Capture and Ideology in American Farm Policy

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ABSTRACT   This paper applies a synthesis of the private interest "capture" and public interest ideological models of public policy to explain the formulation of agricultural incomes policies as embodied in the Agriculture and Food Act of 1981. An econometric analysis of the Senate voting pattern indicates that both narrow private interest motives and broad, altruistic ideological motives help to explain farm policy; the latter variable appears to show more explanatory power.

Introduction

For decades the "farm problem"—a confluence of low agricultural prices, stagnant demand, and commensurately low farm income—has plagued domestic policymakers. The response to this problem has been the creation of an elaborate system of subsidy and supply control programs; a "solution" that most economists agree has created new problems and imposed substantial costs on the economy.

While substantial research has focused on these *economic* costs (Gardner, 1981; Schultz, 1971; Tweeten, 1977), little attention has been devoted to quantitatively measuring the *political* origins of these programs.[1] This dearth of scholarship is all the more surprising given the soaring budgetary costs of farm policy, now approaching $23 billion.

This paper attempts to begin filling that analytical void; we examine the politics of farm policy utilizing a relatively new tool coined the "capture-ideology" framework (Kalt, 1981). This framework makes use of the explanatory powers of the previously competing (but within the framework, complementary) public and private interest economic theories of regulation.

Capture, ideology, and the politics of farm policy

The theoretical backdrop

The capture-ideology framework represents a synthesis of private versus public interest theories of economic regulation. The private interest "capture" theory was first formalized by Stigler (1971); this article depicted the regulatory process (and by extension the formulation of public policies) as the outcome of a distributional struggle among competing interest groups.

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[1] See McCune (1943) for the special interest approach in narrative form. For bureaucratic dynamics views, see various papers in Hadwiger and Browne (1978).

Stigler's work built upon a large foundation of literature in history, political science, and sociology.[2] Sociological discussions of economic policy formulation include Domhoff's (1978:61) argument that "it is within the organization of the policy-planning networks that the various special interests join together to forge general policies that will benefit them as a whole." However, it was Stigler who first attempted empirical (that is, econometric) measurement of the "capture" phenomenon.

Subsequent Stiglerian disciples, including Posner (1974) and Peltzman (1976), have extended, refined, and empirically tested the capture theory, incorporating the possibility of multi-group capture. Downs (1957) and Olson (1965) placed "capture" explicitly within the realm of legislative, as well as regulatory, processes. However, while the model appears to explain the existence of certain regulatory and policy outcomes well, it has been less successful in other circumstances. (Stigler [1971] himself found only statistically weak support for his theory when he applied it to the regulation of trucking.)

The failure of the capture theory to explain public policy in whole has breathed new life into the public interest view of regulation. This view usually describes government as an optimizer of societal welfare, e.g., a regulatory agency or legislative body pursues economic efficiency. Government policymakers are taken as altruistic public servants, seeking to promote some conception of the public welfare. A small group of scholars have made this public interest view a testable hypothesis by relating the altruistic public interest motives of policymakers and regulators to the concept of ideology. Kalt (1981), Kau and Rubin (1979), Mitchell (1977), and others have successfully added various measures of ideology, as a proxy for public interest motives, to the basic capture model. It is this capture-ideology framework that we apply to the politics of federal farm policy.

Application to the politics of farm policy

Private interest view: capture by the farm bloc

Through the lens of the capture theory, the politics of farm policy are simple enough: a powerful coalition of farm interests, or a "farm bloc," successfully exerts pressure, primarily in the Congress, to capture lucrative subsidies, quasi-monopolistic marketing orders, and other such methods of policy largesse. In this interpretation, the public interest rhetoric used to justify such policies is often a cloak to disguise other intentions.

[2] Such instances include Kolko's (1965) historical analysis of the Interstate Commerce Commission's relationship with the railroads. The works of Truman (1951) and Wilson (1980) also are examples of the political scientist's interest group description of policy formulation.

The ideology of farm policy

Despite the appeal of the capture theory, with its emphasis on rational, self-interested actors, there are cogent arguments that ideology is also an important determinant of farm policy. Since political markets are imperfect, characterized by infrequent opportunities for "policing" (through elections) and by high information costs, there should therefore be substantial opportunity for ideological "shirking." This shirking would occur much as Alchian and Demsetz (1972) discuss the policy independence of management from ownership.

We define ideology as ". . . a more or less consistent set of normative statements as to the best or preferred state of the world" (Kalt, 1981: 246). Although there are a number of possible ideological groupings, we choose here the liberal/conservative dichotomy. Navarro (1984) has analyzed the logic of liberalism and conservatism within the context of eight major principles. Although there is no such thing as a "pure" conservative or liberal (one would not expect to find these categories in their untainted form), these "ideal types" can be usefully applied to farm policy formulation.

Regulated and free markets. The public interest view would conclude that a series of market imperfections prompts intervention in the agricultural sector. The vagaries of nature and the instability of world demand subject the agricultural sector to leads and lags that result in boom and bust cycles. Since the liberal values a constant flow of income over an (on average) higher but more unstable one, he therefore favors a stabilization program to ameliorate the fluctuations of market prices.

This free versus regulated market dichotomy pervades actual policy formulation, even when both conservatives and liberals acknowledge the need for some government intervention. It is manifested in the controversy over target prices and support prices. The greater market orientation favored by conservatives leads to an inclination against strict allotments, quotas, and high price supports that would seriously distort the operation of the market. The liberal predisposition for high price supports moves beyond the concept of the safety net and opts instead for active intervention in market operations. That these alternative policies are often the difference between minimum guarantees and income redistribution leads to the next principle.

Property rights versus redistribution. Another dichotomy exists between the principle of redistribution for equity goals and property rights. The mean income level for the rural population is lower than the corresponding urban figure.[3] Farm income programs, *as perceived*

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[3] In 1977, the median income for a metropolitan inhabitant was $15,841. The corresonding figure for nonmetropolitan individuals was $12,831. However, the intra-sectoral income distribution is actually quite skewed in the case of agriculture. While 17.8 percent of all farm families earned more than $25,000 in 1977, over 39 percent earned less than $10,000 (USDA, 1981, 1983).

by liberals, therefore serve to move society towards a more equitable income distribution. The farmers gain through higher prices for their produce and through tax-financed subsidies. Consumers pay in higher food prices and taxes imposed to finance farm programs. Taxes, in expropriating personal wealth, are an infringement upon property rights.

This conflict between equity for farmers and protection of the property rights of consumers and taxpayers has been heightened by the declining importance of the agricultural sector in the American economy. Adjustment is a painful process, and the liberal would be in favor of softening some of the harsher distributional aspects of the market system. The conservative weights more heavily the rights of consumers and taxpayers to retain their earnings and wealth.

The minimal versus welfare state. The final ideological conflict takes place over the role of the individual versus the community (in this case the farm community). To the liberal, the farmer's lifestyle is one worthy of preservation, justifying some infringement upon the individualistic workings of the free market, even at the cost of some material benefits.

The liberal may also view with dismay the rapid rise of corporate agriculture—agribusiness—that may follow the demise of farm income programs. A conservative reply is that these programs reduce to essentially another form of welfare, which will in the end snuff out those individual virtues liberals seek to preserve. Thus, while liberals seek to maintain the traditional strength of the farm *community,* the conservative focuses on the *individual.*

Abstract principles and observable ideological behavior. The relationship between these abstract principles and the real-world indices constructed by watchdog groups such as the Americans for Democratic Action (ADA) can be made fairly explicit by reference to the votes used in constructing such indices. While the selected votes seldom involve agricultural policy, the policy conflicts they illustrate have their analogues in farm policy debates. For instance, in examining the regulated-free market principle, the ADA indicates a higher "liberal quotient" when a senator votes in favor of more intervention in issues ranging from natural gas regulation to occupational safety. Similarly, voting for increased social security payments and tax breaks skewed toward lower income brackets counts positively in these indices and relates to the liberal propensity for redistribution. The greater liberal weighting on the importance of the community is illustrated by a positive assessment on votes to strengthen enforcement of fair housing laws (among others) even as they infringe on individual rights to discriminate (See *ADA Voting World,* various issues). There is thus a fairly clear linkage between these conceptual dichotomies and ADA indices.

An empirical test: The 1981 Agriculture and Food Act

The roles of various public and private interest forces were tested within the context of Senate voting behavior on the 1981 Agriculture and Food Act,[4] which set price supports and other policies for grains, dairy products, sugar, tobacco, and peanuts.

Methodology

Utilizing the theoretical framework described above, the model can be most broadly defined in functional form:

$$PROFARM = f(\text{private interests, ideology})$$

PROFARM can refer to any number of votes on specific commodities. Thus, the votes on dairy price supports are described as PRODAIRY. Each senator's vote is observed as a dichotomous logit variable. These logit variables can in turn be aggregated into logit indices.[5] Since the regressions against the individual logit variables do not diverge appreciably from those against the logit indices, only the latter are reported.

As for the independent variables (see Appendix for details), the private interests are represented by PRODUCE, which is operationalized in a ratio of state commodity production value to state personal income. It is expected that producer influence would closely parallel economic importance in that state. Similar measures have been used in studies of oil regulation (Kalt, 1981) and natural gas (Mitchell, 1977).

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[4] There are a number of minor difficulties inherent with this mode of analysis. Because program authorization bills occur once every three to four years, the pool of votes is rather restricted, both numerically and chronologically. Votes used that were not related to the AFA (S. 884, 1981) included those dealing with the milk price support program (S. 509, 1981) and the No Net Cost Tobacco Act (H.R. 6590, 1982). A description of votes used in the analyses is available upon request from the authors.

[5] The logit indices were of the form described in Pindyck and Rubinfeld (1976):

$$L_i = \log(r_i + 0.5)/(n_i - r_i + 0.5)$$

where r_i is the number of times a particular option is chosen, while n_i represents the number of times the opportunity to vote was actually exercised. In cases where the senator cast no votes, the logit index was undefined (interpreted as a missing value). Correction for heteroscedasticity was effected by the application of a weighted least squares regression, using a variance estimator of the form:

$$V_i = 1/(r_i + 0.5) + 1/(n_i - r_i + 0.5)$$

One characteristic of the logit index is that changes in the independent variable will have greatest influence when there is a high probability of choosing an option near the midpoint of the cumulative logistics curve, on the basis of the other independent variable(s) (Pindyck and Rubinfeld, 1976:249).

To represent the interests of processors that use these commodities as inputs, ideally we would wish to have a variable that measures the amount of that commodity processed in each state (PROCESS). Moreover, consumer interests should be somehow represented. Higher price supports in the case of farm commodities would reduce consumer surplus and represent a net transfer away from consumers. CONSUME should therefore have a negative sign. Unfortunately, there is surprisingly little data on the processing of specific commodities, disaggregated by state. Only in the cases of dairy products and tobacco were they available. As for CONSUME, cigarette consumption per capita was the only proxy available for any of the commodities. These variables were tested in the preliminary regressions and failed to yield parameters significant at conventional levels. For the sake of consistency, the basic model excludes these variables.

LOGROLL is constructed in a manner analogous to PRODUCE. Total agricultural output, subtracting out the specific commodity being tested, yields a variable that should pick up the logrolling between senators on agricultural issues. While in theory logrolling could occur between any interest groups, the traditional aggregation of farm programs in omnibus farm bills suggests that LOGROLL as constructed will show positive influence.

Similarly, FSTAMP, a measure of per capita food stamp expenditures, is based on the hypothesis that representatives of areas receiving heavy food stamp expenditures are willing to trade votes in support of farm programs for reciprocal positive votes on food stamps. This merely follows in the historical descriptions of food stamp/farm program logrolling (AEI, 1977:6, 211–17; Peters, 1978:24–25).

Finally, a measure of dollar lobbying enters via the PAC variable, where PAC is total contributions 1977–1982 for the relevant commodity producer groups.

To measure ideology, our choice would be the ratings of the Americans for Democratic Action (ADA). Because of a past controversy over the use of such a proxy in the literature, a short digression to explain its use is warranted. Critics of the capture-ideology framework argue that the *apparent* importance of ideology is actually due to *left-out economic variables.* Peltzman (1984), for example, has explored this hypothesis by analyzing Senate voting across a broad sample of issues. He found that ideology's effect could be explained away by economic characteristics of the legislator's constituency.

Kalt and Zupan (1984:280–81) point out, however, that Peltzman's research strategy "differs in a fundamental way from the approach taken in the research it critiques." The problem is that Peltzman "bundles" a whole package of Senate votes rather than examining individual votes and relating them to the particular economic and ideological interests involved. Since the capture theory has generally been applied as an issue-specific theory, Peltzman's test seems to beg

Table 1. Test of significance and standardized regression (beta) coefficients for capture-ideology model

Dependent variables	PRODUCE	LOGROLL	FSTAMP	ADA	PAC	F-statistic	R^{-2}	N	Votes in index
PROGRAINS	0.424* (4.55)	— mc	0.229* (2.28)	0.605* (6.69)	0.117 (1.34)	13.47**	0.41	93	3
PROSUGAR	0.181* (1.90)	0.254* (2.47)	0.056 (0.53)	-0.160 (1.64)	0.300* (3.12)	7.87**	0.32	93	2
PRODAIRY	0.297* (3.38)	0.254* (2.82)	0.252* (2.36)	0.598* (6.31)	0.188* (2.32)	13.94**	0.45	100	5
PROPEANUT	0.146* (1.71)	0.306* (3.51)	0.469* (5.31)	-0.283* (3.39)	— na	14.34**	0.41	100	2
PROTOBAC	0.197* (2.25)	0.375* (3.70)	0.429* (4.40)	-0.240* (2.57)	— na	9.53**	0.31	100	5

Notes: t-statistics in parentheses; na indicates that there are no PACs for these producer groups; mc indicates that the variable was highly collinear with another variable; * t-statistic significant at the 5 percent level; ** F-statistic significant at the 1 percent level.

Table 2.   Correlation matrix for grains regressions

Correlation coefficients/prob > $|R|$ under $H_0:\rho = 0$/number of observations					
	GRAINS	LOGROLL	ADA	FSTAMP	PAC
GRAINS	1.00000				
	0.0000				
	100				
LOGROLL	0.88711	1.00000			
	0.0001	0.0000			
	100	100			
ADA	−0.16257	−0.18415	1.00000		
	0.1079	0.0681	0.0000		
	99	99	99		
FSTAMP	0.30751	−0.16249	0.15130	1.00000	
	0.0019	0.1063	0.1349	0.0000	
	100	100	99	100	
PAC	0.21684	0.19143	−0.11418	0.10244	1.00000
	0.0320	0.0590	0.2655	0.3155	0.0000
	98	98	97	98	98

the question of whether ideology is merely a proxy for economic interests.

Within the specific issue framework of coal stripmining legislation, Kalt and Zupan have conducted an exhaustive test of this "interest-proxy" hypothesis. Their results lend credence to the interpretation of ratings such as ADA for reflecting relatively pure ideology.

In stochastic form, the basic equation would be:

$$PROFARM = \beta_1 + \beta_2(PRODUCE) + \beta_3(LOGROLL)$$
$$+ \beta_4(FSTAMP) + \beta_5(ADA) + \beta_6(PAC) + e_i$$

The results are reported in Table 1, which presents standardized beta coefficients. Table 2 is the correlation matrix for the PRO-GRAINS regression.

Statistical results

The production variable for GRAINS was nonsignificant when the specified equation included LOGROLL. LOGROLL was also non-significant (although in the expected direction). The low efficiency of the estimators is due to the high intercorrelation ($\rho = 0.89$) of the two variables (see Farrar and Glauber, 1967:98; and Table 2). Omitting LOGROLL (as in the reported equation) had only minor impact on the adjusted R^2 but resulted in a significant parameter estimate for PRODUCE. ADA remained the major determinant of PRO-GRAINS.

In the case of sugar, PRODUCE was significant. LOGROLL and

sugar PAC were also significant. ADA is both nonsignificant (at the 5 percent level) and *negative*. In the DAIRY regression, all the variables were significant.

On tests for the two predominantly southern-concentrated commodities, peanuts and tobacco, PRODUCE was in the expected direction in both cases, although the ADA parameter estimate was significantly *negative*.

Discussion

When the collinear variable was omitted, PRODUCE was significant (at the 95 percent confidence level) in all cases. While there are some grounds for suspecting parameter estimate bias due to omitted variables when dropping PROCESS and CONSUME, the impact is probably rather minor, judging by the shifts in the R^2 and the magnitude of the omitted variable beta coefficients.[6]

The variable FSTAMP, measuring food stamp interest, shows varying impact and significance, especially in the sugar regression. However, it is significant in the other equations, lending some support to the logrolling hypothesis.[7] Contentions that FSTAMP merely proxies for the agricultural economy are ultimately unconvincing, as no correlation between FSTAMP and any of the commodities ever exceeds $\rho = 0.35$.

An interesting point is that in the PROSUGAR regression, the variable with the greatest beta was the PAC variable. This result was

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[6] (Standardized "beta" coefficients.)** F-statistic significant at the 1 percent level.

$$\text{PROTOBAC} = -0.199 - 0.02(\text{PRODUCE}) + 0.246(\text{PROCESS}) - 0.059(\text{CONSUME})$$
$$(1.51) \quad (0.10) \quad\quad (1.21) \quad\quad\quad (0.39)$$

$$+ 0.385(\text{LOGROLL}) + 0.465(\text{FSTAMP}) - 0.235(\text{ADA})$$
$$(3.74) \quad\quad\quad (4.54) \quad\quad\quad (2.50)$$

$$R^{-2} = .31 \quad F\text{-statistic} = 12.419** \quad \text{PRODUCE, PROCESS: } \rho = 0.89.$$

$$\text{PRODAIRY} = -0.518 + 0.084(\text{PRODUCE}) + 0.253(\text{PROCESS}) + 0.249(\text{LOGROLL})$$
$$(7.01) \quad (0.50) \quad\quad\quad (1.48) \quad\quad\quad\quad (2.51)$$

$$+ 0.297(\text{FSTAMP}) + 0.618(\text{ADA}) + 0.204(\text{PAC})$$
$$(2.69) \quad\quad\quad (6.50) \quad\quad (2.51)$$

$$R^{-2} = .45 \quad F\text{-statistic} = 12.419** \quad \text{PRODUCE, PROCESS: } \rho = 0.88.$$

There was some question of bias due to missing or omitted variables in the other equations, where processing data were not available (such as in the cases of GRAINS, SUGAR, and PEANUT). PROCESS was not significant in either TOBAC or DAIRY, and it is even less likely that it would have been in the other commodities.

[7] This variable assumes that the political organization and power of food stamp recipients increase with numbers. As Olson (1965:22–24) has pointed out, this is not necessarily the case if benefits are diffuse (relative to costs). Here, however, arguably, the stakes are sufficiently high to spur organization.

not replicated in any other commodity group regression, suggesting that there may be something more to the notorious reputation of sugar interests for having substantial political influence (Congressional Quarterly, 1974, 1977).

The most puzzling result is the reversal of direction on the parameter estimates of ideology for southern commodities PEANUT, TOBAC, and SUGAR (though the last is nonsignificant). *A priori,* there is no reason to suspect a systematic differentiation between GRAINS and DAIRY commodity programs on one hand and SUGAR, PEANUT, and TOBAC on the other. Closer inspection, however, combined with discussions with Senate staff, yielded some insights.

The peanut and tobacco programs, especially at the time of this legislation, were perceived as supports for nutritionally unsound commodities.[8] While the allegation seems somewhat tenuous for peanuts, the health implications of cigarette smoking are well known. If the ADA ratings were picking up a sizable consumer orientation factor, then the reversal of sign would be explained, at least for tobacco. Analyses of ADA ratings and those compiled by the Consumer Federation of America (CFA) yield correlation coefficients averaging 0.86 over the years 1979–1983, lending support to this argument.

Another argument was that sugar, peanut and tobacco programs yield highly concentrated benefits, both quantitatively and regionally. When expressed as CCC loans per farm, this is not necessarily true (in quantitative terms), except for sugar.[9] However, figures for loan volume per farm may be misleading. Since peanut and tobacco allotments are geographically specified, a single farmer may own several separate allotments.[10] Thus, CCC loans per farm may be an inappropriate indicator of benefits concentration. Moreover, insofar as entry into the peanut or tobacco growing industries was restricted (by allotments), the liberal aim of nonparticularistic-enhanced income was not met. Indeed, the adjective "feudalistic" was frequently used to describe the peanut and tobacco programs during passage of the AFA 1981 (Congressional Quarterly, 1982:5).

A final explanation for the reversal of ADA parameter estimates may be that ideological issues *outside* this policy area have skewed the results. This would lead one to search for a systematic polarization of the Senate over an extrafarm issue. This effect would be magnified by the breakdown of the traditional logrolling coalitions. For ex-

[8] Conversations with Senate staff, May 1983.

[9] Sugar had the greatest concentration of benefits (in dollar volume) of the commodity groups studied. Source: Bureau of the Census, *1978 Census of Agriculture,* Washington, D.C.: Dept. of Commerce (1981); and Agricultural Stabilization and Conservation Service, *State Data Profiles,* various issues, Washington, D.C.: Dept. of Agriculture.

[10] Mann (1975:33) cites the fact that within an area accounting for 73 percent of total flue-cured tobacco production, there were 122,698 allotments but only 40,000 production units.

ample, there are many accounts of Northern Democrats angered by the defections of Southern Democrats in the tax and budget bill battles of 1981.[11]

Conclusions

In attempting to explain the passage of the 1981 farm bill, economic interests appear (not unexpectedly) to explain in part Senate voting patterns. Although no private interest variable remained significant throughout all the commodity groups studied, the results are rather uniform in conforming to expected directions. They are especially significant in light of the small numbers of votes in the indices.

Less successful is the measure of ideology. Associated parameter estimates seem unstable across commodity group regressions, reversing direction upon crossing the Mason-Dixon line. While these parameter estimates *can* be explained within the context of the ideological principles outlined above, they also suggest that alternative means of proxying ideological motivations may prove fruitful.

References

Alchian, Armen, and Harold Demsetz
    1972   "Production, information costs, and economic organization." American Economic Review 62 (December):777–95.
American Enterprise Institute
    1977   Food and Agricultural Policy. Washington, D.C.: American Enterprise Institute.
Congressional Quarterly
    1974   Weekly Report for February 16, 1974. Washington, D.C.: Congressional Quarterly.
    1977   Weekly Report for July 9, 1977. Washington, D.C.: Congressional Quarterly.
    1982   1981 Congressional Quarterly Almanac. Washington, D.C.: Congressional Quarterly.
    1983   1982 Congressional Quarterly Almanac. Washington, D.C.: Congressional Quarterly.
Domhoff, G. William
    1978   The Powers That Be. New York: Random House.
Downs, Anthony
    1957   "An economic theory of political action in a democracy." Journal of Political Economy 69 (April):135–50.
Farrar, Donald E., and Robert R. Glauber
    1967   "Multicollinearity in regression analysis." Review of Economics and Statistics 49 (February):92–107.
Gardner, Bruce
    1981   The Governing of Agriculture. Lawrence, Kansas: Regents Press of Kansas.
Hadwiger, Don, and William Browne (eds.)
    1978   The New Politics of Food. Lexington, Massachusetts: Heath.
Kalt, Joseph P.
    1981   The Economics and Politics of Oil Price Regulation: Federal Policy in the Post-Embargo Era. Cambridge, Massachusetts: MIT Press.

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[11] This is a prominent theme in various journalistic accounts (see Roberts, 1981:29).

Kalt, Joseph P., and Mark A. Zupan
  1984 "Capture and ideology in the economic theory of politics." American Economic Review 74 (June):279–300.
Kau, James B., and Paul H. Rubin
  1979 "Self-interest, ideology and logrolling in Congressional voting." Journal of Law and Economics 22 (October):365–84.
Kolko, Gabriel
  1965 Railroads and Regulation, 1877–1916. Princeton, New Jersey: Princeton University Press.
Mann, Charles K.
  1975 The Ants and the Elephants. Salt Lake City, Utah: Olympus.
McCune, Wesley
  1943 The Farm Bloc. Garden City, New York: Doubleday.
Mitchell, Edward J.
  1977 Energy and Ideology. Washington, D.C.: American Enterprise Institute.
Navarro, Peter K.
  1984 The Policy Game. New York: Wiley and Sons.
Olson, Mancur
  1965 The Logic of Collective Action. Cambridge, Massachusetts: Harvard University Press.
Peltzman, Sam
  1976 "Toward a more general theory of regulation." Journal of Law and Economics 21 (August):211–48.
  1984 "Constituent interest and Congressional voting." Journal of Law and Economics 27 (April):181–210.
Peters, John G.
  1978 "The 1977 farm bill: coalitions in Congress." Pp. 23–35 in D. Hadwiger and W. Browne (eds.), The New Politics of Food. Lexington, Massachusetts: Heath.
Pindyck, Robert S., and Daniel Rubinfeld
  1976 Econometric Models and Economic Forecasts. New York: McGraw-Hill.
Posner, Richard A.
  1974 "Theories of economic regulation." Bell Journal of Economics and Management 5 (Autumn):335–58.
Schultze, Charles L.
  1971 The Distribution of Farm Subsidies: Who Gets the Benefits? Washington, D.C.: Brookings Institute.
Roberts, Steven
  1981 "Farm bloc cracking under pressure." New York Times. October 27:29.
Stigler, George J.
  1971 "The theory of economic regulation." Bell Journal of Economics and Management 2 (Spring):3–21.
Truman, David B.
  1951 The Governmental Process. New York: Knopf.
Tweeten, Luther G.
  1977 "Agricultural policy: a review of legislation, programs and policy." Pp. 29–58 in American Enterprise Institute (ed.), Food and Agricultural Policy. Washington, D.C.: American Enterprise Institute.
United States Department of Agriculture
  1981 A Time to Choose. Washington, D.C.: USDA.
  1983 Agricultural Statistics, 1982. Washington, D.C.: U.S. Government Printing Office.
Wilson, James Q.
  1980 The Politics of Regulation. New York: Basic Books.

Appendix

Definition of variables*

PROGRAINS, PROSUGAR, PRODAIRY, PROPEANUT, and PROTOBAC—a vote that would implement or retain higher price supports or more restrictive allotments/quotas is assigned a 1; a vote against is assigned a 0.

GRAINS—wheat, feed grains, corn, cotton and rice; DAIRY—dairy, including milk and casein; TOBAC—tobacco, both flue-cured and burley.

PRODUCE is the ratio of commodity value to total state personal income over a three-year average. LOGROLL is a measure of total value of agricultural output in a state, minus the commodity being tested for, divided by state personal income.

PROCESS reflects the importance of product processing in either of two ways (for the cases where data were available): (1) value of fluid milk processed within the state, or (2) value added in tobacco processing industries. (The latter figure was prorated on the basis of firms with over twenty employees in cases where federal disclosure laws prohibited publishing value-added figures.)

CONSUME attempts to capture the consumer interest element. Because of the lack of state data, figures were available only for tobacco (via cigarette consumption). TOBCONS, in this case, is defined as per capita cigarette expenditures.

FSTAMP is food stamp expenditures per capita.

PAC is the total amount of funds contributed by relevant producer interests to the senator over the years 1977–1982. The compilation is not necessarily comprehensive; rather, a sampling of major agricultural producer PACs was obtained. There are no producer PACs for tobacco, while peanut PACs were established only in 1982 and 1983.

ADA is an average of the senators' ADA ratings over their years in office (1979–1982).

* Sources: Dependent variables: *Congressional Quarterly Almanac* (1982, 1983). PRODUCE: USDA/Crop Reporting Board, *Crop Values,* various years, and Dept. of Commerce, *Survey of Current Business,* various issues; PROCESS: DAIRY—USDA/Crop Reporting Board, Economics and Statistics Service, *Dairy Products,* various years; TOBACCO—Bureau of the Census, Dept. of Commerce, *1977 Census of Manufacturers,* Washington, D.C.: Dept. of Commerce (1981); CONSUME: TOBACCO—(cigarette consumption) Tobacco Institute, *The Tax Burden on Tobacco,* Washington, D.C.: Tobacco Institute (1982). LOGROLL: USDA/Crop Reporting Board; FSTAMP: USDA, *Agricultural Statistics,* various years; ADA: *ADA Voting World,* various issues. PAC: U.S. Federal Elections Commission. See especially "D indices."