Stadium Subsidies, Public Choice, and Property Values: A Test of the Homevoter Hypothesis in King County, Washington

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Introduction

- The case: The referendum on a new stadium for the Seahawks
- The goal: Understanding the yes vote
    - Evidence on costs and benefits of projects
    - No vote in previous referendum
- The home-voter hypothesis as an explanation
- Problem: Tangible benefits v. unobserved attitudes
- The twist: Using the previous vote to account for unobserved preferences

Literature

- Can intangibles explain favorable votes? - Evidence from surveys
- What about tangible benefits? - Evidence from hedonics literature
- Could the votes be an example of concentrated benefits, diffuse costs - The home-voter hypothesis
  - General evidence on the hypothesis
  - Application to support for public subsidies - Dehring, Depken, and Ward (2008) and Cowboys Stadium

Context

- Vote on public subsidies for new stadium for the Mariners (1995)
- Paul Allen's purchase of the Seahawks (1996-1997)
- Important announcements
    - New stadium as only option
    - Approval of funding proposal
- Details of funding proposal
- Results of the vote

Data

- Core data for hedonics: Property transactions from King County Department of Assessments
- Use of GIS – Distance from stadium, placement in 1997 precinct
- Property attributes – Current, attributes in 2001, attributes in 1997
- Precinct-level data from Decennial Census
- Core data for vote analysis: Precinct-level results from 1995 and 1997. Base precincts: 1997.

Empirical Approach

- Two-step process – Use results from hedonics to see if percent yes is higher in precincts with more rapid property growth after announcements.
- Hedonic model – Supplement standard model with distance to stadium, announcement dummies, and interactions of distance with annoucements
- (1) $\ln(Price_i) = ß_0 + ß1Dist_i + ß_2Dist^2_i + \sum^3_{j=1} ß_jDist_i*Annc_j + \sum^3_{j=1} ß_jDist^2_i*Annc_j + \sum^{17}_{k=1} ß_kMonth_i + \Gamma Char + v_i$
- Data don't support repeat sales but do include rich set of neighborhood controls, house characteristics
- Construct announcement effects from results

Evaluating Robustness of Voting Results

- Voting models – Relate Percent Yes and Voter Turnout to precinct demographics, announcement effects, and results of the 1995 referendum (to control for unobserved attitudes towards subsidies
- (2) $PctYes_i = ß_0 + ß_1 Annc1\_Effect_i + ß_2 Annc1\_ZeroSales_i + ß_3 Annc2\_Effect_i + ß_4 Annc2\_ZeroSales_i + ß_5 StadDist_i +$

  $ß_6 PctTurnout\_1995Mariners + \Gamma\ Demographics + v_i$
- Estimated similar model with voter turnout as the dependent variable to see if voters with large benefits are more likely to take the time to vote
- Focus on coefficients on the announcement effects and on how those coefficients change when we control for support in the previous election

Results - Hedonics

- Table 7 presents results
- Most standard variables have expected effects on house prices.
- U-shaped relationship between prices and distance from stadium
- No consistent evidence that prices were affected by announcements – weak effect of first announcement, no impact of second announcement (Table 8)

Results - Voting

- Table 9 for Percent Yes, Table 10 for Turnout
- Evidence for announcement effect sensitive to inclusion of information from 1995 vote – accounting for unobservables weakens argument for relevance of homevoter hypothesis in Percent Yes regressions
- In Turnout regressions, accounting for 1995 vote strengthens case for homevoter hypothesis – some evidence that turnout may be higher in precincts with positive announcement effects in aftermath of funding proposal

Conclusions

- Vote in Seattle provides weak support, at best, for the homevoter hypothesis – contrast with results of Dehring, Depken, and Ward (2008)
- Importance of accounting for unobservables – unique opportunity provided by the two referenda
- Where to go from here?
  - Improve the hedonics
  - Better ways to account for unobservables?

Thanks!

Table 7: Regression Results – Hedonic Analysis

Variable	(1)	(2)	(3)	(4)
Distance/100	1.8214***	-1.9313***	-1.1404***	-2.3534***
	(0.3180)	(0.4669)	(0.4393)	(0.4979)
(Distance/100)^2	-9.0871***	2.7004*	-0.3095	4.0253**
	(1.1026)	(1.6099)	(1.4827)	(1.7642)
Annc1*(Distance/100)	-0.3409	-0.5518	-0.5637*	-0.4555
	(0.4308)	(0.3572)	(0.3288)	(0.3615)
Annc2*(Distance/100)	-0.2064	0.1591	0.1691	0.2071
	(0.3657)	(0.2428)	(0.2214)	(0.2665)
Annc3*(Distance/100)	-0.2598	-0.4331**	-0.4355**	-0.3517
	(0.3076)	(0.2044)	(0.1823)	(0.2312)
Annc1*(Distance/100)^2	0.5746	1.2626	1.4334	1.1979
	(1.5647)	(1.3222)	(1.2067)	(1.3822)
Annc2*(Distance/100)^2	0.5569	-0.8235	-0.8343	-1.1265
	(1.4640)	(0.9658)	(0.8515)	(1.1496)
Annc3*(Distance/100)^2	1.1357	1.9117**	1.8804***	1.6513
	(1.2391)	(0.8144)	(0.6862)	(1.0127)
Age*(Distance/100)	---	0.0130**	-0.0074	-0.0133*
		(0.0064)	(0.0063)	(0.0072)
Age*(Distance/100)^2	---	-0.0520**	0.0043	0.0264
		(0.0204)	(0.0191)	(0.0238)
Month dummies included?	Yes	Yes	Yes	Yes
House characteristics in Table 4 included?	No	Yes	Yes	Yes
Parcel attributes in Table 4 included?	No	No	Yes	Yes
Precinct demographics in Table 5 included?	No	No	No	Yes
Constant	12.1764***	11.3239***	11.3172***	11.2302***
	(0.0201)	(0.0328)	(0.0328)	(0.1083)
Observations	37,349	35,050	34,910	34,518
R^2	0.0259	0.5031	0.5450	0.6322
F-statistic	31.51	572.29	466.31	681.85

Dependent variable is the natural log of sale price. Robust standard errors are shown in parentheses. * $p < 0.1$ ** $p < 0.05$ *** $p < 0.1$

Table 8: Distance and Announcement Effects on Sale Price

		Impact of Announcements on Elasticity		
Distance from Stadium (miles)	Elasticity of Sale Price with Respect to Distance[1]	After Dec 5, 1996 Announcement ($Annc_1$)	After April 27, 1997 Announcement ($Annc_2$)	After June 17, 1997 Vote ($Annc_3$)
1	-0.0269	-0.0043	0.0018	-0.0032
5	-0.1151	-0.0168	0.0047	-0.0093
10	-0.1813	-0.0216	-0.0018	-0.0021

Effects shown represent percent change in house sale price.

[1] Evaluated at the mean age (32.81 years).

Table 9: Regression Results – Voting Analysis: Percent Yes

(1)			(2)			(3)			(4)		
Annc1: Effect	-423.364	***	Annc1: Effect	-32.948		Annc1: Effect	40.587		Annc1: Effect	-85.466	***
	(25.088)			(165.404)			(94.177)			(27.550)	
Annc1: Zero Sales	8.494	***	Annc1: Zero Sales	7.005		Annc1: Zero Sales	1.395		Annc1: Zero Sales	0.286	
	(1.884)			(5.159)			(2.934)			(1.830)	
Annc2: Effect	100.512	**	Annc2: Effect	338.951	**	Annc2: Effect	157.824		Annc2: Effect	22.058	
	(47.487)			(170.277)			(104.542)			(25.489)	
Annc2: Zero Sales	-0.712		Annc2: Zero Sales	2.491		Annc2: Zero Sales	0.958		Annc2: Zero Sales	-0.105	
	(1.434)			(1.783)			(1.326)			(1.211)	
			Distance /100	55.033		Distance /100	32.966				
				(37.361)			(22.360)				
						Safeco: % Turnout	-0.127	***	Safeco: % Turnout	-0.170	***
							(0.023)			(0.051)	
						Safeco: % Yes	0.708	***	Safeco: % Yes	0.646	***
							(0.023)			(0.042)	
			% White	-0.235	**	% White	-0.089		% White	-0.103	
				(0.099)			(0.098)			(0.126)	
			% Black	-0.281	***	% Black	-0.124		% Black	-0.159	
				(0.101)			(0.100)			(0.129)	
			% Nat Amer	-1.162	***	% Nat Amer	-0.477	**	% Nat Amer	-0.450	**
				(0.270)			(0.203)			(0.220)	
			% Asian Pac Isl	-0.053		% Asian Pac Isl	-0.013		% Asian Pac Isl	-0.047	
				(0.103)			(0.100)			(0.129)	
			% Hispanic	-0.077		% Hispanic	-0.123		% Hispanic	-0.202	
				(0.173)			(0.134)			(0.163)	
			% College Grad	-0.135	***	% College Grad	-0.174	***	% College Grad	-0.167	***
				(0.019)			(0.014)			(0.016)	
			% Unemp	0.135		% Unemp	0.133		% Unemp	0.152	
				(0.116)			(0.100)			(0.097)	
			Median HH Inc/1000	0.340	***	Median HH Inc/1000	0.239	***	Median HH Inc/1000	0.246	***
				(0.017)			(0.013)			(0.015)	
Constant	45.805	***	Constant	623.661	***	Constant	28.419	***	Constant	35.144	***
	(0.956)			(9.889)			(9.776)			(13.181)	
										***	
Obs	2,648		Obs	2,472		Obs	2,471		Obs	2,646	
R^2	0.1662		R^2	0.3405		R^2	0.5893		R^2	0.5560	

Dependent variable is the percent who voted yes on Referendum 48. Bootstrap standard errors are shown in parentheses.
* $p < 0.1$ ** $p < 0.05$ *** $p < 0.1$

Table 10: Regression Results – Voting Analysis: Percent Turnout

(1)			(2)			(3)			(4)		
Annc1: Effect	115.653	***	Annc1: Effect	98.477		Annc1: Effect	58.812		Annc1: Effect	-32.943	*
	(14.622)			(96.974)			(65.756)			(20.042)	
Annc1: Zero Sales	-3.761	**	Annc1: Zero Sales	-5.615	*	Annc1: Zero Sales	-1.327		Annc1: Zero Sales	3.100	***
	(1.959)			(3.220)			(1.849)			(1.196)	
Annc2: Effect	128.664	***	Annc2: Effect	-7.236		Annc2: Effect	210.988	***	Annc2: Effect	107.215	***
	(20.265)			(106.004)			(68.615)			(20.973)	
Annc2: Zero Sales	-0.648		Annc2: Zero Sales	-1.011		Annc2: Zero Sales	1.884	*	Annc2: Zero Sales	1.534	**
	(1.442)			(1.640)			(0.970)			(0.778)	
			Distance /100	-36.877		Distance /100	23.502				
				(22.489)			(15.038)				
						Safeco: % Turnout	0.631	***	Safeco: % Turnout	0.716	***
							(0.021)			(0.029)	
						Safeco: % Yes	0.029	*	Safeco: % Yes	0.057	
							(0.016)			(0.038)	
			% White	0.126		% White	0.018		% White	0.050	
				(0.141)			(0.055)			(0.077)	
			% Black	-0.050		% Black	-0.067		% Black	-0.035	
				(0.142)			(0.055)			(0.078)	
			% Nat Amer	0.202		% Nat Amer	0.093		% Nat Amer	0.033	
				(0.187)			(0.092)			(0.137)	
			% Asian Pac Isl	-0.026		% Asian Pac Isl	-0.042		% Asian Pac Isl	-0.007	
				(0.141)			(0.055)			(0.076)	
			% Hispanic	-0.450	***	% Hispanic	-0.115		% Hispanic	0.044	
				(0.156)			(0.112)			(0.170)	
			% College Grad	-0.023	*	% College Grad	-0.052	***	% College Grad	-0.108	***
				(0.013)			(0.008)			(0.013)	
			% Unemp	-0.099		% Unemp	0.018		% Unemp	-0.007	
				(0.082)			(0.053)			(0.059)	
			Med. HH Inc/1000	0.056	***	Med. HH Inc/1000	0.019	**	Med. HH Inc/1000	0.058	***
				(0.014)			(0.009)			(0.014)	
Constant	33.196	***	Constant	26.516	*	Constant	1.426		Constant	-6.352	
	(0.487)			(14.124)			(5.711)			(8.043)	
Obs	2,634		Obs	2,459		Obs	2,458		Obs	2,631	
R^2	0.0360		R^2	0.2105		R^2	0.5949		R^2	0.5890	

Dependent variable is the percent of registered voters who participated in the election that included Referendum 48. Bootstrap standard errors are shown in parentheses below coefficients. * $p < 0.1$ ** $p < 0.05$ *** $p < 0.1$