

An Economic Analysis of Factors Affecting Legislative Support for Farm Commodity Legislation

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Enactment of federal farm commodity legislation has been an issue which has greatly concerned agricultural economists. This interest concerns both the impact of government policy on the production and distribution of agricultural commodities and actual and potential changes in program structure and benefit levels which change the policy constraints in the agricultural economy. Structural changes in U.S. political processes—reduction in farm population and the emergence of two party competition in rural areas—have been extensively related to the ongoing evolution of agricultural policy. However, most of this literature lacks conceptual and, particularly, empirical content. Significant exceptions concern single commodities which abstracts from the notable feature of multi-commodity farm legislation [Field, Rausser and Freebairn].

This paper reports on a preliminary analysis of the factors affecting support for agricultural legislation in Congress. The theory of public choice is utilized as a conceptual framework for an analysis of the Agriculture Act Amendments in 1975 which were designed to raise target prices and support levels for a number of commodities. Although the legislation was initially passed by both the House of Representatives and the Senate, the President's veto was sustained when the House was unable to produce a two-thirds majority. The empirical analysis focused on estimation of discriminant functions of the Senate vote on passage of this bill. While it is recognized that issues of agricultural legislation are more divisive in the House of Representatives, the smaller numbers of Senators and their representation of states simplifies empirical analysis. This analysis provides methodological and sub-

stantive insights which would be useful in analysis of House votes.

Analytical Framework

The theory of public choice conceptualizes political decisions in a benefit-cost framework. Citizens are postulated to cast their votes in elections on the basis of an individual evaluation of the costs and benefits of the set of public policies to which alternative candidates are committed. In their votes in Congress, politicians vote in a manner which satisfies a majority of their constituents. Cochrane and Hardin have implicitly used such a model in predicting declining support for farm programs. Benefits from agricultural programs designed to raise farm prices are concentrated among farmers and in farm producing regions. Costs of programs, which are reflected in government outlays and rising food prices, are widely dispersed among all taxpayers and consumers. With a small farm population, farmers are a miniscule minority in most constituencies so that very few legislators would be expected to support farm legislation. However, this naive model fails to explain continued affirmative action on farm legislation.

The concept of rational ignorance [Downs] adds more realism to the naive model. Rational ignorance suggests that voters are unaware and/or indifferent of the positions of their legislators on issues of minor significance to their economic welfare. Under this viewpoint, a politician could support farm legislation which benefited a small minority of his constituents. Supporting positions favored by a minority of a constituency is especially likely as long as the issues involved are narrowly defined and attract little public attention. For agricultural legislation, opposition would be

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heightened in a non-agricultural constituency if government costs are high and/or the program greatly increases food costs. Empirical relevance of this proposition is supported in the high and visible costs associated with the payments limitation issue and more currently the peanut program.

The concept of log-rolling increases the propensity of a legislator to vote for legislation not beneficial to a majority of his constituents. As conceived by Buchanan and Tullock, legislators support issues of low priority to their constituents in order to win support on issues of higher priority. The electorate, in turn, ignores their interests on issues of lower priority if the politician supports their major interests. For an issue with large benefits to a small constituency, the potential for log-rolling is higher than if benefits are small. Bonnen, Hathaway, and Wyckoff have utilized log-rolling concepts in examining potential support for farm legislation.

Consideration of rational ignorance and log-rolling gives the public choice model unity with the political concept of pluralism [Steiner]. In general, this theory suggests two reasons why a politician would be expected to support farm legislation: 1) the legislation provides significant benefits to an important organized component of his constituency without providing significant costs to other components and 2) the vote reflects log-rolling activity. In terms of causality, the larger the potential benefits and/or number of beneficiaries the greater the likelihood of support for farm legislation. Generalities concerning log-rolling are not as easy to derive. One exception is that Democratic legislators

could be expected to be more likely to support farm legislation because of the historical commitment to farm programs.

Empirical Model

The analytical framework discussed in the previous section was applied to an analysis of the votes of Senators on the 1975 farm bill. Discriminant functions were estimated for positive and negative votes on final passage of the bill. Classification variables in the functions reflected the political forces suggested in the theoretical discussion. Variables which were included in the analysis and data sources are indicated in table 1.

A component of the variables reflected the importance of farm interests in each state. Percentage of constituency residing in urban areas reflects the proportion of the citizenry which would be unconnected with agriculture and would be expected to be associated with negative votes on farm legislation. Variables on the percent of state farm income derived from a particular commodity were included for all commodities represented in the legislation. Unless these commodity interests reflected a large percentage of state farm income, senators were expected to oppose the legislation. The influence of commodity income on the senators' support was expected to vary among commodities. The features of the bill were most favorable for dairy, feed grains, wheat, and cotton: milk support prices were continued at 80% of parity

Table 1. Description of variables used in analysis

Variable	Units
Senate votes ^a	
Democratic party ^b	1 for Democrats; 0 otherwise
Urban population ^c	Urban as a percentage of total population
Farm Bureau membership	Membership as a percentage of farmers
Western cattle states ^e	1 for Western states with 50% of gross farm income from cattle
Beef cows ^e	Head in thousands
College education ^c	Percentage of state population (25 and older) with college education
Feed grains income ^e	Percentage of state gross farm income
Cotton income ^e	Percentage of state gross farm income
Tobacco income ^e	Percentage of state gross farm income
Soybeans income ^e	Percentage of state gross farm income
Wheat income ^e	Percentage of state gross farm income
Dairy income ^e	Percentage of state gross farm income

Sources: ^a*Congressional Quarterly Weekly Report*, Vol. 33, March 29, 1975, p. 673.

^b*Congressional Directory*, 94th Congress First Session, 1975, Government Printing Office, Washington, D.C.

^cU.S. Bureau of the Census, *U.S. Census of Population: 1970*, Vol. 1, Parts A and C, Government Printing Office, Washington, D.C.

^dTalbot, Ross B. and Don F. Hadwiger, *The Policy Process in American Agriculture*, Chandler Publishing Company, San Francisco, 1965.

^eU.S. Department of Agriculture, *Agricultural Statistics 1975*, Government Printing Office, Washington, D.C.

and both target prices and price support loan rates were raised for the three crops. For soybeans and tobacco, the provisions only concerned price-support loan rates which provide very little price protection under current farm policy and would be expected to have little influence on support.

Two variables were included to reflect constituent interest in beef cattle. Even though beef incomes are not directly supported in the provisions of the bill, the price of beef is related to the supply of feed grains. After the recent experiences with low beef prices, beef producers could be interested in the incentives for grain production provided by the target prices. Number of beef cows would reflect the importance of feeder calf production and the Western beef dummy variable isolates the influence of specialization in beef production in several Western States. It can be noted that the existence of support of beef producers for feed grains programs is the reverse of historical patterns of political position on feed grains programs [Hadwiger and Talbot].

The variables representing Farm Bureau membership, college education, and political party were included to measure both effect of farm income support and log-rolling. Considering the historical opposition of the American Farm Bureau Federation to commodity programs, senators with a large Farm Bureau membership in their constituency would be expected to ignore their constituents' farm interests and/or less likely to log-roll on farm bills. College education would be expected to increase constituent awareness of the costs of farm legislation and perhaps involvement in the con-

sumer movement; these influences would be expected to increase opposition to farm legislation. Finally, Democrats would be expected to be more likely to support farm bills than Republicans; they would be more likely to include farmers in their coalition of support and also to log-roll with their rural colleagues in Congress. To measure the particular influence of political party, one model excluded party from the set of classification variables and another included party as a dummy variable.

One short-coming of this empirical approach is the equivalence of the set of classification variables for senators from states in which both are members of the same party. If the senators take different positions on a vote, this equivalence means that the discriminant functions will misclassify one of the Senators. In this analysis, three states—Florida, Tennessee, and West Virginia—were subject to this problem.

Analysis of Votes

The results of the discriminant analysis—the coefficients or weights for each variable in each linear function in both models are shown in table 2. The F-statistic for each coefficient is also included. Interpretation of the results for each individual variable is based on its statistical significance and the relative magnitudes of the coefficients. The largest coefficient for a variable indicates in which group a senator would be classified if the value of the functions without the effect of the variable were equal. The results for the set of farm variables

Table 2. Discriminant functions which classify senators according to votes on 1975 general farm bill

Variable	Model I			Model II		
	Coefficients		F-Value	Coefficients		F-Value
	Voted Yes	Voted No		Voted Yes	Voted No	
Constant	-28.0629	-36.1121		-32.9862	-37.8071	
Democratic party				7.6582	4.4935	14.9185***
Urban population	0.3252	0.4172	8.3562***	0.3213	0.4149	7.0353***
Farm Bureau membership	0.0268	0.0428	2.1874	0.0182	0.0378	2.6883
Western cattle states	-2.9230	-6.4472	6.4985**	-0.6486	-5.1126	8.5875***
Beef cows	0.0005	-0.0001	3.8227*	0.0005	-0.0002	2.9091*
College education	2.4782	2.9083	3.3544*	2.5114	2.9278	2.5690
Feed grains income	-0.0229	-0.0981	2.5121	0.1220	-0.0131	6.3657**
Cotton income	1.8422	1.2394	0.9846	3.4653	2.1918	3.4675*
Tobacco income	0.5262	0.5320	0.0075	0.6771	0.6205	0.5719
Soybeans income	0.4359	0.3584	1.5342	0.3694	0.3194	0.5146
Wheat income	0.3045	0.1855	6.7891**	0.4695	0.2823	13.1558***
Dairy income	0.2259	0.1709	2.7773*	0.3004	0.2147	5.4662**

*.10 level of significance

** .05 level of significance

*** .01 level of significance

were as expected. The six commodities included in the legislation were all associated with affirmative votes with the exception of tobacco in Model I. In addition, the significance levels correspond with expected associations—tobacco and soybeans were non-significant in both models, dairy and wheat were significant in both models and feed grains and cotton in Model II. In addition, the coefficients on the beef variables and the urban variable were significant in both models and correspond to the theoretical analysis.

The results of the set of variables included to measure both the propensity to log-roll and farm income effects were not as satisfactory. In Model II, the Democratic Party membership was associated with positive votes and was highly significant. Farm Bureau membership and college education were associated with negative votes in both models but only college education was significant in Model I and neither in Model II.

In general, Model II appears to be superior. Not only was the coefficient for political party significant but also the coefficients for feed grains and cotton income were significant when party was included. An analysis of the incorrect classification of Senators is also consistent with this view—thirteen were incorrectly classified in Model I and seven in Model II. While improved classification would be expected with the addition of an additional variable, Model I appeared to have a specification bias: nine out of the thirteen incorrect classifications were from the West in Model I compared to two out of seven in Model II. More importantly, six Democrats from the West were incorrectly classified as voting no and three Republicans were incorrectly classified as voting yes in Model I. Thus, Model II is clearly an improved specification for the West.

Conclusions and Implications

The empirical analysis of Senate votes on the 1975 farm bill supported the use of the theory of public choice as a framework for empirical analysis of agricultural policy. The existence of primary benefits from farm programs were demonstrated to be associated with support of the bill; furthermore, the commodities with more benefits had statistically significant associations while those with less potential benefits were not significant. The analysis of log-rolling on farm legislation, other than through political parties, was not as satisfactory. However, political party was demonstrated to be particularly important in classifying votes of Western senators. Of substantive interest, the analysis indicated that beef produc-

tion in general and in the West in particular is now associated with support of feed grains programs which is a reversal of historical patterns.

The analysis in this paper has several implications for future research on agricultural policy. Past research that has related support for farm programs solely to farm population in a constituency has failed to consider the importance of the income of commodities covered by the legislation. In addition, political party is a reliable measure of propensity to log-roll for farm legislation, at least in the Senate. Finally, discriminant analysis has fairly strong probability assumptions, and linear probability models could be considered as an alternative statistical model for this analysis [Ladd].

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