Public Preferences, Pressure Groups, and Public Policy Regarding Multifunctionality in Agriculture: Compatibility and Conflict

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1. Introduction

The multifunctionality of agriculture is increasingly important in the design of agricultural and rural policy, including the regulation of agricultural producers. In some cases policies may be designed to simultaneously achieve multiple objectives. For example, policies attempt to reduce water pollution by reducing soil erosion. However, there may be impacts on agricultural functions outside of those addressed by the policy objectives that conflict with social preferences. For example, regulatory requirements designed to reduce soil erosion and water pollution may inadvertently make the preservation of family farms more difficult by increasing production costs. Ideally, the objectives emphasized by 'multifunctional' policies should reflect social preferences across all functions of agriculture. In our analysis, we show that this is not the case in California for the two objectives of reducing the negative environmental externalities produced by agriculture and protecting the open spaces currently used for agricultural production from urban or suburban development.

We begin by summarizing our findings from a series of focus groups designed to elicit public preferences and farmer preferences regarding two "multifunctional" agricultural policy objectives: the preservation of farmland, and the protection of the environment from negative externalities of agricultural production. As a result of our focus group findings, we distinguish farmland protection from open space protection. Although not a part of our analysis of multifunctional policy, we include information regarding preferences for open space protection in order to aid in assessing how members of the public and interest groups distinguish it from farmland protection. We evaluate environmental groups that are active in our study area in terms of their interest in these multifunctional policy objectives. We then link these objectives to relevant state programs and agencies.

We construct a political pressure groups, or lobbying, political economy model to explain these California policy outcomes, given the preferences of the general public. We find that while it is impossible to definitively predict the relationship between public preferences for spending and

actual government expenditures for environmental protection, our model predicts that government spending on farmland preservation will exceed the amount preferred by the public.

As demonstrated by Cropper, Evans, Beradi, Ducla-Soares and Portney (1992), special interests, or political pressure groups, can play an influential role in the development of environmental policy. Naevdal and Brazee (2000) explain the interaction between policymakers and environmental pressure groups in terms of asymmetric information. Their analysis, however, does not use a rent-seeking or lobbying approach. Damania (1999) uses a lobbying approach to explain the choice of environmental policy instruments. Rather than using a pure lobbying model, only producers and environmentalists lobby, by donating funds to political parties. Other consumers are incorporated into the model via the government's objective function, which is a weighted combination of social welfare and getting elected (or re-elected). A party's probability of election is increased by contributions from interest groups. Damania (2001) uses a similar lobbying model to explore why industries that pollute more often face less stringent environmental regulations than newer firms that pollute less do.

Damania's approach is based on Grossman and Helpman (1994). In contrast, our approach is based on Becker (1985). We model a political pressure groups approach in order to explain the policy outcomes observed in California for environmental protection and farmland preservation. The political pressure group approach has been used to evaluate other types of agricultural policies. This literature is discussed in deGorter (2002), and in Rausser and Goodhue (2002). The latter also places this approach in the context of the broader political economy literature.

Empirically, we use focus groups to establish our evidence. This approach falls between anecdotal support and a formal survey. Focus groups may be considered a structured group interview which uses a trained moderator and a pre-prepared script. Focus groups are useful for developing hypotheses, for pre-testing surveys, and for gathering qualitative information, among other purposes. Here, we primarily use focus groups to aid us in developing our hypotheses.

2. Focus Group Results

Focus groups were held in two locations in California to ascertain public opinion regarding agricultural amenities and disamenities, and farmland preservation. The locations were centered on the small towns of Winters, Yolo County, in the Sacramento Valley, and Watsonville, Santa Cruz County, on the Central Coast of California. Three different groups were targeted in each of the locations for a total of six focus groups. The groups were town residents, rural residents who were not farmers and farmers. The preferences of the groups regarding the objectives we examine are summarized in Table 1.

Table 1: Focus Group Objectives

	Farmland Preservation	Open Space Preservation	Environmental Protection
Farmers	XX	X	X
Town Residents: Winters	XX	XX	X
Town Residents: Watsonville		XX	XX
Rural Residents: Winters	XX	XX	XX
Rural Residents: Watsonville		XX	XX

XX denotes strong preference for objective. X denotes preference for objective.

Each of the focus groups asked the participants about where they lived, what they liked and what they would change about their immediate and broader surroundings. In that context, they were asked to describe any interactions they had with agriculture in their area. They were then asked about the benefits and costs they perceived from agriculture, and their wish list for farmland in their county for the next ten to thirty years. Finally, participants were asked to define open space. Many participants distinguished between open space and farmland, so their preferences regarding open space preservation are also included in Table 1.

2.1. **Town Residents.** The Winters town residents talked about the benefits of living in a small town, especially the lack of congestion. Most of the participants had moved to Winters from other more highly populated areas of the state. They talked about the local parks, a friendly atmosphere and safety. Several people mentioned the proximity to Sacramento and Napa as a plus. For the

most part the participants were uncomfortable with the question concerning how they interact with agriculture. A few mentioned fruit trees that they had in their yards. Others mentioned the Yolo County Fair, a nearby pumpkin patch, and wine tasting. Surprisingly, no one mentioned a farmers market or roadside stand.

The benefits from agriculture proposed were a healthier environment, good air quality, decreased crowding, decreased stress due to living in a beautiful place, employment, diversity in the community due to the population of Hispanic farmworkers, and the scenery provided by agriculture. When asked to rank the benefits the group agreed on lower stress, decreased crowding, and a healthier environment as the most important. In Watsonville, an additional identified benefit was eating high quality fresh local produce.

When asked about things that they would like changed, the Winters group mentioned stopping the burning of rice straw and increased public open space as a contingency against development. In both locations, strongly supported clean air and access to open space. In Watsonville, there were two additional concerns: inadequate farmworker housing and the lack of young people entering farming. Several Watsonville residents said they would like to see more organic production.

When asked about their wish list for the next 10 - 30 years, the Winters group expressed concerns about the preservation of family farms in the area, planned growth, agriculture in public education, and the creating and maintenance of open space between development. They seemed to view development as inevitable and didn't want to deny farmers the right to sell their land. However, they felt that with careful planning and forethought access to open land could be maintained.

Significantly, there were interesting discussions regarding open space and farmland in both groups, as well as the rural resident groups (see below). In the Winters group, several did not think that farmland was open space unless there was public access. However, many participants enjoyed the agricultural landscape. In the Watsonville groups, participants did not view farmland as open space

at all. Farmland is a space holder that slows development but does not provide public access and wildlife habitat in the way that parks and nature reserves do.

2.2. **Rural Residents.** In the Winters group, most of the rural residents had lived in the area for many years. They had a broader list of benefits from agriculture than the town residents and seemed to know the farmers who lived near them. Like the town residents they talked about the relief from congestion but they took that idea further to include a buffer from society and an opportunity to meditate and to star gaze. They discussed farmland as a source of education about how food is produced, and as a connection to the past. They also emphasized the importance of food security. Wildlife habitat directly near their homes was extremely important.

When asked about the negatives of agriculture, members of this group were much more specific about agricultural practices in the area than the town residents were. They talked about high speed tomato trucks in the area, being awakened by crop dusters early in the morning, rice burning, pesticides, the high use of water, and the dust created by farming operations. They also talked about restricted access to land and zoning restrictions related to purchasing and dividing farmland. There was an interesting discussion about farming as a way of life. They agreed that it was impossible to become a farmer without marrying into the land or inheriting it. Several felt that federal tax dollars going to farmers in the form of subsidies was a major concern.

When asked about their wish list for the next 10 to 30 years the discussion turned to infrastructure. In particular, schools and roads were discussed at length. The participants also mentioned the need for public transit, trains and buses. They talked about open space and access to hiking trails. They wanted farming to become more efficient and reduce its use of water, fertilizers and pesticides. They also wanted farmers to become less dependent on government subsidies.

The town and rural residents focus groups in Watsonville had similar results to the Winters focus groups with respect to the attributes of a safe environment, lack of congestion, and tranquility that the presence of farmland allows within a community. Beyond those intersecting ideas, the

Watsonville focus groups were peppered with discussion of the high cost of living in the area, the low vacancy rate, and the difficulty in finding employment. These concerns came up again and again. The groups talked about the parks and land preserves in the area and were less inclined to think of agriculture as open space or a source of scenic beauty than were the Winters area residents. They discussed habitat only in the context of land out of agricultural production. One rural resident said that a benefit from farming was that it kept houses from being built, so the view of the ocean was not blocked from the highway. There was a much greater concern with local negative environmental impacts from agriculture including salt build up on beaches, lowering of the water table and flooding caused by agriculture.

2.3. **Farmers.** In the Winters group, the farmers immediately mentioned the importance of farms providing wildlife habitat. In particular, they described the land adjacent to Putah Creek, and attempts by public entities to purchase farmland along the creek to stop pumping out of the creek. The farmers felt that any government intrusion of this type was inappropriate use of tax money. They felt strongly that the presence of farmland was a benefit to people from the cities who come out to the country on the weekends for drives or bicycle rides. To them viewing the farmland was equivalent to access to farmland. Taking that one step further, farmland to them was synonymous with open space. There was an interesting discussion about what the area around Winters would look like without irrigated agriculture. The image of a desert was put forth.

Not surprisingly, the farmers brought up the idea of food security. They talked about the risk of shifting farmland into wildlife habitat and out of production. Food was viewed as a necessity and parks as a luxury.

When asked about the negative impacts of farming, the farmers instead began to talk about the problems that farmers now face. These included difficulty in making a living, low margins, access to water, farmer dependence on government subsidies, problems due to the enforcement of the Endangered Species Act and the omnipotent threat of development. They did finally mention problems

of soil erosion, loss of topsoil, air pollution, salt build up, and groundwater depletion. Their wish list included better services form the county including fire and water, stopping the dumping of garbage on farm property, and a slowing of development even though they owned land that had potential for development. The rest of their comments pertained to ways to improve profitability from farming including direct marketing, Internet sales, reducing the revenue to middlemen, and the problems connected to concentration among buyers and processors.

In Watsonville, the farmer group repeatedly returned to the subject of inequities in international trade for the fresh market commodities that they produce. They felt that overseas producers had an unfair advantage because of government subsidies and tariffs. The message was clear that they would like to see trade barriers lifted. In the same vein, they supported required country of origin labeling.

3. Interest Groups

There are a wide variety of interest groups that are interested in one or both of these multi-functional policy objectives. Some groups, such as the California Farm Bureau and the California Cattlemen's Association, represent farmers. Their positions favor both environmental protection and farmland preservation, but caution legislators about the costs imposed on farmers by some means of achieving environmental protection.

A number of "environmental interest groups" operate in northern California. Some are primarily concerned with the environment, while others are more concerned with land preservation, both agricultural and non-agricultural. One subset, the environmental protectionists, are concerned with reducing environmental degradation due to farming practices, and are unconcerned with farmland preservation. One example of such a local group in our study area is the Putah Creek Council.

Other groups include farmers and non-farmers, and emphasize environmental protection and the preservation of farming as a way of life, including farmland preservation. Examples of such groups that operate in California include the Committee for Sustainable Agriculture, the Community

Alliance with Family Farmers, the Organic Farming Research Foundation, and the Great Valley Center.

Still other groups emphasize the preservation of open space, not necessarily farmland, in conjunction with one or both of the two multifunctional policy objectives we examine. Such groups include the Audubon Society, Ducks Unlimited, Greenpeace, the Sierra Club, the American Farmland Trust, and the Nature Conservacy. In contrast to the environmentally focused local group in the Winters area, the local group near Watsonville, the Aramos Community Center Foundation, is focused on the preservation of (non-agricultural) open spaces. Table 2 summarizes the objectives of these various interest groups.

Table 2: Environmental Group Objectives

	Farmland Preservation	Open Space Preservation	Environmental Protection
Aramos Community Center Foundation		X	
American Farmland Trust	X	X	
Audubon Society	X	X	X
Committee for Sustainable Agriculture	X		X
Community Alliance with Family Farmers	X		X
Ducks Unlimited	X	X	
Great Valley Center	X		X
Greenpeace		X	
Nature Conservacy	X	X	X
Organic Farming Research FOundation	X		X
Putah Creek Council			X
Sierra Club		X	X

4. California Programs and Agencies

In this section, we briefly summarize some of the major state-level programs regarding the two multifunctional policy objectives we address: environmental preservation and farmland protection. Resource conservation districts are designed to address our two policy objectives, as well as the preservation of open space that is not necessarily agricultural. Local zoning may be used for the protection of farmland and other open space. Cities are currently required to define their long-term spheres of interest, which provides information regarding their intended plans for expansion.

Other programs are single-purpose. The Williamson Act is designed explicitly to protect farmland from development. In exchange for development rights, farmers receive a tax break on the protected land. Regional Water Quality Control Boards are concerned exclusively with reducing the negative impacts of agriculture and other human activitied on water quality. The California Department of Pesticide Regulation's mandate is to protect human health and the environment from negative effects of pesticide use. Table 3 relates these government programs and institutions to the policy objectives we identify.

Table 3: State and Local Program Objectives

	Farmland Preservation	Open Space Preservation	Environmental Protection
Department of Pesticide Regulation			X
Regional Water Quality Control Boards			X
Resource Conservation Districts	X	X	X
Williamson Act	X		
Zoning	X	X	

5. Analytical Model

We develop a political pressure model following Becker (1985). We consider the outcome when interest groups are concerned with the taxes and expenditures for a single multifunctional objective, either limiting the negative externalities from agriculture or preserving farmland. Based on the preferences elicited through our focus groups, we then use the analytical model solution to explain the pattern of government expenditures for each of these objectives. The model includes four interest groups: farmers (f), environmentalists/preservationists (v), rural residents (r), and urban residents (u). Since we evaluate each objective separately, there is no need to simultaneously consider environmentalists and preservationists.

Our interest groups choose the amount of money they spend lobbying per member, a_i, in order to maximize utility by influencing the amount of public funds spent on the multifunctional objective in question, S^E.

We define a political pressure function, p_i, for each group that depends negatively on the number of members (n_i) and positively on the total lobbying expenditures (m_i) of each group. For group i, $p_i = p_i(m_i, n_i)$, where $m_i = a_i n_i$. a_i is group i's average expenditure per member. Total public expenditures on the multifunctional objective, S^E, are a function of the political pressure exerted by all of the groups: $S^E = S^E(p_f, p_v, p_r, p_u)$.

The government is constrained in its spending. Total expenditures must equal total tax revenues, or $S^E(p_f, p_v, p_r, p_u) = \sum_i t_i$. We assume that taxes are collected exclusively from the interest groups we examine, and that taxes have a negative effect on utility for members of all groups.

We assume that the utility of all pressure groups depends on money, y, and the multifunctional outcome, E. For farmers, money includes profits from agricultural production, as well as money expended on lobbying and taxes. For the other groups, money includes only money expended on lobbying and taxes. Utility functions for members of the four pressure groups may be written as follows.

$$U_f = U_f(\pi_f, E, a_f, t_f) \tag{1}$$

$$U_v = U_v(E, a_v, t_v) \tag{2}$$

$$U_r = U_r(E, a_r, t_r) \tag{3}$$

$$U_u = U_u(E, a_u, t_u) \tag{4}$$

After substituting in the definitions presented above, we differentiate the objective function for a member of each group with respect to his decision variable, a_i. Our solution concept, following Becker, is that the groups play Cournot-Nash in expenditures a_i. That is, when maximizing his objective function, a member of a given group assumes that the average per member expenditure

of the other groups will remain unchanged. The following first order necessary conditions define the equilibrium levels of a_i.

$$\frac{\delta U_f}{\delta a_f} \quad \frac{\delta U_f}{\delta y}\left[\frac{\delta \pi_f}{\delta a_f} - 1 - \frac{\delta I}{\delta p_f}\frac{\delta p_f}{\delta m_f}n_f\right] + \frac{\delta U_f}{\delta E}\frac{\delta E}{\delta I}\frac{\delta I}{\delta p_f}\frac{\delta p_f}{\delta m_f}n_f = 0 \tag{5}$$

$$\frac{\delta U_v}{\delta a_v} \quad \frac{\delta U_v}{\delta y}\left[-1 - \frac{\delta I}{\delta p_v}\frac{\delta p_v}{\delta m_v}n_v\right] + \frac{\delta U_v}{\delta E}\frac{\delta E}{\delta I}\frac{\delta I}{\delta p_f}\frac{\delta p_f}{\delta m_f}n_f = 0 \tag{6}$$

$$\frac{\delta U_r}{\delta a_r} \quad \frac{\delta U_r}{\delta y}\left[-1 - \frac{\delta I}{\delta p_r}\frac{\delta p_r}{\delta m_r}n_r\right] + \frac{\delta U_r}{\delta E}\frac{\delta E}{\delta I}\frac{\delta I}{\delta p_r}\frac{\delta p_r}{\delta m_r}n_r = 0 \tag{7}$$

$$\frac{\delta U_u}{\delta a_u} \quad \frac{\delta U_u}{\delta y}\left[-1 - \frac{\delta I}{\delta p_u}\frac{\delta p_u}{\delta m_u}n_u\right] + \frac{\delta U_u}{\delta E}\frac{\delta E}{\delta I}\frac{\delta I}{\delta p_u}\frac{\delta p_u}{\delta m_u}n_u = 0 \tag{8}$$

Based on our focus groups and economic theory, we impose the following signs on the above derivatives. These signs are independent of the multifunctional objective in question.

$$\frac{\delta U_i}{\delta y} \quad > 0$$

$$\frac{\delta U_i}{\delta E} \quad > 0$$

$$\frac{\delta E}{\delta I} \quad > 0$$

5.1. **Farmer Utilities.** In general, controlling negative externalities from agriculture increases production costs and reduces profits, so that $\frac{\delta \pi_f}{\delta a_f} \quad < 0$. Based on our focus group discussions, farmers support environmental protection, so that $\frac{\delta U_f}{\delta E} \quad > 0$. However, farmers are also concerned about the effect of environmental protection on their profits. The net effect of these tradeoffs in this case is that farmers will exert political pressure against increased expenditures, so that $\frac{\delta I}{\delta p_f} \quad < 0$.

The classic example is pesticide regulation.[1] California has the strictest pesticide regulations in the United States.

In contrast, farmland preservation in general has a positive effect on farmers' profits, by reducing the net cost of farmland, so $\frac{\delta \pi_f}{\delta a_f} > 0$.[2] While some farmers are concerned about the effects of farmland preservation measures on their ability to make their own land use decisions, overall farmers support farmland preservation, particularly if it is conducted through voluntary programs. In California, the Williamson Act is an example of a voluntary farmland preservation program. Apart from its direct financial benefits, farmers appear to favor farmland preservation for aethetic reasons. Consequently, $\frac{\delta U_f}{\delta E} > 0$.

5.2. **Rural and Urban Resident Utilities.** In our model, we use residents' preferences as a proxy for social preferences. In our focus groups, both rural and urban residents were concerned about the negative externalities of agricultual production. Accordingly, we assume $\frac{\delta U_r}{\delta E} > 0$ and $\frac{\delta U_u}{\delta E} > 0$ when the multifunctional objective is controlling negative externalities. Similarly, both rural and urban residents were concerned about farmland preservation, so $\frac{\delta U_r}{\delta E} > 0$ and $\frac{\delta U_u}{\delta E} > 0$ in this case as well. However, the relative intensity of their concern differed across groups. Accordingly, we evaluate different cases.

In the Watsonville groups, their concern regarding farmland preservation was not as significant as their concern regarding the environment. Further, their concern regarding farmland preservation was not as significant as farmers' preferences for farmland preservation. Furthermore, Watsonville residents tended to not be concerned with farmland preservation *per se*. Instead, they were concerned primarily with the preservation of open space, particularly wild landscapes and land with public access. Thus, our Watsonville focus group results suggest that the utility residents obtain

[1] Of course, there are also cases where the adoption of environmentally friendly practices are privately profitable. Such cases, however, are unlikely to be a source of political tension and are not addressed in this paper.

[2] Tax credits for easements, such as the Williamson Act provides, directly reduce operating costs. Provided that the zoning authority can credibly commit to maintaining its decisions, zoning ensures that land values reflect their value in agricultural production, rather than their value as development property.

from a given change in negative externalities is greater than the utility they obtain from a given change in farmland preservation. Further, the first derivative of utility with respect to a change in the value of the multifunctional objective is smaller in the case of farmland preservation, although still positive. The second derivative of utility with respect to a change in the value of the multifunctional objective is negative and larger in magnitude in the case of farmland preservation than in the case of controlling negative externalities. Essentially, their attitude toward the multifunctionality of agriculture is neutral to negative.

Winters residents indicated a much stronger concern with farmland preservation than the Watsonville residents did. While some group participants expressed a preference for more open space with public access, most group members indicated that they enjoyed the agricultural landscape. Many mentioned the agricultural, rural setting as a factor in their choice of residence. Of course, Winters residents were concerned with the negative environmental effects of agriculture. Overall, however, they view the multifunctionality of agriculture as much more of a set of tradeoffs than the Watsonville residents did.

Our Winters focus group results suggest that the utility residents obtain from a given change in farmland preservation may be greater than the utility they obtain from a given change in environmental protection. Certainly, it is larger than the utility Watsonville residents derive for an equivalent change. For purposes of comparison, we focus on the case where utility residents obtain from a given change in farmland preservation is greater than the utility they obtain from a given change in environmental protection. In this case, the first derivative of utility with respect to a change in the value of the multifunctional objective is smaller in the case of environmental protection, although still positive. The second derivative of utility with respect to a change in the value of the multifunctional objective is negative and larger in magnitude in the case of environmental protection than in the case of farmland preservation.

5.3. **Environmentalists and Preservationists.** Environmentalists and preservationists both obtain positive utility from their respective objectives. Accordingly, we assume $\frac{\delta U_v}{\delta E} > 0$. Furthermore, rural and urban residents in both locations perceive that environmentalists and preservationists obtain greater utility from any given level of E than they do. Hence, $\frac{\delta U_v}{\delta E} > 0$ declines at a slower rate than $\frac{\delta U_r}{\delta E} > 0$ and $\frac{\delta U_u}{\delta E} > 0$ do.

5.4. **Comparing Environmental Protection and Farmland Preservation Equilibria: Watsonville Case.** In Watsonville, urban and rural residents receive less utility from a dollar of public funds spent on farmland preservation than they receive from a dollar of public funds spent on environmental protection. Hence, we would expect them to expend less per person on lobbying activities intended to increase farmland preservation. Since these groups have the largest memberships, a given level of total expenditures results in a smaller amount of political pressure than is the case for the other groups. Since their net utility gain is smaller than that of the environmentalists or preservationists, they will choose to expend less on lobbying per member. In the case of farmland preservation, they receive no financial benefit and their marginal utility from an increase in preservation is smaller than farmers', so they will expend less on lobbying than farmers do.

Farmers receive a positive financial benefit from farmland preservation, in addition to the cost of lobbying expenditures and taxes. On the other hand, environmental protection increases their financial costs. Hence, we would expect farmers to lobby for increased farmland preservation, while their lobbying regarding environmental protection depends on the relative magnitudes of its negative financial effects and positive effects on the environment. As the level of environmental protection increases, it becomes costlier for farmers financially, while the marginal utility from improved environmental quality decreases. Therefore, as the level of environmental quality increases, we anticipate that farmers will be more likely to oppose increased environmental protection and, given that they oppose it, will do so more intensely. Further, their lobbying expenditures opposing environmental protection will increase.

Environmentalists and preservationists will lobby to further their respective objectives. We assume that their preferences are identical regarding their respective objectives, their lobbying expenditures are equally effective, and they have the same number of members. This facilitates our comparison of the different preferences of farmers and residents on the outcomes for the two objectives.

Given these differences, the first order conditions describing the equilibrium in our pressure group model predict the following differences between the two solutions: the government will spend less on environmental protection and more on farmland preservation than urban and rural residents' preferences would indicate. The differences are due to the alignment of interests between preservationists and farmers in the case of farmland preservation; the disparity of interests between environmentalists and farmers in the case of environmental protection; the relatively high degree of environmental protection in Santa Cruz County; and the lower marginal utility urban and rural residents achieve from an increase in preservation relative to an increase in protection. Clearly, these findings are dependent on the tradeoff in the political pressure function between total spending and the number of members in the group. If the effect of the number of members is sufficiently close to zero, the equilibrium we describe will apply.

5.5. **Comparing Environmental Protection and Farmland Preservation Equilibria: Winters Case.** As in the Watsonville case, farmers will lobby in favor of farmland protection and against environmental protection. Environmentalists and preservationists will lobby in favor of their respective goals. Residents will expend less on lobbying than farmers, environmentalists, or preservationists. The difference between the two cases regards the position of the urban and rural residents. In Winters, residents receive more utility from a dollar of public funds spent on farmland preservation than they receive from a dollar of public funds spent on environmental protection. Hence, we would expect them to spend less per person on environmental preservation lobbying.

Another difference is that Yolo County has relatively less stringent environmental regulations than Santa Cruz County does.

Given these differences, the first order conditions describing the equilibrium in our political pressure group model does not provide a definitive prediction regarding the relationship between government spending and residents' preferences. The misalignment of interests between farmers and environmentalists may lead to a net lobbying effect that mirrors residents' preferences, or spending may be above or below what residents prefer. In contrast, our model provides a clear answer for the land preservation case. Since farmers and preservationists both have stronger preferences for land preservation than residents do, government spending will exceed residents' preferred level, given their tradeoff between income lost through taxation and the resulting increase in preservation relative to that of the other two groups.

6. Conclusions and Further Research

We used focus groups to elicit information about preferences regarding two multifunctional agricultural objectives: protecting farmland from development, or farmland preservation; and mitigating the negative environmental externalities of agriculture, or environmental protection. Our series of focus groups generated two particularly interesting findings. First, the relative intensity of preferences varied systematically by location: Winters residents placed a relatively higher weight on farmland preservation, and Watsonville residents placed a relatively higher weight on environmental protection. Second, many participants distinguished between farmland and open space. In both locations, public access was considered a necessary characteristic of open space. In Watsonville, participants did not derive utility from the agricultural landscape. Rather, they associated open space with wild landscapes.

We used the preferences elicted through the focus groups to evaluate outcomes in a political pressure group model. Due to the differences in preferences, we evaluated two cases: one in which residents preferred farmland preservation more than environmental protection (Winters), and one in

which residents preferred environmental protection more than farmland preservation (Watsonville). Overall, our analysis provides no definitive answer regarding the relationship between residents' preferences for government spending on environmental protection and the lobbying outcome. We do find that government spending on farmland preservation will likely exceed residents' preferences for public spending on this objective. We could potentially obtain more information regarding the relationship between government spending and residents' preferences by incorporating both objectives into a single lobbying model. Another difference we may wish to incorporate is the relative viability of the use of private funds to directly achieve the policy objective, rather than lobbying the government to do so. In this case, the relative efficacy of lobbying and direct use and the substitutability between public and private funds will influence the outcome.

One factor influencing the differences in preferences across locations may be the broader landscape surrounding the two towns. Each town has hills on one side. However, the other sides are very different. Winters is on the western edge of the Sacramento Valley. The landscape is largely agricultural, and privately owned, including the hills. Watsonville is on the coast, and the landscape is defined by the Pacific Ocean. Watsonville is, broadly speaking, surrouded by publicly-owned open spaces with wild landscapes and public access, including the hills. Accordingly, it is perhaps not suprising that the scenic value of agriculture differs across the two locations. Given the differences in preferences, a broader sample of non-farmer, non-environmentalist California residents may provide more information regarding preferences for policy goals addressing the multifunctionality of agriculture.

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