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Farmer's Perceptions of Cost of Regulations in the Northeastern US

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Abstract:

Regulation and compliance are major issues within the agricultural industry. We attempt to gain a better understanding of the factors effecting the cost of compliance in the agricultural sector. We conducted an online survey during Fall 2014 on Northeastern agricultural producers. A total of 600 surveys were collected representing all types of agricultural production within the Northeastern U.S. We find producers perceive all regulations have increased since 2010, but environmental, food safety, and environmental regulations having been perceived to increase the most. Over half of the survey respondents indicated a significant increase in the cost of compliance for state regulations. However, fines after inspection was found to have little impact on the cost of compliance. We also find that older farmers have less costs of compliance and bigger farms have more costs of compliance.

Farmer's Perceptions of Cost of Regulations in the Northeastern US

Introduction

Regulation in agriculture has always been a contentious issue with the prevalence of laws and ordinances designed to restrict production practices. In some instances, regulations have been proven to cause an entire industry shift in a market for an agricultural good (Ferrier and Lamb, 2007). Additionally, there has been an increasing trend in regulation for agriculture over the past several years (Russell et al., 2015). These regulations have come from both federal and state authorities. This is supported by the efforts of some states to pass, or attempt to pass, sweeping “right-to-farm” laws and amendments that prevent new regulations from being imposed (Ferrell, Sanders, 2016). The states of Missouri and North Dakota strengthened their respective “right-to-farm” laws with similar measures proposed in Oklahoma, although Oklahoma’s initiative failed to receive the votes needed to pass (Morris, 2017). This has driven a sentiment from farmers that they are being over regulated.

Recent surveys have indicated that regulations are an important concern for business viability for agricultural producers. Regulation is an important topic for producers since, by design, the costs of compliance fall on them. Perceptions of these regulations may vary among producers based on the types of production in which they are engaged, the size of their farms, their experience, and other factors. Specifically, producers may believe that the national, state, or local government over- or under-regulates on the margins of taxation, labor protections, environmental protection, food safety, and transportation regulation. If a producer perceives that

there is too much regulation, producers may choose to specialize or leave the industry if the cost of compliance is too high, resulting in further industry concentration. Alternatively, under-regulation could result in under-attainment of consumer, worker, and environmental protection goals. Given that regulatory costs can be highest for small firm, which a lot of agribusinesses are, it is no surprise then that this issue of interest for agricultural producers (Crain and Crain, 2010).

While the federal regulations are the same for all US farmers, regulations often vary across states especially depending on which policymakers are in power. State regulations may have more effect on the agricultural producers than federal or municipal regulation. When states add additional standards onto producers, they must invest additional time and money into meeting those standards. These changes may affect a producer that is newer in the industry more than an established producer or vice versa. This paper analyzes survey data from the northeastern US to determine farmers' perceptions of these issues and what factors affect these perceptions. This paper informs policymakers as to the perceived effects perceptions of the costs of the agricultural sector.

Data

We use an online survey administered from September through November 2014 to agricultural producers in the northeastern US. While it was open to all agricultural producers, the producers with the highest economic output were of unique interest. The survey was distributed through email list serves sent out by state level Farm Bureaus, university extension

agents, and regional agricultural associations and published online websites. Since there was no financial award to respondents for completing the survey it was difficult to define the response rate, but the method of distribution allowed for enough informative data to be collected. Due to there being a large number of regulatory categories, the survey focused the questions on business tax, labor, environmental, food safety, and transportation regulations. These categories have been determined to play a significant role in agriculture production business. Additionally, demographic data was collected along with farm characteristics to help sort respondents. Farm characteristics data includes questions based on primary production, type of business organization, range of sales, other forms of production, age of farm, and zip code. The demographic data includes gender, highest level of education, year of experience in farming, and percentage of household income from farming.

According to the survey, 50.39% of respondent's perceived money spent on compliance for state regulations has increased with 14.34% of respondents specifying that money spent has significantly increased (Figure 1). Only 2% of respondents indicated any type of decrease in perceived compliance costs. This shows that over half of the farmers perceive regulations to be increasing and that the costs of that compliance to be increasing as well.

A summary of the data used for the analysis is in Table 1. The summary statistics show this sample to be representative of agriculture in general. The average age of the farmer is 58 which is similar to what is reported by the USDA census of agriculture (USDA, 2012). The sample is also diverse across farm typology with 31% focusing on fruits and vegetables, 8% on field or row crops, 11% focusing on dairy, and 13% on livestock, which are the major categories.

Responses to farmer perceptions on cost of compliance were also varied. Table 2 shows the dispersion of responses for the 10 point Likert scale questions for each of the three dependent variables used in the analysis. For equipment costs and administration expenses, responses were spread fairly evenly over the 10 point Likert scale. However, this does not hold for the question about the cost of fines after inspection. Table 2 shows that most respondents indicated that fines after inspection have not been costly at all with 61% marking the lowest option available which corresponds with “Not Very Costly”. An additional 15% indicated option 1, which is the second lowest impact available to report. This is interesting for several reasons. First, it shows heterogeneity in the costs associated with regulation. This indicates that regulations don’t always affect the costliness in all areas, rather the administrative costs and equipment costs have increased, but fines associated with these regulations have not. Secondly, this is interesting because a main criticism of survey approaches to regulation is that producers are biased in their responses and tend to state they are more affected than what they actually experience. This question shows that farmers who responded to the survey were willingly to admit that one area of the regulations they are being asked about had little to no effect on the costs of their operation.

Research Methodology

To analyze how factors affect the perception of costliness, the survey question of interest was focused on how costly regulations have been for the farms. This includes fines after inspections, equipment needs, and administrative costs. Respondents chose a single answer from

a 10-option Likert scale. The Likert scale was organized from 0-not very costly, to 5-moderately costly, and finally to 10-very costly.

We examine the effects of factors on the perception of costliness of regulation by estimating a tobit model to account for the truncation of the Likert scale question. The factors used to examine this relationship are state of residence, agricultural sector (e.g. dairy, row crops, greenhouse and nurseries, fruits and vegetables, livestock, other), farmer demographics (e.g. farmer experience, sex, ethnicity), annual sales in dollars (a proxy for farm size), business structure type (e.g. partnership, s-corp, LLC, sole-proprietorship). We examine these factors using a tobit model specified by equation (1) below:

(1) $Cost =$

$f(State, Sector, Structure, Farmer Demographics, Farm Demographics, Sales).$

Where $Cost$ is the dependent variable of interest (e.g. equipment costs, administrative costs, fines after inspection).

Results

Results for the model analyzing the costs of equipment to comply with the regulation are located in Table 3. The older the farmer, the less costly equipment is to comply with regulations. Bigger farms by sales are higher equipment costs as well. For farm typology, dairy farms

experience an increase in equipment costs compared to row crop farms. Farm structure type was not statistically significant for equipment costs. And finally, farm owners that are of Asian ethnicity were found to have higher equipment costs.

Factors affecting fines after inspection are found in Table 4. Given the number of respondents reporting low costs of fines, it is not surprising that there is a low level of statistical significance for this model. As in the case with equipment costs, the larger the farm and a farm operator of Asian ethnicity was found to have a positive impact. Additionally, livestock and dairy farms were found to have a negative and statistically significant impact on fines after inspection.

Results for administrative costs are in Table 5. The older the farmer the less administrative costs a farm has to comply with regulations. However, this is contrasted by farmer experience. It was found that the more experience a farm operator has, the more administrative costs are incurred to comply. All farm types except dairy were found to be positive and statistically significant relative to the base of row crops. Also, as was the case in the previous two models, farm operators of Asian ethnicity experienced higher costs of compliance.

Conclusions

Regulation and compliance are major issues within the agricultural industry. We examined surveys from the Northeastern US to gain a better understanding of the factors effecting the cost of compliance in the agricultural sector. The online survey was conducted during the Fall of

2014 with a total of 600 surveys collected representing all types of agricultural production. We find producers perceive all regulations have increased since 2010. Over half of the survey respondents indicated a significant increase in the cost of compliance for state regulations. However, fines after inspection was found to have little impact on the cost of compliance. We also find that older farmers have less costs of compliance and bigger farms and farms of certain ethnicities have more costs of compliance. It was also found that certain farm types experience different levels of costs to comply with regulations.

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Figure 1. Respondent Perceptions on Change in Money Spent on Compliance to Regulations

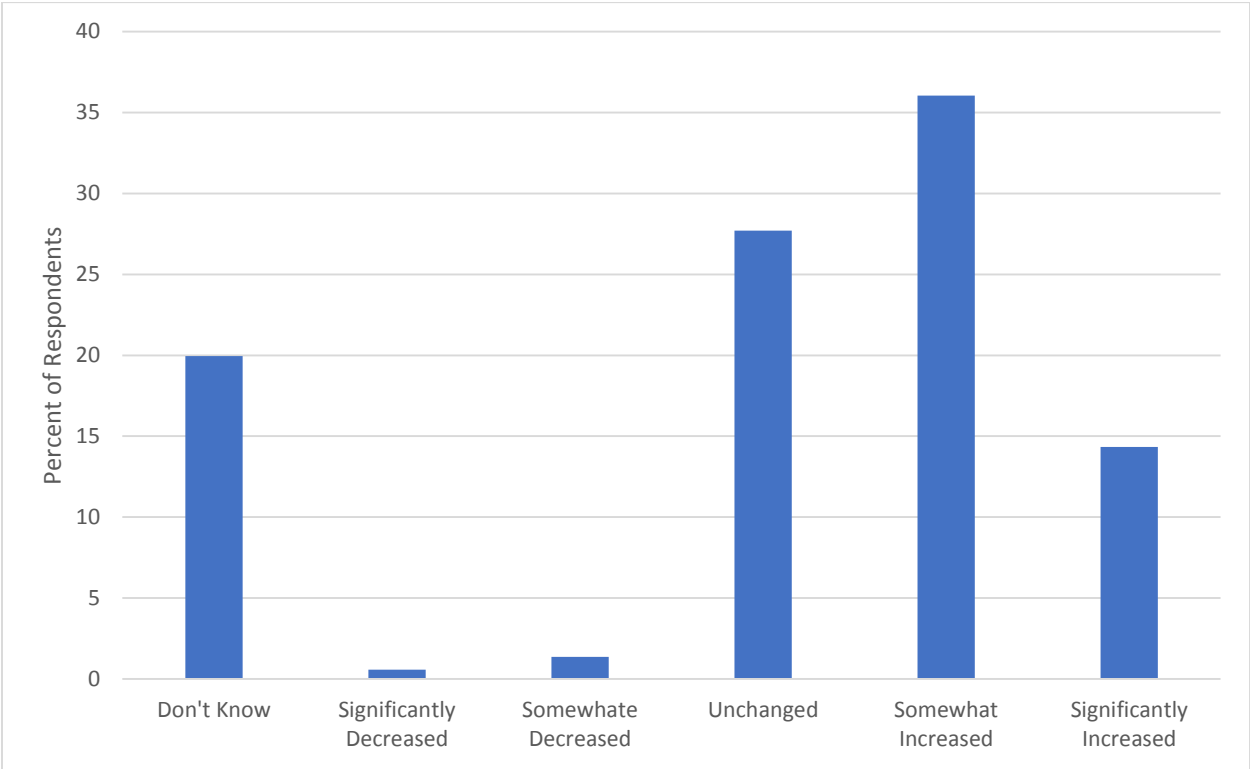


Table 1. Summary Statistics

	N	Mean	Standard Deviation	Min	Max
Cost of Fines after Inspection	247	1.356	2.452	0	10
Equipment Costs to Comply	366	3.820	3.101	0	10
Age	382	58.175	12.213	22	106
Farmer Experience	650	3.297	1.586	1	6
Sales	535	1497196.000	2792068.000	74999.5	10000000.00
Male	385	0.668	0.472	0	1
Field Crops	586	0.075	0.264	0	1
Dairy	586	0.113	0.316	0	1
Greenhouse and Nurseries	586	0.082	0.274	0	1
Fruit and Vegetables	586	0.312	0.464	0	1
Livestock	586	0.130	0.336	0	1
Other crops	586	0.288	0.453	0	1
Sole Proprietorship	661	0.464	0.499	0	1
Partnership	661	0.044	0.205	0	1
LLC	661	0.254	0.436	0	1
Corporation	661	0.145	0.353	0	1
Other Business Structure	661	0.059	0.236	0	1
White	379	0.931	0.253	0	1
Hispanic	379	0.003	0.051	0	1
Asian	379	0.005	0.073	0	1
Native American	379	0.032	0.175	0	1
Other Race	379	0.029	0.168	0	1

Table 2. Summary of Dependent Variable Responses

Likert Scale Interpretation	Likert Scale	Dependent Variables		
		Equipment Costs	Administrative Costs	Fines After Inspection
Not Very Costly	1	61	49	151
	2	51	57	39
	3	42	42	10
	4	34	50	9
	5	27	29	4
Somewhat Costly	6	56	52	13
	7	18	32	4
	8	19	41	4
	9	13	14	5
	10	22	14	4
Very Costly	11	23	23	4

Table 3. Equipment Costs for Regulatory Compliance

Variable	Estimate	Standard Error	P Value
Age	-0.044**	0.021	0.036
Farmer Experience	-0.062	0.174	0.722
Sales	0.000***	0.000	0.072
Male	0.433	0.508	0.395
Dairy	2.509**	1.091	0.021
Greenhouse and Nurseries	0.816	1.203	0.497
Fruit and Vegetable	0.838	0.960	0.383
Livestock	-0.486	1.061	0.647
Other Farm Type	0.128	0.971	0.895
Partnership	-0.750	0.934	0.422
LLC	0.665	0.563	0.238
Corporation	0.582	0.702	0.407
Other Business Structure	1.180	1.139	0.300
Hispanic	21.001	512.661	0.967
Asian	6.408***	3.536	0.070
Native American	2.316	1.204	0.054
Other Race	-2.020	1.319	0.126
Constant	4.656*	1.502	0.002

*, **, *** Indicates statistical significance at the 99%, 95%, and 90% level respectively
N=261

Table 4. Fines after Inspection

Variable	Estimate	Standard Error	P Value
Age	-0.102	0.042	0.016
Farmer Experience	0.109	0.350	0.756
Sales	0.000*	0.000	0.002
Male	-0.212	0.969	0.827
Dairy	-3.675***	1.919	0.055
Greenhouse and Nurseries	-2.195	1.910	0.250
Fruit and Vegetable	-2.302	1.591	0.148
Livestock	-5.459*	1.993	0.006
Other Farm Type	-1.839	1.579	0.244
Partnership	-0.786	2.001	0.695
LLC	-0.613	0.998	0.539
Corporation	-0.960	1.203	0.425
Other Business Structure	-0.432	2.237	0.847
Hispanic	--	--	--
Asian	16.799*	4.982	0.001
Native American	0.578	2.324	0.804
Other Race	1.657	1.905	0.384
Constant	6.144**	2.936	0.036

*, **, *** Indicates statistical significance at the 99%, 95%, and 90% level respectively
N=186

Table 5. Administrative Costs

Variable	Estimate	Standard Error	P Value
Age	-0.044**	0.019	0.022
Farmer Experience	0.248***	0.153	0.104
Sales	0.000	0.000	0.342
Male	0.555	0.459	0.227
Dairy	1.691	1.022	0.098
Greenhouse and Nurseries	3.035*	1.092	0.005
Fruit and Vegetable	2.786*	0.901	0.002
Livestock	1.647***	1.002	0.100
Other Farm Type	2.086**	0.909	0.022
Partnership	0.671	0.894	0.453
LLC	0.802	0.506	0.113
Corporation	1.572**	0.634	0.013
Other Business Structure	0.285	0.988	0.773
Hispanic	19.755	299.921	0.947
Asian	5.966***	3.386	0.078
Native American	0.230	1.113	0.836
Other Race	-0.518	1.162	0.656
Constant	2.180	1.463	0.136

*, **, *** Indicates statistical significance at the 99%, 95%, and 90% level respectively
N=283