**Supplemental Reviewer Appendix (not for publication)**

**Description of Municipal Referendums 1988-2012**

Table R1 contains descriptive annual statistics for our dataset of U.S. municipal referendums 1988-2012. Just over three-quarters of referendums passed (N=1,253/1,640; 76.4%) and those that did pass did so with an average vote margin of 14.4 percent (standard deviation=9.3%). Through these referendums, communities allocated $8.9 billion (2012 dollars) specifically for land conservation out of a possible $19.6 billion (2012 dollars) of total proposed funding in the ballot measures. Total proposed funding ranged from $15,000 (1999 dollars; Pittsgrove Township, NJ) to $2.2 billion (2000 dollars; Jacksonville, FL). Taxes and bonds were the most prevalent financing mechanisms; 48 percent of referendums held raised funds through property tax while 39 percent proposed the use of bonds. Income tax, sales tax, and real estate property transfer tax were used in 11 percent of referendums and the remaining two percent of measures proposed other forms of financing. Sixty-seven percent of referendums were held in a November election, with the rest being held in another month.

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| Table R1: Summary statistics by year | | | |  |  |  |
| Year | Number of referendums | Fraction in MA and NJ | Average funding (1,000 $) | Fraction proposing bonds | Fraction approved | Mean vote margin |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 1988 | 13 | 0.08 | 16,770 | 0.85 | 0.92 | 11.49 |
| 1989 | 12 | 0.00 | 5,223 | 0.92 | 0.75 | 10.98 |
| 1990 | 15 | 0.00 | 12,501 | 0.87 | 0.67 | 5.26 |
| 1991 | 7 | 0.00 | 10,115 | 0.71 | 0.86 | 9.06 |
| 1992 | 16 | 0.06 | 6,015 | 0.81 | 0.75 | 6.54 |
| 1993 | 13 | 0.23 | 6,246 | 0.77 | 0.77 | 7.84 |
| 1994 | 22 | 0.05 | 4,976 | 0.77 | 0.77 | 9.57 |
| 1995 | 27 | 0.04 | 19,873 | 0.48 | 0.74 | 10.80 |
| 1996 | 54 | 0.15 | 15,199 | 0.59 | 0.72 | 10.16 |
| 1997 | 51 | 0.25 | 10,371 | 0.59 | 0.90 | 11.49 |
| 1998 | 128 | 0.56 | 7,365 | 0.36 | 0.86 | 11.04 |
| 1999 | 73 | 0.47 | 12,572 | 0.36 | 0.89 | 16.03 |
| 2000 | 101 | 0.28 | 38,211 | 0.49 | 0.94 | 15.04 |
| 2001 | 161 | 0.69 | 5,073 | 0.22 | 0.72 | 7.01 |
| 2002 | 135 | 0.56 | 9,680 | 0.30 | 0.70 | 8.10 |
| 2003 | 105 | 0.41 | 7,249 | 0.41 | 0.77 | 9.21 |
| 2004 | 154 | 0.38 | 11,474 | 0.38 | 0.76 | 8.09 |
| 2005 | 115 | 0.51 | 9,183 | 0.25 | 0.78 | 9.75 |
| 2006 | 137 | 0.44 | 15,910 | 0.35 | 0.73 | 7.58 |
| 2007 | 78 | 0.53 | 8,101 | 0.36 | 0.63 | 4.90 |
| 2008 | 90 | 0.47 | 19,867 | 0.39 | 0.72 | 8.99 |
| 2009 | 33 | 0.33 | 4,853 | 0.52 | 0.61 | 3.06 |
| 2010 | 33 | 0.39 | 8,169 | 0.36 | 0.79 | 7.38 |
| 2011 | 18 | 0.56 | 2,267 | 0.17 | 0.50 | 4.27 |
| 2012 | 49 | 0.43 | 16,785 | 0.33 | 0.71 | 7.60 |
| Notes: Summary statistics by year for 1,640 municipality-level referendums in the coterminous United States. Data from the Trust for Public Land’s *LandVote* database. | | | | | | |

**Socioeconomic Variables**

Figure R1: Continuity of socioeconomic variables and referendum characteristics



Notes: The vertical axis is a socioeconomic variable or referendum characteristic (note that y-axes vary in scale) and the horizontal axis is vote margin; points to the left of the dashed line represent a failed focal referendum and points to the right of the dashed line represent a passed focal referendum. Referendum vote margins are binned in 1% intervals. Data are fitted flexibly using a locally weighted regression to illustrate continuity around a vote margin of zero. Data are for municipalities and municipality-level referendums in the coterminous United States 1988-2012 from the 2000 U.S. Decennial Census and the Trust for Public Land’s *LandVote* database.

Table R2 is a transition matrix detailing the vote margin of each focal referendum and the results of the next subsequent referendum. The value in cell *ij* corresponds to the number of observations with a focal referendum’s vote margin in bin *i* and the subsequent referendum’s vote margin in bin *j* (for the same municipality). This transition matrix illustrates two interesting points. First, the proportion of focal referendums in each bin that do not have an associated subsequent referendum jumps from 0.49 (N=75/154) to 0.73 (N=171/233) across the fail/pass boundary (vote margin=[-5,0) to vote margin=[0,5)). In other words, referendums that just barely fail tend to be followed by referendums more frequently than those that just barely pass. Second, of observations with focal and subsequent referendums (N=579), only 87 pairs of referendums fail both times. Together, these points further motivate our analysis of temporal dynamics and provide preliminary support for the “try again when you fail” hypothesis.

Table R2: Transition Matrix

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Vote margin of subsequent referendum | | | | | | | | | | |  | |  | |
|  |  | [-50, -20) | [-20, -15) | [-15, -10) | [-10, -5) | [-5, 0) | [0, 5) | [5, 10) | [10, 15) | [15, 20) | [20, 50) | No subsequent referendum | | *Obs* | |
| Vote margin of focal ref | [-50, -20) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 28 | | *29* | |
| [-20, -15) | 0 | 0 | 1 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 23 | | *28* | |
| [-15, -10) | 0 | 0 | 1 | 4 | 2 | 1 | 0 | 3 | 1 | 1 | 36 | | *49* | |
| [-10, -5) | 0 | 3 | 4 | 2 | 5 | 15 | 8 | 5 | 3 | 4 | 72 | | *121* | |
| [-5, 0) | 1 | 2 | 4 | 10 | 11 | 17 | 15 | 10 | 5 | 4 | 75 | | *154* | |
| [0, 5) | 2 | 0 | 0 | 4 | 7 | 6 | 13 | 8 | 7 | 15 | 171 | | *233* | |
| [5, 10) | 0 | 1 | 3 | 1 | 11 | 6 | 9 | 8 | 14 | 10 | 151 | | *214* | |
| [10, 15) | 0 | 1 | 5 | 3 | 5 | 8 | 19 | 15 | 14 | 16 | 147 | | *233* | |
| [15, 20) | 0 | 1 | 1 | 3 | 4 | 8 | 8 | 20 | 7 | 24 | 125 | | *201* | |
| [20, 50) | 1 | 1 | 1 | 7 | 8 | 11 | 14 | 13 | 26 | 63 | 203 | | *348* | |
|  | *Obs* | *4* | *9* | *20* | *34* | *54* | *74* | *87* | *83* | *77* | *137* | *1031* | | *1610* | |
| Notes: Rows indicate the vote margin of focal referenda. Columns indicate the vote margin of the next subsequent referendum. Matrix element *ij* is the number of referenda held with vote margin *i* in the focal referendum and *j* in the subsequent referendum. Some municipalities held only one referendum within the time frame of our dataset (1988-2012) and those are reflected in the *No subsequent referendum* column. | | | | | | | | | | | | | | | | | |

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| Table R3: Socioeconomic effects |  |  |  |  |  |
|  | Future referendums held | |  | Future referendums passed | |
|  | 1 year | 5 years |  | 1 year | 5 years |
|  | (1) | (2) |  | (3) | (4) |
| Fail | 0.263\*\*\* | 0.472\*\*\* |  | 0.136\*\*\* | 0.284\*\*\* |
|  | (0.052) | (0.099) |  | (0.041) | (0.082) |
| Socioeconomic variables |  |  |  |  |  |
| Median house income (2000 US$10,000) | 0.004 | 0.041 |  | -0.006 | 0.018 |
|  | (0.016) | (0.053) |  | (0.013) | (0.049) |
| Median house income squared | 0.000 | 0.000 |  | 0.000 | 0.000 |
|  | (0.000) | (0.000) |  | (0.000) | (0.000) |
| Houses constructed 1990-2000 (%) | 0.000 | 0.000 |  | 0.000 | 0.000 |
|  | (0.000) | (0.000) |  | (0.000) | (0.000) |
| Total population (millions) | 0.010 | 0.273 |  | -0.006 | 0.265 |
|  | (0.017) | (0.176) |  | (0.014) | (0.170) |
| Population density | 0.0001 | -0.002 |  | 0.0001 | 0.0004 |
|  | (0.003) | (0.007) |  | (0.002) | (0.007) |
| Population under 18 (%) | -0.0009 | 0.003 |  | -0.0002 | 0.005 |
|  | (0.002) | (0.006) |  | (0.002) | (0.005) |
| Population over 65 (%) | 0.0003 | 0.0008 |  | 0.0003 | 0.000 |
|  | (0.001) | (0.002) |  | (0.001) | (0.002) |
| Proportion democratic (%) | -4x10-6\* | -3x10-5\*\*\* |  | -5 x10-6\*\* | -3x10-5\*\*\* |
|  | (0.000) | (0.000) |  | (0.000) | (0.000) |
| Unemployment rate (%) | -0.0006 | 0.0002 |  | 0.0003 | 0.002 |
|  | (0.002) | (0.005) |  | (0.001) | (0.004) |
| Owner occupied houses (%) | -0.0007 | 0.0008 |  | -0.0003 | 0.0009 |
|  | (0.001) | (0.002) |  | (0.000) | (0.001) |
| High school education or more (%) | 0.0003 | 0.004 |  | 0.0006 | 0.00778\* |
|  | (0.002) | (0.005) |  | (0.001) | (0.005) |
| College education or more (%) | 0.0005 | 0.002 |  | 0.0007 | 0.0006 |
|  | (0.001) | (0.003) |  | (0.001) | (0.002) |
| Cubic polynomial in vote margin | Y | Y |  | Y | Y |
| State and year fixed effects | Y | Y |  | Y | Y |
| Observations | 1,560 | 1,387 |  | 1,560 | 1,387 |
| Notes: This table shows the socioeconomic coefficients from columns 1 and 5, both panels, Table 4. The dependent variable is number of future referendums held within one year (column 1) and five years (column 2), and number of future referendums pass within one (column 3) and five years (column 4). The coefficient of interest is on Fail, a binary variable equal to one if the focal referendum failed and zero otherwise. Socioeconomic data are from the 2000 U.S. Decennial Census. High school and college are educational attainment variables representing the percent of population completed at least a high school or college degree. Income is median household income. Recent construction represents the percent of houses constructed between 1990-2000. Owner occupied is the percent of houses occupied by the owner. The cubic polynomial in vote margin controls for vote margin on either side of the threshold for passage. Data are for municipality-level referendums held in the coterminous United States 1988-2012 from the Trust for Public Land’s *LandVote* database. Robust standard errors are in parentheses and clustered at the municipality level. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively. | | | | | |

**Robustness and Falsification Checks**

We use ordinary least squares (OLS) estimation and perform robustness checks using three alternate estimation methods: regressing using a Poisson distribution and collapsing to a binary variable equal to one if the municipality held at least one referendum within a timeframe following a focal referendum and using logit and probit estimation methods. Table R4 shows the results of these estimation methods for a five-year timeframe. Our results are strongly significant in all models and agree in effect direction and magnitude.

We present estimates using OLS for three main reasons. First, while maximum likelihood estimations such as Poisson are efficient for correctly specified densities, OLS is consistent under weaker assumptions, and although it is less efficient, the OLS estimate of our variable of interest is strongly significant (Cameron and Trivedi 2010). Second, we want to include several covariates and fixed effects. The additional degrees of freedom make it difficult for the Poisson MLE to converge for all variations in our dependent variable. Finally, the coefficients from OLS regression are readily and easily interpretable.

Table R5 presents alternative ways to control for vote margin in our regression discontinuity analysis. Both panels build up to equation (2) across columns: column 1 estimates the effect of a fail outcome; column 2 additionally controls for the running variable vote margin interacted with vote outcome as a linear, quadratic, and cubic function, respectively; column 3 also includes municipality-level socioeconomic demographics; and columns 4 and 5 add state and year fixed effects, respectively. Column 1 presents an OLS estimate of the treatment effect, which is an order of magnitude smaller than the estimates using an RD framework in Columns 2-5. This result makes clear that the RD framework is necessary to disentangle the causal effect of vote outcome from general voter support and many municipality-level unobservables that are correlated with voter support. Our coefficient of interest is highly significant in columns 2-5 and is robust to the addition of socioeconomic characteristics and state and year fixed effects. The stability of the coefficient of interest despite the addition of covariates and fixed effects builds confidence in the quasi-random variation among municipalities close to the threshold.

Our main results are robust to a falsification test, presented in Table R6. We created an artificial cutoff point ten percent higher than the vote margin required for an actual fail. The set-up of the table is similar to Table 3 showing results from regressions with the dependent variable equal to the number of future referendums held (panel A) and passed (panel B) for timeframes of 1-5 years. The coefficients on Original Fail are the ones from Table 3, repeated here for convenient comparison. Our falsification test model includes our artificial cutoff point, False Fail, and the actual binary variable for Fail along with its interaction with a cubic function in vote margin. For each timeframe, the coefficient on Fail is very close between the original and falsification regressions and statistically significant at the 1% level. In the falsification regressions, the coefficient on the artificial cutoff point is insignificant, as expected. This falsification test provides support for our main finding of a discontinuous effect of vote outcome on the number of future referendums held and passed using regression discontinuity.

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| Table R4: Robustness check of estimation method | | |  |  | |
|  | OLS | Poisson | Logit | Probit | |
|  | (1) | (2) | (3) | (4) | |
| Fail | 0.472\*\*\* | 1.289\*\*\* | 2.140\*\*\* | 1.238\*\*\* | |
|  | (0.096) | (0.338) | (0.516) | (0.293) | |
| Cubic polynomial in vote margin | Y | Y | Y | Y | |
| Socioeconomic variables | Y | Y | Y | Y | |
| State fixed effects | Y | Y | Y | Y | |
| Year fixed effects | Y | Y | Y | Y | |
| Observations | 1,387 | 1,387 | 1,356 | 1,356 | |
| Notes: The dependent variable for OLS and Poisson is number of referendums held within five years of a focal referendum; column 1 is a reiteration of column 5 in Table 3. The dependent variable for logit and probit is a binary variable equal to one if the municipality held at least one referendum within five years of a focal referendum. The cubic polynomial in vote margin controls for vote margin on either side of the threshold for passage. Data are for municipality-level referendums held in the coterminous United States 1988-2012 from the Trust for Public Land’s *LandVote* database. Standard errors are in parentheses and are robust errors for the OLS and Poisson models. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively. | | | | |

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| Table R5: Building up to the preferred model | | | | | |
|  | (1) | (2) | (3) | (4) | (5) |
| A. Number of referendums held | |  |  |  |  |
| Fail | 0.0760\* | 0.502\*\*\* | 0.510\*\*\* | 0.524\*\*\* | 0.472\*\*\* |
|  | (0.044) | (0.092) | (0.094) | (0.101) | (0.099) |
| R-squared | 0.003 | 0.036 | 0.068 | 0.156 | 0.196 |
|  |  |  |  |  |  |
| B. Number of referendums passed | |  |  |  |  |
| Fail | 0.015 | 0.307\*\*\* | 0.319\*\*\* | 0.334\*\*\* | 0.284\*\*\* |
|  | (0.040) | (0.076) | (0.078) | (0.084) | (0.082) |
| R-squared | 0.000 | 0.024 | 0.057 | 0.158 | 0.203 |
| Cubic polynomial in vote margin | N | Y | Y | Y | Y |
| Socioeconomic variables | N | N | Y | Y | Y |
| State fixed effects | N | N | N | Y | Y |
| Year fixed effects | N | N | N | N | Y |
| Observations | 1,388 | 1,388 | 1,387 | 1,387 | 1,387 |
| Notes: The dependent variable is number of referendums held (Panel A) and number of referendums passed (Panel B) within five years of a focal referendum. The coefficient of interest is on Fail, a binary variable equal to one if the focal referendum failed and zero otherwise. Each column adds independent variables to the models. The cubic polynomial in vote margin controls for vote margin on either side of the threshold for passage. Data are for municipality-level referendums held in the coterminous United States 1988-2012 from the Trust for Public Land’s *LandVote* database. Robust standard errors are in parentheses and clustered at the municipality level. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively. | | | | | |

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| Table R6: Falsification test | | | | | | | |
|  | within  1 year | 2 years | 3 years | | 4 years | | 5 years | |
|  | (1) | (2) | (3) | | (4) | | (5) | |
| A. Number of future referendums held | | | |  | |  | | |
| Artificial Fail (vm<10) | -0.018 | 0.002 | 0.024 | | 0.045 | | 0.014 | |
|  | (0.020) | (0.037) | (0.045) | | (0.051) | | (0.066) | |
|  |  |  |  | |  | |  | |
| B. Number of future referendums passed | | | |  | |  | | |
| Artificial Fail (vm<10) | -0.021 | -0.007 | 0.003 | | 0.014 | | 0.003 | |
|  | (0.020) | (0.034) | (0.042) | | (0.045) | | (0.058) | |
| Cubic polynomial in vote margin | Y | Y | Y | | Y | | Y | |
| Fail (vm < 0) | Y | Y | Y | | Y | | Y | |
| Socioeconomic variables | Y | Y | Y | | Y | | Y | |
| State fixed effects | Y | Y | Y | | Y | | Y | |
| Year fixed effects | Y | Y | Y | | Y | | Y | |
| Observations | 1,560 | 1,542 | 1,510 | | 1,477 | | 1,387 | |
| Notes: False Fail is a binary variable that increases the criteria to pass (vm>0) by 10 percent (vm>10), creating an artificial cutoff point. The table is set up similar to Table 3, where the dependent variable is the number of future referendums held (panel A) and passed (panel B). Each column uses the preferred model and additional includes a binary variable representing the artificial threshold. The cubic polynomial in vote margin controls for vote margin on either side of the threshold for passage. Data are for municipality-level referendums held in the coterminous United States 1988-2012 from the Trust for Public Land’s *LandVote* database. Robust standard errors are in parentheses and clustered at the municipality level. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% level, respectively. | | | | | | | |