increased likelihood of voting "no" on initiatives. We think that bonds may be different. For one, they are often low salience and so their order may matter more (e.g., Grant 2017), particularly given different bond questions have underlying baseline popularity (Pearson-Merkowitz and Lang 2020). Second, they are unique in that they have costs stated as part of the ballot wording. This may increase the likelihood of order effects as voters use mental accounting or because voters tire of approving what they may perceive as increases in spending.

Ballot length can also affect voter's attention, with much of the literature finding from real-world elections data that the longer the ballot, the more likely it is that referendums will face voter roll-off and generate fewer votes (Bernardo, Pearson-Merkowitz, and Macht 2022; Matsusaka 2016; Stutzer, Baltensperger, and Meier 2019). Given the discussion above about standard economic theory, we also hypothesize that specifically bonds listed further down the ballot will receive less support, and the more bonds on the ballot, the higher likelihood that voters will reject them.

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Methods

Survey design

We designed our survey to randomize several aspects of a hypothetical ballot to causally test each of our hypotheses. We add to the existing literature to date by using a randomized survey experiment. Although the previous political science literature uses strong real-world natural experiments, those natural experiments have some limitations. Namely, they do not allow for a randomization of costs, only order and length, and are limited to studies in Texas. Additionally, they find conflicting evidence. Further, the economics data uses only observational data that may be correlated with observed and unobserved community factors. Certainly, randomized surveys have benefits and downsides. The benefit is that we can truly control and randomize all factors for which we are interested while taking into account unique effects for each factor for each bond issue we include. The downside is that people may behave differently on surveys than in the actual voting booth. Unfortunately, given there is no way to randomize bond amounts in the real world, a survey experiment is the best way to test our hypotheses.

First, to test the effect of bond order and the number of bonds on the ballot, we randomized whether the respondent was shown a ballot with one, three, or five referendums. If multiple referendums were present (ballot length three or five), the order of the referendums was randomly assigned. The referendums included five different program investment types that are common among real ballot propositions (especially in the location of our survey experiment): Land Conservation, Affordable Housing, K-12 School Construction, Higher Education Buildings Construction, and Transportation. We chose these topics to increase recognition of the policy proposals among participants to elicit more precise results by mirroring what would occur during an actual election. In addition, we wanted to include ballot issues that both tend to generate a large magnitude of support (e.g., Land Conservation, Transportation, and K-12 construction) and those that tend to be less popular (Affordable Housing and Higher Education) to make sure our results were not a product of choosing valence issues (e.g., Dyck and Pearson-Merkowitz 2019; Pearson-Merkowitz and Lang 2020), or due to underlying popularity.

Ballots with only one bond presented were constrained to show only the Land Conservation Bond or the Affordable Housing Bond. Ballots with three referendums included both Land Conservation and Affordable Housing bonds, plus an additional randomly chosen third bond from the remaining three topics (K-12, Higher Ed, or Transportation). Ballots with five referendums included all five issues. Each of these configurations had a 25% chance of being shown to a respondent.

Each bond proposal included a randomly generated bond amount. Bond amounts included $20, $50, $100, $200, $300, and $500 million, with each amount equally likely to appear. We chose the dollar amounts based on historical amounts of bonds that appeared on Rhode Island ballots (the location of our survey experiment) in recent elections. Since 2010, 21 of the 23 bonds in the state on these topics were priced between $10 and $110 million and all passed. The two referendums outside of that range (both $250 million state school construction bonds) were also both successful. These amounts are also not outside the range voters in other states would see on the ballot. As we were trying to determine if the dollar amount is truly a factor, and as no bond had failed in recent history, we included bond amounts that were much larger than those typically put on the ballot. Below the bond title and amount was a brief

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Table 1. Possible levels after randomization by variable type

Variable	Levels
Bond amount ($ millions)	20, 50, 100, 200, 300, and 500
Type	Land conservation, affordable housing, K-12 school construction, college buildings construction, and transportation
Length	1 (land conservation), 1 (affordable housing), 3, and 5
Order	1, 2, 3, 4, and 5

Note. We present the possible levels for each variable after randomization took place. Each possible amount point had an equal chance of being randomly selected (17%). Each possible length had an equal chance of selection (25%). Conditional on length, the ordering was randomized equally. Ballots of length 1 had a 100% chance of order spot 1, ballots of length 3 had an equal 33% chance of being ordered anywhere in spots 1–3, and ballots of length 5 had an equal 20% chance of being ordered anywhere from 1 to 5.

description of what the money would be used for if approved, mimicking the way bonds typically appear on ballots in Rhode Island. For reference, Table 1 shows the possible levels that bond amount, type, number of bonds, and bond order could be presented given randomization of these variables. The respondents were shown the full ballot (all the bonds with their associated dollar amounts) on a single screen to mirror the paper ballot used in the state.

Figure 1 shows a portion of a sample ballot from the 2018 Rhode Island General Election. We designed our hypothetical ballots to have similar layout and descriptions. Figure 2 presents the way a respondent would have seen the questions for three hypothetical ballots, with 1, 3, and 5 questions, respectively. Respondents who were only asked to vote on one question, would have seen the top box, respondents who were asked to vote on three bonds would have seen the second box, and respondents who were asked to vote on five bonds would have seen the bottom box. The entire ballot was visible on a single screen, mirroring Rhode Island's paper ballot format (as seen in Figure 1), so participants could compare and contrast referendums and amounts as they normally could in the real-world. The wording and presentation of each ballot question was the same regardless of the number of bonds included on the ballot.

The remainder of the survey consisted of questions regarding standard demographics (age, race, education, income), political party affiliation, voting frequency, homeowner status, and city of residence which have been shown to affect bond referendum support in other studies (e.g., Brunner, Robbins, and Simonsen 2021; Pearson-Merkowitz and Lang 2020; Prendergast, Pearson-Merkowitz, and Lang 2019).[3] These questions appeared after the respondent finalized their vote and had proceeded to the next page.

Data collection

We conducted the survey in the fall of 2019. The survey was administered at five of the six Department of Motor Vehicle (DMV) registries in the state of Rhode Island. Motor Vehicle Licensing offices have been shown to be effective locations for conducting intercept surveys among the general public (see for example, these studies also using the motor vehicle offices as a representative survey site: Borchers, Duke, and Parsons 2007; Lang *et al.* 2021; McGonagle and Swallow 2005). Most

[3]The full survey is available from the authors by request.

https://doi.org/10.1017/spq.2023.26 Published online by Cambridge University Press

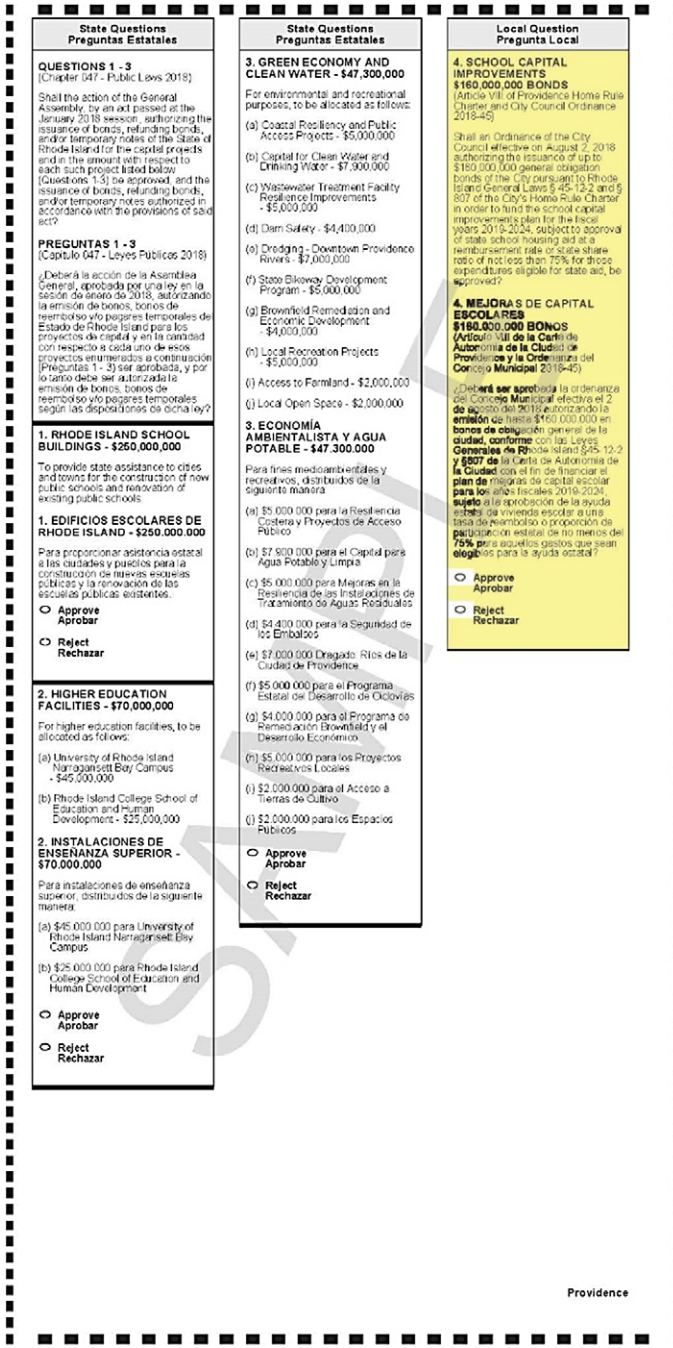

Figure 1. Sample Ballot from the 2018 Rhode Island General Election.

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	Vote Choice	
	approve	reject
Land Conservation Bond ($100 million) For the purpose of purchasing land so that it is preserved as open space.	○	○

	Vote Choice	
	approve	reject
Land Conservation Bond ($500 million) For the purpose of purchasing land so that it is preserved as open space.	○	○
K-12 School Construction Bond ($100 million) For the purpose of building new and renovating aging public school buildings	○	○
Affordable Housing Bond ($20 million) For the purpose of building new affordable housing in Rhode Island	○	○

	Vote Choice	
	approve	reject
Transportation Bond ($50 million) For the purpose of funding road and bridge repairs	○	○
College Buildings Construction Bond ($100 million) For the purpose of funding construction and renovation at Rhode Island College and the University of Rhode Island	○	○
K-12 School Construction Bond ($50 million) For the purpose of building new and renovating aging public school buildings	○	○
Affordable Housing Bond ($50 million) For the purpose of building new affordable housing in Rhode Island	○	○
Land Conservation Bond ($200 million) For the purpose of purchasing land so that it is preserved as open space.	○	○

Figure 2. "How Would you Vote on the Following Bonds?" Example Ballots of Length 1, 3, and 5.

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importantly, the DMV is an efficient way to reach a large number of people in one place, increasing the sample size, and it offers a broad swath of the population given there are a variety of tasks that require an in-person visit to the DMV. In our particular case, this helps reduce potential selection bias often associated with convenience sampling as all residents who drive or need a "walkers license" must visit the DMV. During this time, the DMV was also requiring people to upgrade to a REAL ID, which required an in-person visit instead of an online renewal.

Our research protocol was as follows: teams of two surveyors were stationed in the waiting room of DMV locations throughout the standard work week during open hours. Hours of operation for the DMV locations varied with the largest location open between 8 am and 6 pm Monday–Friday and satellite locations open limited hours and days. The surveyors were instructed to only survey visitors who had already checked in and were waiting for their number to be called. In addition, surveyors only asked prospective participants waiting in the standard waiting room locations. Surveyors approached and asked *every person* in each waiting room to participate in the survey. The potential respondents were asked if they would be willing to take a 5-minute, anonymous survey to be used for research purposes only. If the person gave verbal consent, they were offered a touchscreen tablet to take the survey. Respondents could omit responses if they felt inclined, but only after a prompt asked them if they wanted to continue with the survey and leave the question blank. If the respondent was under 18 years of age, they were stopped from taking the survey. All surveyors received extensive training in in-person survey methodology, interviewer bias, selection bias, and research ethics. We dropped observations that were missing responses to any of the bond or demographic questions, and those that completed the survey in under 1 minute as this likely means they were not engaging with the questions. After these exclusions, our final sample includes 732 respondents.

Table 2 presents summary data of the survey respondents, as well as statewide statistics from the 2018 American Community Survey (ACS) and the Rhode Island voter registration database (Rhode Island Department of State 2019) for comparison purposes. Respondents represented the state well in terms of geography; Rhode Island has 39 towns and we had respondents from each one. Overall, our sample includes a wide range of participants and reflects the state population demographics fairly well. Our sample includes fewer seniors (age 65+), but otherwise tracks the age distribution well for younger adults. Although the frequencies of almost all income groups and race were similar to the state, our sample was substantially more educated, with over half of the respondents reporting bachelor's degree or higher compared to only 31.7% in the statewide estimation. Our sample also includes more voters who identify as Republicans relative to statewide voter registration (19.9% versus 12.2%) and a lower percentage of Democrats. However, we see this as beneficial for statistical inference because Rhode Island leans so heavily toward the Democratic Party.

Table 3 presents summary data for the ballots presented to respondents. Mean approval for both the Land Conservation Bond (80% approval) and the Affordable Housing Bond (70.2% approval) was high, and higher than typically seen in historical referendum votes. In 2016 both Land Conservation and Affordable Housing bonds were on the ballot and passed with 67.6% and 58.0% approval, respectively. Both the Land Conservation and Affordable Housing bonds in our experiment had a mean dollar amount of around $190 million (range is $20–$500 million). The mean and outward bound of the range is larger than the real-world amount of typical bonds on

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Table 2. Respondent summary statistics

	Survey mean	Survey std. dev.	Statewide mean
Age			
Age 18–29	23.2	42.2	22.2
Age 30–44	29.5	45.6	22.5
Age 45–54	22.0	41.4	16.4
Age 55–64	16.1	36.8	17.4
Age 65 and over	9.2	28.9	21.4
Female	47.6	49.9	51.9
Income ($)			
Less than 50,000	30.3	46.0	39.1
50,000–74,999	19.9	40.0	17.3
75,000–99,000	17.9	38.4	12.1
100,000–149,000	17.1	37.6	17.1
150,000 or more	14.8	35.5	14.2
Education			
Less than high school	2.9	16.7	10.5
High-school diploma	20.4	40.3	29.0
Some college	23.1	42.2	28.6
Bachelor's degree or higher	53.6	49.9	31.7
Race			
White	78.8	40.9	71.4
Asian	4.5	20.8	3.3
Black or Hispanic	20.1	40.1	22.8
Two or more reported races	4.9	21.6	2.4
Party affiliation			
Democrat	32.2	46.8	39.7
Republican	19.9	40.0	12.2
Unaffiliated	47.8	50.0	48.0
Gov. Trust (mean) (1–5 scale: N = 729)	2.3	0.75	
Observations	732		

Note: Summary statistics are presented for demographic controls collected from the respondents. Columns 1 and 2 show for each variable, the percent of the population and the standard deviation, respectively. Column 3 presents statewide demographic mean estimates from the 2018 American Community Survey (ACS) for the over 18 population and party affiliation from the 2019 Rhode Island voter registration data.

Table 3. Ballot summary statistics

	Mean	SD	*N*
Approval (%)			
Land conservation	80.0	40.1	559
Affordable housing	70.2	45.7	527
Absolute amount ($million)			
Amount (land conservation)	188.3	166.4	565
Amount (affordable housing)	197.8	169.7	531
Relative amount ($million)			
Cumulative amount all else (land conservation)	296.2	388.3	565
Cumulative amount all else (affordable housing)	399.6	399.4	531
Non-amount			
Order (land conservation)	2.2	1.5	565
Order (affordable housing)	2.4	1.5	531
Ballot length 1 (land conservation) (%)	27.5	44.7	732
Ballot length 1 (affordable housing) (%)	22.8	42.0	732
Ballot length 3 (%)	23.2	42.3	732
Ballot length 5 (%)	26.5	44.2	732

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these two issues in Rhode Island, which has never exceeded $70 million in the state and are typically less than $50 million (Ballotpedia 2018).

We explore relative bond dollar amounts by creating a variable called *cumulative amount all else*, which equals the sum of the dollar amounts listed for all the other bonds on that ballot. This allows us to examine if the total cost of the other bonds influences support for one of the main referendums. To illustrate this variable, consider the ballot with three referendums in Figure 2. When trying to understand the determinants of approval for the Land Conservation bond as the focal referendum, *cumulative amount all else* is equal to the sum of the other two bonds, $20 million for Affordable Housing plus $100 million for K-12 School Construction (sum $120 million). When Affordable Housing is the focal bond, *cumulative amount all else* takes on a value of $600 million. The same process holds for ballots with five referendums and *cumulative amount all else* naturally has a higher average value due to there being more bonds on the ballot. Ballots with only one referendum are coded as *cumulative amount all else* equal to zero. Table 3 shows that the mean of *cumulative amount all else* for Land Conservation is about $296 million and for Affordable Housing is about $400 million. This large difference is just a result of realized values in the randomization process, nothing in the survey design implied a difference.

Our survey design randomized across the four possibilities of ballot length with equal probability, and Table 3 shows that each outcome was realized about 25% of the time. However, ballot length 1 (Land Conservation) was realized slightly more often than the others, with 27.5% of respondents seeing this version. Given *cumulative amount all else* is coded zero for ballot length 1, this helps explain the large difference in that variable between our two main referendums. The second variable that measures non-amount influences of referendum support is *order*, which is the spot on the ballot in which the bond appears. If the main bond is listed first, then *order* is coded as 1, if second 2, and so on. *Order* is always coded as 1 on ballots with only one referendum. To reiterate our survey design, ballot order is randomized, so our main referendums appeared in every position on the ballot. Table 2 shows that the mean *order* is 2.2 for Land Conservation and 2.4 for Affordable Housing. When examining ballots of length 3 or 5 only, mean *order* is 2.4 and 2.6 for Land Conservation and Affordable Housing, respectively.

Empirical models

The first model we estimate simultaneously tests the influences of absolute dollar amount, relative dollar amount, and bond order and total number of bonds on approval of our two main referendums. We estimate the following linear probability model for both the Land Conservation Bond and the Affordable Housing Bond separately:

$$approve_i = \alpha + \beta_1 amount_i + \beta_2 cumulative\ amount\ all\ else_i + \beta_3 order_i + \beta_4 ballot\ length\ 3_i + \beta_5 ballot\ length\ 5_i + X_i\boldsymbol{\delta} + \varepsilon_i \quad (1)$$

$approve_i$ is a binary variable equal to 1 if individual i voted to approve the main referendum, and zero otherwise. $amount_i$ is the cost that the respondent was shown for the main referendum, and we expect β_1 to be negative in sign.

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$cumulative\ amount\ all\ else_i$ is the relative cost measure, and we are ambiguous on the expected sign of β_2, given the opposing forces discussed above. $order_i$ is the order in which the bond appeared on the ballot for each individual. To be clear, $order_i$ always takes on the value 1 for ballots of length 1. $order_i$ ranges from 1 to 3 for ballots of length 3 and from 1 to 5 for ballots of length 5. We hypothesize that β_3 will be negative as bonds appearing further down the ballot will be less likely to be approved. We then control for the number of bonds on the ballot by using two indicator variables, $ballot\ length3$ and $ballot\ length5$, which are equal to 1 if the ballot presented to the individual showed 3 or 5 bonds, respectively. We expect $\beta_5 < \beta_4 < 0$ for the same reason as β_3, the more referendums a voter faces, the less likely they are to approve. X_i is a vector of control variables including political party affiliation, trust in state government, voting frequency, race and ethnicity, homeowner status, income, education, sex, and city of residence. Although these variables are not our focus, they are important determinants of approval and are included to improve model fit (Prendergast, Pearson-Merkowitz, and Lang 2019; Pearson-Merkowitz and Lang 2020). In additional specifications, we also include interactions between $amount_i$ and dummy variables for ballot length 1, 3 and 5. This allows us to test if dollar amount responsiveness changes as the length of the ballot grows, which has never been tested to date.

Equation (1) demonstrates the power of our analysis. We can include all of these variables in a single equation because they are all orthogonal given randomization. Analysis of real-world ballots and outcomes are limited in this way. Thus, we expect novel findings not possible in previous analysis.

The second model we estimate examines cost responsiveness across all five bond types in a single, pooled model. We only include choices from respondents who were shown a ballot of length five, but we include all of their five votes as observations. We include respondent fixed effects to capture any individual factors that affect approval across bond types. The initial model we estimate is:

$$approve_{ib} = \delta_1 + \delta_2 amount_{ib} + \alpha_i + \varepsilon_{ib} \tag{2}$$

where $approve_{ib}$ is a binary variable equal to 1 if respondent *i* voted to approve bond *b* and zero otherwise, $amount_{ib}$ is the amount shown to respondent *i* for bond *b*, and α_i is the respondent fixed effect. δ_2 is the measure of amount responsiveness across all bond types combined and δ_1 is the common intercept, interpreted literally as expected approval if amount was zero.

We expand Equation 2 to allow for bond-specific amount responsiveness and intercepts:

$$approve_{ib} = \boldsymbol{\delta_{1b}} + \sum_{b \in B} \delta_{2b} amount_{ib} * \boldsymbol{I}(b = B) + \alpha_i + \varepsilon_{ib} \tag{3}$$

where $\boldsymbol{\delta}_{1b}$ is now a vector with one intercept for each bond type, $I(b = B)$ is an indicator variable equal to one if bond *b* equals bond type *B*, the set of which are the five bond types in our survey (Land Conservation, Affordable Housing, K-12 School, Higher Education, and Transportation), and δ_{2b} is now the bond-specific amount responsiveness of approval. In this specification, there is no omitted, or reference,

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group, so each coefficient is interpreted as amount responsiveness in absolute terms, not relative to some other bond type.

Results

Table 4 presents results from estimating Equation (1) with approval of the Land Conservation bond as the dependent variable in Columns 1–3 and approval of the Affordable Housing bond as the dependent variable in Columns 4–6. Columns 1 and 4 include only amount, length, and order variables. Columns 2 and 5 add socioeconomic controls (age, education, etc.) and city-fixed effects. Because amount, length, and order are randomized, they will be (mostly) uncorrelated with respondent characteristics. Given that, it is unsurprising we see very similar patterns comparing Columns 1 and 2 and Columns 4 and 5. Columns 3 and 6 interact bond amount with

Table 4. Amount, order, and length effects by ballot size

	Referendum type					
	Land conservation			Affordable housing		
	(1)	(2)	(3)	(4)	(5)	(6)
Absolute amount effects						
Amount ($100 millions)	−0.0243**	−0.0241**		−0.0318***	−0.0316***	
	(0.0105)	(0.0100)		(0.00919)	(0.0112)	
Amount × ballot length 1			−0.0246**			−0.0289
			(0.00955)			(0.0208)
Amount × ballot length 3			−0.0238			−0.0588**
			(0.0240)			(0.0220)
Amount × ballot length 5			−0.0236			−0.0100
			(0.0161)			(0.0278)
Relative amount effects						
Cumulative amount all else ($100 millions)	0.00642	0.0115	0.0115	0.00245	0.00516	0.0044
	(0.00728)	(0.00780)	(0.00780)	(0.00737)	(0.00733)	(0.00740)
Non-amount effects						
Ballot length 3 (=1 if yes)	−0.0760	−0.135**	−0.137**	−0.0231	−0.0267	0.0361
	(0.0462)	(0.0517)	(0.0578)	(0.0796)	(0.0864)	(0.1128)
Ballot length 5 (=1 if yes)	−0.166***	−0.235***	−0.237***	0.0285	0.0220	−0.0065
	(0.0592)	(0.0663)	(0.0685)	(0.0984)	(0.1102)	(0.1063)
Order	0.00863	0.0201	0.0201	−0.0370*	−0.0390*	−0.0390*
	(0.0172)	(0.0183)	(0.0183)	(0.0211)	(0.0220)	(0.0214)
Socioeconomic controls	No	Yes	Yes	No	Yes	Yes
City FE	No	Yes	Yes	No	Yes	Yes
Observations	559	559	559	527	527	527
R-squared	0.023	0.162	0.162	0.026	0.176	0.181

Note: We present OLS estimates from Equation (1). Columns 1 and 4 present estimates with land conservation and affordable housing as the referenda of interest, respectively, without any voter-level control variables. Columns 2 and 5 present the estimates with land and affordable housing as the referenda of interest, respectively, with control variables. Both columns exclude amount interactions with ballot length. We include these interaction terms in Columns 3 and 6. Controls include binary variables for minority, home ownership, democrat, independent, male, and city of residence within the state. We also control for continuous variables of age, government trust, income, and education. Robust standard errors are clustered at the DMV location level. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

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ballot length to investigate whether amount-responsiveness changes as ballot length grows.[4]

Focusing on how approval depends on bond amount, we find small, negative, statistically significant effects. In Column 2, the coefficient is −0.0241 for Land Conservation, and in Column 5, the coefficient is −0.0316 for Affordable Housing. Both of these coefficients, as well as those in Columns 1 and 4, are statistically significant at the 5% level. These estimates imply that a $100 million dollar increase in the amount of the Land Conservation bond is associated with a 2.41 percentage point decrease in the likelihood of voting "yes", on average. The same increase in an Affordable Housing bond is associated with a 3.16 percentage point decrease. Although the coefficient for affordable housing is slightly larger in magnitude than the coefficient for land conservation, they are not statistically different. We explore differences in cost responsiveness across bond types further with Table 5.

Although the negative signs of the estimates are consistent with the hypothesis that support decreases as the bond amount increases, the magnitudes are very small. Given the mean approval rating in our sample is 80% for the Land Conservation bond and 70.2% for the Affordable Housing bond, respectively, and assuming a standard 50% approval rate needed to pass, a $100 million dollar increase in the amount of the bond would only decrease support to 77.59% for Land Conservation and 67.04% for Affordable Housing. This is still overwhelmingly above the minimum amount required. At this rate, a $1 billion increase would be required to decrease the proportion in favor of the bond to below 50% and result in either of the measures failing. This amount is predicted out-of-sample and is clearly outside the bounds of reality (Rhode Island's state budget is only $13.1 billion annually); however, it illustrates how little approval appears to be impacted by a bond's stated amount. Even a $100 million increase would be quite large relative to past observed bond values; a more modest $10–$20 million increase is more realistic. Our results suggest that an increase of $20 million would decrease support by 0.48 percentage points for the Land Conservation bond and 0.63 percentage points for the Affordable Housing bond. Thus, although the amount of the bond is statistically significant, it is not economically or politically significant.

We also find no evidence that bond support is affected by the total dollar amount of the ballot. Across all columns, the coefficients on $cumulative\ amount\ all\ else$ range from 0.00245 to 0.0115, and all are statistically insignificant. These results suggest that total budget concerns or reference points are not impacting approval decisions.

Although the "price tag" of an individual bond or the total amount requested on the ballot appear to affect voter support very little, the number of bonds on the ballot and the order in which bonds are listed are large drivers of approval – enough in some cases to flip the referendum outcome. For Land Conservation, as the size of the ballot grows, approval declines. Using Column 2 for reference, holding other variables constant, a respondent given a ballot with three referendums is 13.5 percentage points less likely to approve the Land Conservation bond than if they were given a ballot with only one bond referendum. Respondents given a ballot with five bond referendums were 23.5 percentage points less likely to approve.

[4]In Supplementary Table A1, we replace *cumulative amount all else* with a different variable *cumulative amount previous*, which is the cumulative amount of all other bonds seen before land or affordable housing. This controls for respondents who might not have considered the full ballot in its entirety, and just made decisions in order, despite being shown the full ballot simultaneously. The results are highly similar.

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Table 5. Pooled results of amount effect by referenda type

	(1)	(2)	(3)
Bond amount by referendum type			
Amount ($100 millions)	−0.0244**		
	(0.0107)		
Amount × land		−0.0333	−0.0278
		(0.0208)	(0.0209)
Amount × affordable housing		−0.0087	−0.0110
		(0.0229)	(0.0224)
Amount × K-12 school		−0.0141	−0.0127
		(0.0182)	(0.0181)
Amount × higher education		−0.0601**	−0.0606**
		(0.0233)	(0.0235)
Amount × transportation		−0.0100	−0.0124
		(0.0195)	(0.0192)
Intercept by referendum type			
Intercept	0.801***		
	(0.0211)		
Land conservation		0.632***	0.706***
		(0.0460)	(0.0504)
Affordable housing		0.552***	0.645***
		(0.0517)	(0.0593)
K-12 school		0.702***	0.792***
		(0.0353)	(0.0496)
Higher education		0.585***	0.666***
		(0.0477)	(0.0542)
Transportation		0.650***	0.737***
		(0.0529)	(0.0585)
Other ballot elements			
Order			−0.0276***
			(0.00936)
Respondent FE	Yes	Yes	Yes
Observations	959	959	959
R-squared	0.393	0.858	0.860

Note: We present OLS estimates from Equation (2). All columns present pooled results from respondents who were shown a ballot with length equal to 5. Respondent fixed effects are included in every column. Column 1 presents simple OLS amount estimates without controlling for bond type, amount interactions, or order. In column 2, we add controls for bond type and amount interactions. In column 3, we add a control for order of the bond of interest on the ballot. Robust standard errors. ***, **, and * represent statistical significance at the 1%, 5%, and 10% level, respectively.

We find no evidence that votes for the Affordable Housing bond (the less popular bond referendum type) were affected by the number of bonds on the ballot, however the order in which the Affordable Housing bond referendum appeared affected approval. In Columns 4–6, the coefficient for bond order suggests that holding other variables constant, an Affordable Housing referendum placed one spot lower on the ballot is associated with a 3.7–3.9 percentage point decrease in support. Our results suggest that moving from position one to five is associated with a 15.6 percentage point reduction in support (using Column 5). Although not quite enough to sink the bond given the mean approval rate of 69.9%, certainly a meaningful reduction—a few more bonds on the ballot and the Affordable Housing Bond could certainly fail. Further, our results suggest that in locations with less support for affordable housing or public goods in general, ballot position could change the outcome.[5]

[5]In Supplementary Table A2, we estimate the same models as in Table 4, but using only ballots of length 3 and 5. The motivation for this model is assess if the effect of order on approval changes when ballot length 1 is not included. However, we find similar results for the coefficients on order.

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In Columns 3 and 6, we include interaction effects between the bond amount and number of bonds on the ballot to check for conditional effects. The interaction coefficients in Column 3 are all very similar in magnitude suggesting no heterogeneity in responses between amount and different ballot lengths. In Column 6, magnitudes do change across ballot lengths, with the largest effect registering for ballot length 3. However, magnitudes are still relatively small and because the coefficients do not grow or shrink consistently as the number of bonds on the ballot increases, our results do not suggest there is a conditional effect of bond amount and ballot length. These results further bolster the idea that bond amount has little impact, regardless of the length of the ballot.

In Table 5, we present estimates from a model that pools all votes from respondents presented with a ballot of length five, resulting in five observations per respondent. In Column 1, we present results from estimating Equation 2, in which the bond amount is the only independent variable, but we control for respondent fixed effects. In this column we do not differentiate by referendum type. The estimate on bond amount is −0.0244 and is statistically significant at the 5% level, which is consistent with the results in Table 4. This coefficient implies that for a generic bond, a $100 million dollar increase in the bond amount is associated with a 2.44 percentage point decrease in approval. The intercept estimate is 0.801, which interpreted literally means that expected approval for a generic bond of $0 is 80.1%.

Column 2 presents results from estimating Equation 3, in which we differentiate every bond type to get separate intercept and slope estimates. Column 3 is the same except we add order as a control variable. The results from the amount interaction terms suggest that amount responsiveness is mostly similar across referendum types, all negative and small in magnitude, and there is little difference in the coefficients across columns. Most coefficients are statistically insignificant, but this may be a result of less statistical power than true null results. Regardless, we can rule out large changes in approval due to changes in bond amounts. The only statistically significant estimate is for Higher Education, which implies that a $100 million increase in a Higher Education bond is associated with a 6% decrease in the likelihood of approval. The coefficient on *order* is -0.0276, indicating each position a referendum moves down the ballot is associated with a 2.76 percentage point decrease in support.[6]

In contrast to bond amount responsiveness, there is heterogeneity in bond-specific intercepts suggesting that there are underlying preferences for some referendum types over others. For example, using the estimates from Column 2, the bond with the most support was K-12 School Construction (70.2% baseline approval), and the least likely was Affordable Housing (55.2% baseline approval). Moving to Column 3, the preference ordering remains the same, but all intercepts increase seven to nine percentage points because of the inclusion of bond order effects.[7]

[6]In Supplementary Table A3, we estimate a version of the Column 3 model, but allow for non-linear effects of ballot order. We find monotonic decreases in support as a bond goes down the order, though first and second order have similar approval rates, as do fourth and fifth (last) order, with third in the middle.

[7]The interpretation of the intercept changes moving from Column 2 to Column 3. In Column 3, the intercept is the expected approval rate if bond amount equals zero and order equals zero, whereas in Column 2, it is only conditional on bond amount equaling zero, which explains the changes in magnitude.

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Table 6. Bond amount cutoff points for approval across referenda type and order

	Bond amount ($ millions) at which approval = 50%				
	Land conservation	Affordable housing	K-12 School	Higher education	Transportation
Order = 1	641.7	1067.2	2081.8	228.3	1688.7
Order = 3	443.1	565.4	1647.2	137.2	1243.5
Order = 5	244.6	63.6	1212.5	46.2	798.3

Note: We present amount cutoff points across referenda and order at which the predicted probability of approval would drop <50%, the amount necessary to achieve passages of most bonds. Rows use estimates from Column 3 of Table 3.

Discussion

Our results suggest that ballot factors other than the "price tag" of a bond meaningfully affect support. The number of bonds on the ballot and the bond's spot on the ballot appears to negatively impact approval far more than any reasonable increase in the bond amount. This finding adds to the mixed evidence using real world data on bond order and length (e.g., Augenblick and Nicholson 2016; Bernardo, Pearson-Merkowitz, and Macht 2022; Grant 2017; Matsusaka 2016).

Most importantly, we find almost no responsiveness to the bond amount across all bond types, though we do find significant differences in the likelihood of approval based on bond type regardless of the amount requested.

To demonstrate the relative importance of amount and order, Table 6 uses the coefficients from Column 3 of Table 5 to predict the dollar amount at which support for each bond type at each position on the ballot drops to 50%. In the first and third position on the ballot, our model predicts astronomically high bond amounts needed for bonds to fail. However, in Row 3, we can see the critical importance of bond order for the less popular bonds. Placed as the last bond on the ballot, both Affordable Housing and Higher Education bonds tip to failure at very reasonable price points (63 and 46 million, respectively) well within the bounds of what is typically placed on the state's ballot.

One explanation for the bonds generating varying levels of initial support regardless of the bond amount, could be the difference between issue "types". For some issues, voters are unresponsive to the specifics of the question and instead vote based on gut response to the issue. Voters may indeed have gut responses to Affordable Housing, which generally fits within people's well-established attitudes toward the welfare state (Pearson-Merkowitz and Lang 2020; Tigue 2012). However, as land preservation is a very local issue tied to people's housing values and can be a form of exclusionary zoning supported by Democrats and Republicans alike (Fischel 2017), land preservation may be more along the lines of what Dyck and Pearson-Merkowitz (2019) refer to as "valence issues" that receive almost uniform support and on which voters are unlikely to be responsive to information.

Perhaps most importantly, what our research indicates is that, pragmatically, government officials may need to be more worried about how many bonds they ask voters to approve and where *less popular* bonds sit on the ballot, than the dollar amount of those bonds.

Given that there is tangible evidence of differences in approval depending on bond type irrespective of the dollar amount listed, the results from Table 6 suggest that policy makers could successfully pass more bonds for topics that do not generate widespread support by putting the less popular bonds higher up on the ballot. By doing this, the order effect that decreases approval in bonds lower on the ballot is less

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detrimental to more favorable bonds that have inherently higher approval. The less popular bonds remain more likely to be approved higher on the ballot, and the more popular bonds still are likely to pass at any sort of reasonable amount even if they are low on the ballot. If policy makers are already acting strategically in this manner, analysis of real-world referendum outcomes may be biased if they treat ballot location as exogenous.

The results also suggest that approval rates may be higher if a government asks voters to approve a single referendum for a large amount instead of asking voters to approve many referendums for smaller amounts. Our results certainly suggest that the probability of failure is higher for multiple bonds than for a single very large bond given the willingness of voters to approve high dollar amounts but the significant negative effect of long ballots. Thus, our results indicate that legislators concerned that important community investments will fail because voters will balk at the price tag of a large bond, should be more concerned that voter support will fall off when they are asked to approve *many* smaller dollar bonds. To this end, an important question for future research is whether voter support differs for omnibus referendums compared to multiple single subject referendums. For example, if less popular issues are included in an omnibus referendum, does their presence decrease support or are the more popular issues listed able to keep support high?

Conclusion

In this article, we examined the determinants of bond referendum voting behavior using a survey with randomized ballot characteristics. We examined four attributes of the ballot: (1) the dollar amount of bonds, (2) how the amount of a bond compares to the total amount of other bonds appearing on the same ballot, (3) the number of bond referendums on the ballot, and (4) the ordering of bond referendums. All four are important to understand how ballot characteristics affect voter support. To the best of our knowledge, this article is the first to investigate these attributes simultaneously.

The results suggest that support is not amount-responsive to either a single referendum or across all bonds on the ballot, even at very large dollar amounts well outside what is typical and affordable. Eliciting even a small decrease in approval would require the amount of the referendum to increase by hundreds of millions of dollars, far beyond any of the highest priced bonds ever proposed. In contrast, we find that non-amount ballot attributes matter most for bond referendum approval. Longer ballots and moving a referendum down ballot both reduce support significantly, as much as 15–30%. Support for a bond referendum does differ by bond type, irrespective of amount. In our sample, for example, K-12 School Bonds and Transportation Bonds experience much higher rates of approval than a Higher Education Bond, ceteris paribus. Although the differences between issue types may be a product of the specific politics of our sample state, considering the difference in what bonds fund and what initiatives are about is critical for future research.

Our results help clarify and build on the literature to date on ballot order and length as well as the economics literature on bond price and voter approval. The political science research to date does not take into account presented costs nor does most of it take into account issue type (e.g., Augenblick and Nicholson 2016; Grant 2017; Matsusaka 2016), whereas the economics literature uses only observational data.

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Future research building on these findings could go in multiple directions. First, our survey design could be repeated in different locations on different bond topics to add to the external validity of our results. Rhode Island is an excellent setting for this study, as residents have a lot of experience voting on bond referendums. From 2010 to 2022, Rhode Islanders voted on 37 statewide bond referendums, the most by any state in that timeframe, and many local bonds as well. However, a limitation of our study is that it is possible that states with voters with less experience voting on bonds or more experience voting on direct initiatives could react to bond amounts differently. On the one hand, lack of knowledge surrounding bonds could lead to even more voters not understanding cost and voting in a way that is unresponsive to the price tag. On the other, voters with less experience might react more skeptically to large dollar amounts given they have less experience seeing expenditures listed in millions of dollars.

Prior work suggests that estimated effects of bond amount, order, and length may be different in states with more or less experience voting on bonds or where bond elections are more salient and have competitive campaigns that raise voter awareness. Dyck and Seabrook (2010) look at data in California and Oregon and find that turnout effects of direct democracy are driven by high profile initiatives with considerable campaign environments. The low and medium salience elections they include in their study (of which only the low salience, bond election is applicable to our data) did not show large turnout effects. Similarly, Burnett and Kogan (2012) show that voters in initiative states are less susceptible to framing effects than voters in non-initiative states. To the extent that the amount of a bond is a framing effect, this indicates voters in states that only rarely vote on bond referendums, may be more sensitive to the cost. Moreover, we specifically chose bond issue types that voters in Rhode Island have experience voting on, in another state, these issues may differ in terms of baseline approval. Additional data collection would help clarify the generalizability of our findings.

Our investigation here also differentiates from the large literature on ballot initiatives because, unlike many ballot initiatives that often garner significant campaign spending, bonds tend to be low profile and rarely garner opposition funding. Even the spending in favor of bond elections tends to be very small compared to spending on initiatives and candidates. As a result, bonds tend to be low salience and low information. Further, direct initiatives do not have a cost associated with them on the ballot. Although requiring a school district to not teach certain material or requiring parental consent for an abortion might have a cost to the state, that cost is not listed on the ballot for voters to approve as part of their vote. Of course, our findings suggest that doing so would be unlikely to affect their votes.

One hypothesis about the lack of responsiveness to absolute and relative bond amounts is that voters are unable to internalize the personal financial consequences of approving bonds stated in terms of aggregate cost. Lang *et al.* (2022) find widespread evidence of personal cost misperception of bond referendums, with less than 20% of surveyed voters estimating personal costs within 25% of true costs. Some states, such as Nevada, require that the state and municipalities translate the bond amount into the effect on individual taxes for likely just this reason. Future research should explore the mechanisms in which cost is delivered, and how much the proposed amount would impact an individual in terms of taxes. We suspect this would make a difference based on best practices of contingent valuation surveys specifying clear communication of personal costs and results that indicate strong price responsiveness (Johnston *et al.* 2017). However, in these settings, cost is

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intentionally orthogonal to the quantity of public goods provided, which is not the case with bond referendums. Further, even if greater dollar amount responsiveness was found, the wording on real-world referendums is unlikely to change.

Our results also have real world applications. Legislators make decisions about how to list bonds on a ballot. They can put one omnibus bond for a large amount, or many smaller bonds requiring multiple votes. They can choose to borrow what is feasible or they can choose to borrow and invest in state projects at a much lower rate. For example, in March of 2021, several years after we gathered our data, Rhode Island held a statewide special election. No office holders or other questions were on the ballot, only bond questions. The state needed funds for infrastructure projects in many areas and had to go to voters for their approval. Many legislators worried that the price tag of the ballot would be too much for voters and the legislature decided to list the bonds separately on the ballot grouped by policy type (housing, environment, early childhood, arts). The state could have afforded to issue more debt and many legislators made the case in the general assembly that now was the time to invest, not the time to skimp. In the end, the legislature increased some of the bond amounts and decreased other amounts from the governor's original proposal (RIPEC 2021). The result was a single ballot with seven separate bond questions for voters to approve or reject that ranged greatly in price.

The first bond placed on the ballot was for higher education facilities and construction at the three state colleges and Universities. At $107.3 million, it was also the most expensive. The bond passed with 59.39% of the vote. The third question on the ballot was a $65 million bond for affordable housing which passed with 66.03% of the vote.[8] Our results indicate that had these two questions been listed in the fifth, sixth, or seventh position on the ballot, both may have failed. Further, had the legislature approved higher dollar amounts to be sent to the voters, it is unlikely that the dollar amount alone would have decreased voter support. Although the legislature was concerned that the "price tag" of the ballot would be too high for voters, our results suggest that this was not a concern. Instead, the number of bonds they listed may have put some in jeopardy of failing.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/spq.2023.26.

Data availability statement. Replication materials are available on SPPQ Dataverse at https://doi.org/10.15139/S3/TDPLWQ (Bechard, Lang, and Pearson-Merkowitz 2023).

Funding statement. This research was supported by the USDA National Institute of Food and Agriculture, Agricultural and Food Research Initiative Competitive Program, Agriculture Economics and Rural Communities, grant number 2018–67023-27689. This research was approved by University of Rhode Island IRB (reference #1192605).

Acknowledgements. The authors thank the editors and anonymous reviewers for their helpful comments on the manuscript.

Author contributions. Authors are listed in alphabetical order, contribution is equal.

Competing interest. The authors declare none.

[8] https://ballotpedia.org/Rhode_Island_2021_ballot_measures.

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Cite this article: Bechard, Andrew, Corey Lang, and Shanna Pearson-Merkowitz. 2024. Voter Approval of Bond Referendums: The Role of Bond Amount and Ballot Characteristics. *State Politics & Policy Quarterly* **24** (1): 53–76, doi:10.1017/spq.2023.26