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The political economy of state right to farm amendments: Evidence from Missouri

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Abstract

Right-to-farm laws started in the 1970s. In 2014, Missouri residents voted on a right-to-farm constitutional amendment that gave farmers constitutional protection from nuisance suits related to agricultural production. The Amendment passed 50.12% to 49.88%. We use an empirical median voter model on county-level voting data to analyze the determinants of yes voting. We find that an increased presence of agricultural interests in a county as measured by head of cattle, acres planted, and % employed in agriculture were associated with a higher percentage of yes votes. Our results highlight the importance of widespread farm interests obtaining constitutional projections for farming.

Keywords: Right-to-farm; State referendum; Animal welfare; Environmental economics; Agriculture
JEL Classification Codes: Q18, Q15, D72

1. Introduction

When discussing basic rights enshrined in constitutions, agriculture is not typically high on the list of topics. However, citizens in a number of states such as North Dakota, Missouri, and Oklahoma have recently voted on referenda to protect the right to farm at the constitutional level. While right to farm (RTF) laws have existed for many years as state, county, and municipal laws, these referenda represent significant shifts in the legal protection of agriculture. These laws deny nuisance suits against agricultural producers using standard farming practices for nuisances like odor, noise, dangerous equipment, and visual clutter.

Given the increased protection of agriculture proposed by these amendments and the implications they have for agricultural, environmental, an animal welfare interests, an examination of voting on RTF constitutional amendments provides insight into the power of agricultural interests. We use an empirical median voter model (Wadsworth, 2020; Bock, 2021; Guffey, 2021) to investigate the extent to which agricultural interests are associated with the percentage of "yes" votes at the county level in the Missouri RTF referendum in 2014.

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The economics literature on RTF laws is scant. Bergstrom and Centner (1989) provide a theoretical analysis of the implications of RTF laws. Specifically, they examine the incentives associated with protecting farmers from nuisance suits. They conclude that RTF laws increase commodity production and agricultural waste byproducts. Duke and Malcolm (2003) develop an interdependent-behavior model of interactions between producers and the residential public. They examine the interactions between these two groups under differing institutional arrangements and interpretations of RTF laws. The only empirical examination of RTF laws of which we are aware is Adelaja and Friedman's (1999) analysis of municipal RTF laws. The authors examine the adoption of such laws using a binary-dependent model and find that farm groups are able to influence the adoption of municipal RTF laws. We extend this literature by examining RTF laws with a much higher "hurdle," since municipal and state laws can be repealed by new legislation. Elevating RTF to the constitutional level provides a significantly higher level of protection for farmers against nuisance suits.

The Missouri RTF Amendment is of interest beyond the previous literature for two reasons. First, Missouri is more populous, urban, and economically diverse than other states with recent RTF referendums such as North Dakota. This led to intense politic action on both sides of the issue (Ballotpedia, 2021). The pro-RTF side included state and national agricultural groups, agribusinesses political organizations, and non-agricultural groups. The anti-RTF side included state and national animal welfare and environmental groups, state political parties, and farmer protection groups. Second, the Missouri referendum passed with a very small margin, winning 50.12% to 49.88% (Ballotpedia, 2021). We therefore focus on the extent to which agricultural interests were able to influence the passage of these legal protections in a state with a larger and more urban population.

2. Methods

The purpose of the paper is to determine the extent to which agricultural and other interests influenced referenda on right to farm constitutional amendments in Missouri in 2014. We model the percentage of the votes in favor of the referenda as a function of planted acres of crops, total cattle inventory, and % of labor force employed in agriculture. In addition, a set of income, and demographic controls standard in the empirical median voter literature – especially the literature focused on constitutional referendums at the state level (Neto et al., 2016; Hall and Karadas, 2018) – are included. Our use of income and demographic variables as controls are important not only to modeling voter preferences at the county level, but also to mitigate against omitted variable bias.

To examine the effect of agricultural interest group influence on the percentage of votes in favor of RTF constitutional amendments, we employ the following model:

$$y_i = \alpha + \sum_{j=1}^{J} \beta_j A_{ij} + \sum_{k=1}^{K} \beta_k D_{ik} + \varepsilon_i$$

where y is the percentage of voters in county i who voted "Yes" on the Right to Farm referendum, A_{ij} are J agricultural variables that capture the effect of a county's dependence on agricultural production on the vote percentage, D_{ik} are income and demographic variables that measure the effects of county-level per-capita income, % white, and % female on the vote percentage, ε_i is a mean-zero normally-distributed error term, and α, β_j, and β_k are parameters to be estimated.

If the coefficient on planted acres or cattle inventory or % employed in agriculture are positive, people in more agriculturally-dependent counties are more likely to vote in favor of the amendment. This implies that voters perceived the amendment as a necessary protection for their interests, which are a function of the health of the agricultural industry in their area.

Though the primary arguments against RTF were expressed as concerns for animals (see, for example, the arguments in Ballotpedia (2021), the wording of Missouri's RTF amendment indicates that they would also protect modern crop agricultural practices.[1]

3. Data

The use of both crop and cattle inventory variables to measure this effect is necessary due to the variations in the type of agricultural production in each of the counties in Missouri. Though these two agricultural production types do not represent all of agriculture in these states – for example, Missouri is home to substantial hog and poultry production – reliable data was not readily available on inventory or production of these commodities for all counties. USDA Census data are published in such a way as to protect the confidential information of producers. Thus, in counties in which there are only one or a handful of operations, the data are omitted from the census. This effectively reduces the number of counties to 64 should hogs, broilers, and layers are added to the analysis. For this reason, we employ a more parsimonious analysis where Head of Cattle and Acres Planted proxy for the presence of all agriculture. Table 1 displays summary statistics.

Table 1. Summary statistics.

Variable	Mean	Std. Dev.	Min	Max
% Yes	63.2	10.5	32.7	86.6
Acres Planted (in 1000s)	142.5	108.2	3.4	438.3
Head of Cattle (in 1000s)	33.8	22.2	0.1	115.0
% Employed in Agriculture	4.9	3.6	0.3	20.8
Income (in 1000s)	$41.8	$9.2	$28.4	$94.3
%White	93.2	6.2	64.8	99.0
% Female	50.2	2.0	37.0	55.0

County-level vote outcomes are from Missouri Secretary of State (2016). Demographic and employment data are from the American Community Survey (2016). Data on planted acres comes from the United States Department of Agriculture, Farm Service Agency (2016). Cattle data comes from the United States Department of Agriculture, National Agricultural Statistics Service (2016).

4. Results

Table 2 presents our empirical results for Missouri, estimated using Ordinary Least Squares with robust standard errors. Column (1) includes our three agricultural interest variables: Acres Planted, Head of Cattle, and % Employed in Agriculture.[2] All three variables are statistically significant and have the expected positive sign. We interpret this as strong evidence of the important role that agricultural interests play in county-level voting outcomes on RTF laws.

[1] The Amendment added the following Section to Missouri's constitution. "Section 35. That agriculture which provides food, energy, health benefits, and security is the foundation and stabilizing force of Missouri's economy. To protect this vital sector of Missouri's economy, the right of farmers and ranchers to engage in farming and ranching practices shall be forever guaranteed in this state, subject to duly authorized powers, if any, conferred by article VI of the Constitution of Missouri"

[2] Surprisingly, there is not a high degree of correlation between these three variables, with the highest being % Employed in Agriculture and Acres Planted at 17.4%.

Table 2. Determinants of county-level voting on Missouri RTF constitutional amendment

Variable	**(1)**		**(2)**		**(3)**		**(4)**	
Constant	49.832	***	58.374	***	41.167	**	97.964	***
	(2.212)		(4.813)		(16.282)		(17.949)	
Acres Planted (in 1000s)	0.013	*	0.012	*	0.014	**	0.019	**
	(0.007)		(0.007)		(0.007)		(0.007)	
Head of Cattle (in 1000s)	0.136	***	0.122	***	0.111	***	0.098	***
	(0.035)		(0.033)		(0.033)		(0.033)	
% Employed in Agriculture	140.673	***	123.779	***	(113.94)	***	104.350	***
	(26.010)		(27.361)		(27.341)		(27.042)	
Income (in 1000s)			-0.172	*	-0.149	*	-0.145	**
			(0.089)		(0.083)		(-0.073)	
% White					0.181		0.271	**
					(0.156)		(0.123)	
% Female							-1.295	***
							(0.295)	
R-Squared	0.335		0.354		0.362		0.421	

Notes: Dependent variable is the percentage of voters in a county voting "Yes" on Constitutional Amendment 1 in 2014. Absolute value of robust standard errors in parentheses. * Indicates statistical significance at the 10\% level, ** at the 5\% level, and *** at the 1\% level. N=114 in all specifications.

In columns (2)-(4) we include our demographic controls one at a time. Income is found to have a negative and statistically significant relationship in all three specifications. We hypothesize that higher income voters, conditional on the level of agricultural interests in the county, are more likely to be concerned about potential animal welfare and environmental issues that may be blocked by a RTF constitutional amendment. This finding, however, is at odds with survey evidence regarding corporate social responsibility in agriculture (Morgan et al., 2018: Table 4). The higher the % White in a community, the greater the vote for the RTF amendment, but this result is only statistically significant in Column (4). % Female is negative and statistically significant in Column (4). This finding is also at odds with the findings of Morgan et al. (2018), who find that females are generally not concerned about corporate social responsibility in agriculture except for health and safety. Whether this is preference falsification (Kuran, 1997) or the multi-dimensional nature of an issue like RTF, is beyond the scope of our paper but would be a fruitful avenue for future research. The Morgan paper is a nationwide survey, which includes many states that do not depend as greatly on agriculture as Missouri does. This may account for some of the differences in our results from the Morgan paper as well.

5. Concluding remarks

In this paper, we measure the effect of agricultural interests on a statewide referendum in Missouri that creates a RTF. While employment in agriculture has declined rapidly over the past century, agricultural interests have been able to influence the passage of advantageous legislation. This paper provides more evidence that those in and affected by the agricultural industry can obtain benefits from the political process. Specifically, we find evidence that counties which have more cattle, more planted acres, and higher agricultural employment were more likely to vote in favor of a RTF constitutional amendment.

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