Influence of Political Campaign Contributions by American Agribusiness Firms on U.S. Farm Policy

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Abstract:

This study adapts Ndayisenga and Kinsey's econometric model of the allocation of political campaign contributions by agribusiness firms. This model combines information on campaign contributions for political influence with the behavior assumption of profit maximization to test the hypotheses that agribusiness firms do not lobby against farm policies.
Model results support the hypotheses and show that lobbying expenditure in output markets is statistically significant, and that political campaign contributions to the Democratic Party significantly correlate with agribusiness firms' profits.
The conclusions of this study provide useful information about the intentions of agribusiness firms that participate in the political market, but the results should be carefully interpreted.

1. Introduction

This study analyzes the effects of political campaign contributions by American agribusiness firms on the agricultural commodity programs and on U. S. Farm Policy between 1992 and 2000. The Center for Responsive Politics reports that, in the American campaigns, agribusiness firms contributed $35 million, food processing & sales firms $7 million and food products manufacturing firms $2.5 million. Individually, in 1992, agribusiness firms such as RJ R Nabisco contributed $1,775,753, Archer-Daniels-Midland Co $1,680,650, Philip Morris $1,583,273. It is not clear whether all these campaign contributions by agribusiness firms are directed towards American government intervention in agricultural commodities markets, or towards policies and regulations related to their output/input markets, or towards both (Ndayisenga et al. 1999).

The main objective of this study is to analyze the effects of expenditure by American agribusiness firms for political influence. In other words, this study is interested in knowing how much influence over farm commodity policies agribusiness firms seek to have. Farms products are estimated to account for as much as 70% of material utilized by agribusiness firms, so these firms are expected to lobby against policies that raise agricultural commodity prices. There is some evidence that large agribusiness firms lobby against sugar and peanut programs. Both sugar and peanut programs raise input prices via quotas where the cost is borne more directly by consumers, while major agricultural commodity programs (wheat, corn, milk) tend to support prices with taxpayer dollars. Therefore, it is not obvious in which way agribusiness firms influence farm policy, or if it is significant (Ndayisenga et al., 1999).

This study analyses whether American agribusiness firms make political campaign contributions to influence their input markets. The model used is adapted from studies

of farm input allocations completed by Just, Zilberman, Hochman and Bar-Shira (1990) and Ndayisenga and Kinsey (1999).

2. Theoretical Model

Agribusiness firms may lobby to benefit both their input and output markets, but they do not record political campaign contributions for each market separately. One way is to design a survey asking agribusiness firms to report their political campaign contributions allocated to each activity. Alternatively, these political campaign contributions can be used to estimate expenditures in each market. Some models have been developed to estimate variable input allocations (Just et al., 1990). These models address the question of how to allocate, ex post, observed total input expenditures among different inputs, assuming that the firm operates within a competitive profit-maximization environment. The most important part of the model, the lobbying component, has its roots and justification in the work of Krueger; Becker; Cairns; Welliz and Wilson; Bhagwatti and Srinivasan; and Zusman, among others. These researchers start from the proposition that since policies affect the welfare of organizations and individuals, it is rational for them to allocate resources to influence policy choices in their favor. This literature maintains that the lobbies' objective is to maximize the economic surplus from lobbying activities adjusted for the resources expended for political influence. Lobbying expenditure is introduced into a profit-maximizing model via a pricing function, which determines the prices that agents receive for their output, or pay for their inputs, as a function of lobbying expenditures. The pricing function includes variables that are directly observable.

Suppose that an agribusiness firm is engaged in lobbying in two activities (q, y) corresponding to the output and input market, its objective is to influence the prices (r,

w) of the two activities. Let n_{oq} and n_{oy} be the lobbying activities q and y, respectively. The total observed lobbying expenditure allocated between the two activities is n_o . The objective is to estimate n_{oq} and n_{oy} from the knowledge of n_o and the behavior assumption of profit maximization (Ndayisenga et al., 1990).

Assuming that the agribusiness firm maximizes profit, so it chooses the level of output q and the lobbying expenditures n_{oq} and n_{oy}, and thus solves the following problem:

$$\text{Max } \pi = r\ (n_{oq})q\ -C\ (w,q\ ) \equiv r\ (n_{oq})q\ -C\ (n_{oy},q\ )$$
$$\text{with } \quad w = g\ (n_{oy})$$
$$\text{s.t.} \quad\quad n_{oq} + n_{oy} \le\ n_o\ ,$$

where: r(.) and g(.) are the output and input pricing functions, respectively. C(.) is the minimum cost of producing output q.

The problem includes a lobbying constraint that represents the restrictions imposed by the Federal Election Commission on the maximum amount that economic agents can contribute to political campaigns.

Assuming an interior solution, the first order conditions defining the change in output prices (r) and input costs (c) with respect to lobbying expenditures (n_{oq} and n_{oy}) are given by:

$$\frac{\partial\ r}{\partial\ n_{oq}}q\ =\ \lambda \tag{2.1}$$

and

$$-\frac{\partial\ C}{\partial\ n_{oy}}q\ =\ \lambda\ . \tag{2.2}$$

The conditions (2.1) and (2.2) show that profit maximization requires marginal returns to be equalized in the two markets. The agribusiness firm must exhaust arbitrage opportunities. The objective is to use n_O and the first-order conditions of profit maximization with respect to n_{oq} and n_{oy} to generate an estimable equation.

The elasticity with respect to the lobbying in the output and input markets is:

$$e_{oq} = \frac{\partial r}{\partial n_{oq}} \frac{n_{oq}}{r}$$

and   (2.3)

$$e_{oy} = \frac{\partial r}{\partial n_{oy}} \frac{n_{oy}}{C} \; .$$

Rearranging equation (2.3), these expressions become as follows:

$$\frac{\partial r}{\partial n_{oq}} = \frac{e_{oq} r}{n_{oq}} \;, \qquad \frac{\partial C}{\partial n_{oy}} = \frac{e_{oy} r}{n_{oy}} \; . \qquad (2.4)$$

These expressions can be rewritten as:

$$\frac{e_{oq} rq}{n_{oq}} = \lambda \quad \Rightarrow \quad n_{oq} = \frac{e_{oq}}{\lambda} R_{oq}$$

and   (2.5)

$$\frac{e_{oy} C}{n_{oy}} = -\lambda \quad \Rightarrow \quad n_{oy} = -\frac{e_{oy}}{\lambda} C \;,$$

where:

R_{oq} is the Agribusiness revenue, and C is the production cost of q, assuming that the elasticities e_{oq} and e_{oy} vary between the two markets, among agribusiness firms, over time, and between the two American political parties. The decomposition of elasticities

is different from Ndayisenga and Kinsey's study, because it includes the party component. The expressions are as follows:

$$e_{oq} = a_q + b_o + d_t + p_o,$$

$$\text{(2.6)}$$

$$e_{oy} = a_y + b_o + d_t + p_o,$$

where:

a_q is the output market component, a_y is the input market component, b_o is the firm-specific component, d_t is the time component, and p_o is the party component, respectively. This study assumes for convenience that the parameters are the same for the output (revenues) and the input (cost) components of the agribusiness firm, and includes a restriction $a_q > a_y$. This restriction is imposed on the empirical model.

Two new equations can be obtained, if equations 2.6 are inserted into equations 2.4 and 2.5, which can be combined and estimated by the following equations:

$$n_{oq} = \left(\frac{a_q}{\lambda} + \frac{b_o}{\lambda} + \frac{d_t}{\lambda} + \frac{p_o}{\lambda} \right), \qquad \text{(2.7)}$$

$$n_{oy} = -\left(\frac{a_y}{\lambda} + \frac{b_o}{\lambda} + \frac{d_t}{\lambda} + \frac{p_o}{\lambda} \right). \qquad \text{(2.8)}$$

Combining 2.7 and 2.8 gives:

$$n_o = a^q R_{oq} - a^y C + b^o (R_{oq} - C) + d^t (R_{oq} - C) + p^o (R_{oq} - C), \qquad \text{(2.9)}$$

where:

$$a^q = \frac{a_q}{\lambda}, \quad a^y = \frac{a_y}{\lambda}, \quad b^o = \frac{b_o}{\lambda}, \quad b^t = \frac{b_t}{\lambda}, \quad p^o = \frac{p_o}{\lambda}. \qquad \text{(2.10)}$$

After specification of the error structure, equation 2.9 can be estimated and the parameter estimates, if significant, can be inserted into equations 2.7 and 2.8 to find the allocations of the lobbying inputs between the input and output markets.

The estimated version of equation 2.9 is equation 2.11, which is linear in parameters. The firm-specific, time-specific and party-specific effects are represented by dummy variables that interact with profit for each agribusiness, time period and the Democratic Party in the sample. The empirical equation to be estimated is as follows:

$$n_{oit} = A^q R_{it} + A^y C_{it} + \sum_i B_i^o (R_{it} - C_{it}) D_i + \sum_t D^t (R_{it} - C_{it}) D_t + P_i^o (R_{it} - C_{it}) P_i + \mu_{it}$$

$$(2.11)$$

where:

D_i is equal to 1 for the ith agribusiness firm and zero otherwise, D_t is equal to 1 for the tth time period (1992-1998) and zero otherwise, P_i is equal to 1 if the Democratic Party received the largest proportion of the lobbying expenditure from the ith agribusiness firm and zero otherwise, n_{oit} is the total lobbying expenditure of the agribusiness firm i in period t, R_{it} is the revenue for the agribusiness firm i in period t, C_{it} is the production cost for agribusiness i in period t, and μ_{it} is a stochastic error term of unknown heteroskedasticity. Equation 2.11 was estimated with SHAZAM econometric software using White's heteroskedasticity-consistent covariance matrix estimator to correct for heteroskedasticity.

Two hypotheses are tested: that agribusiness firms' lobbying activity in their output markets is significantly different from zero, and in their input markets is not significantly different from zero.

The first hypothesis is formulated as follows:

Null Hypothesis: $\qquad H_o : A^q = 0,$

Alternative Hypothesis: $\qquad H_a : A^q \neq 0.$

If the null hypothesis is rejected, it can be concluded that agribusiness firms significantly lobby in their output markets. This suggests that the direct lobbying through agribusiness firms' political campaign contributions is primarily directed to their output markets.

The second hypothesis is formulated as follows:

Null Hypothesis: $\qquad H_o : A^y = 0,$

Alternative Hypothesis: $\qquad H_a : A^y \neq 0.$

If the null hypothesis is not rejected, it can be concluded that agribusiness firms do not significantly lobby in their input markets. This is consistent with the view that food firms have monopsony power in their input markets that allow them to negotiate lower prices despite government regulations, or they can pass on any cost increases to consumers, or both.

3. Data and Information

The data required to estimate the equation 2.10 are lobbying expenditures, production costs and revenues by individual agribusiness firms. The averages of lobbying expenditures, revenues and production costs are presented in table 1.

Firms	Lobbying Expenditures ($000s)	Revenues ($000s)	Costs ($000s)
American Crystal Sugar	514	633	184
Conagra Inc.	479	23,637	20,174
Deer & Co	326	10,825	7,308
Flowers Industries	261	1,470	1,020
Georgia Pacific Co	482	14,605	12,002
International Paper	622	20,179	14,790
Pepsico Co	584	22,689	10,010
Philip Morris	8,840	69,641	27,392
R J Reynolds	1,507	5,565	1,552
R J R Nabisco	1,738	6,903	3,922
Tyson Foods	265	5,443	4,567
UST Industries	1,153	1,321	261
Westaco	218	2,921	2,076
Winn-Dixie Stores	270	12,346	9,270

Table 1 - Agribusiness Firms' Average Lobbying Expenditures, Revenues and Costs

The averages presented in table 1 are calculated from data collected from the Center for Responsive Politics (lobbying expenditures), and from Moody's Industrial Manuals, Standard and Poor's Industry Surveys and Hoover's online (revenues and costs) between 1992 and 2000 for each American agribusiness firm. Costs include the cost of material, the direct labor costs, and depreciation to account for the cost of capital. A concern with using this type of agribusiness firm-level data is that they may reflect accounting conventions more than the measurement of economic concepts. This study uses revenue and cost data, which are not generally subject to extensive accounting adjustments. The issue would be far more relevant if profit or net income data were used.

Data on lobbying expenditure by firms in this study are published by the Center for Responsive Politics. This data includes only contributions to political campaigns. The selection of agribusiness firms was contingent upon the availability of data on their campaign contributions. The sample contains 70 observations collected for 14 agribusiness firms between 1992 and 2000. The selection on agribusiness firms was contingent upon the availability of data on their political campaign contributions.

4. Results

The results of the allocation equation estimates of agribusiness firms' lobbying expenditure are presented in table 2. The coefficient on variable revenue (x2), which captures the lobbying expenditure in the output markets, is statistically different from zero. This suggests that lobbying through agribusiness firms' political campaign contributions is primarily directed to their output market. The impact of these political campaign contributions on agribusiness firms' revenues is significant, because revenue

elasticity has a value of 0.528, which means a political contribution of $1.00 increases revenue by $0.53 (Table 2).

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Variable Name	Estimated Coefficient	t-Ratio 50 D. F.	Elasticity At Means
x2	5.39E-02	6.47	0.528
x3	9.52E-03	0.86	0.068
D1	-5.22E-02	-3.37	-0.063
D2	1.68E-01	13.49	0.429
D3	1.76E+00	6.50	0.039
D4	2.20E-01	2.23	0.016
D5	5.57E-01	5.74	0.004
D6	1.35E-01	9.78	0.041
D7	2.99E-01	10.35	0.074
D8	1.24E-01	7.34	0.022
D9	2.81E-01	4.17	0.004
D10	5.59E-02	10.21	0.101
D11	4.54E-01	7.27	0.052
D12	2.01E-01	10.92	0.025
D13	2.89E-01	11.45	0.027
DT1	-1.29E-02	-1.36	-0.010
DT2	-1.78E-02	-1.62	-0.015
DT3	2.27E-02	4.56	0.023
DT4	3.03E-01	15.39	0.339
DD	2.69E-01	7.39	0.046

Table 2 - Estimates of parameters

where: x2 is revenue, x3 is production cost, Di is a dummy variable for the ith agribusiness firm, DTi is a dummy variable for the tth time period (1992-1998), and DD is a dummy variable for the Democratic Party assuming that it receives the largest proportion of the lobbying expenditure from the ith agribusiness firm.

The coefficient on the variable cost (x3), which captures the lobbying expenditure in the input markets, is not statistically different from zero. This means agribusiness firms do not spend a significant amount of their resources to lobby in the input markets. This

implies that agribusiness firms do not exercise significant political influence in agricultural commodity markets. Cost elasticity has a value of 0.068, which means any political contribution in input markets has a low influence (Table 2). The results obtained with respect to the output and input markets agree on the conclusions presented in Ndayisenga and Kinsey's study (1990).

The variables labeled D1 through D13 in table 2 represent agribusiness firms identified by name in table 1. The coefficients on D1-D13 indicate that the gross profit for an agribusiness firm is significantly correlated with its total lobbying expenditures relative to the reference agribusiness firm. The gross profits of all agribusiness firms are significantly related to their lobbying expenditures. American Crystal Sugar (D1) has a significant negative relationship between lobbying expenditures and profits. Profits of the remainder agribusiness firms have a significant positive correlation with greater lobbying expenditures.

The coefficients of DT1 and DT2 in table 2 indicate that lobbying expenditure was less in 1992 and 1994 relative to the reference year 2000. The coefficients DT3 and DT4 in table 2 show that lobbying expenditure was greater in 1996 and 1998 relative to the reference year 2000.

The last coefficient of DD in table 2 indicates that political campaign contributions to the Democratic Party are significantly correlated with profits. This statement can be confirmed by the elasticity coefficient (last column of table 2) that shows that $1.00 spent in lobbying expenditure increases profits by $0.34.

The interpretation of these results should be made carefully. As a consequence, this analysis may not be widely generalized across agribusiness firms, over time or between political parties. They are interesting for the formulation of hypotheses about the

behavior and motivations of other agribusiness firms that participate in the political market.

5. Conclusions

The study analyses the effects of political campaign contributions by American agribusiness firms on agricultural commodity programs and U. S. Farm Policy between 1992 and 2000.

Agribusiness firms may lobby to influence the output and input markets. The main objective of this study is to analyze the effects of American agribusiness firms' lobbying expenditure for political influence.

The model used in this study is adapted from Ndayisenga and Kinsey's study (1999). This model addresses the question of how to know the influence of observed total lobbying expenditure between the output and input markets, among American agribusiness firms, over time, and between the two American political parties. Lobbying expenditure allocation equation parameters were estimated using White's heteroskedasticity-consistent covariance matrix estimator to correct for heteroskedasticity.

Data and other relevant information were collected from Moody's Industrial Manuals, Standard and Poor's Industry Surveys and Hoover's online for revenues and costs, while political campaign contributions were collected from the Center for Responsive Politics. The selection of agribusiness firms was contingent upon the availability of data on their political campaign contributions.

Model results show that American agribusiness firms' lobbying is primarily directed to their output markets. American agribusiness firms do not exercise significant political influence in agricultural commodity markets. Failure to reject the hypothesis that

agribusiness firms do not lobby in the input market is consistent with the view that American agribusiness firms have monopsony power in their input markets. The results obtained with respect to the output and input markets agree with the conclusions presented in Ndayisenga and Kinsey's study (1999).

American agribusiness firms, except one firm, are significantly positive correlated with greater lobbying expenditures. Political campaign contribution were greater in 1996 and 1998 related to the reference year 2000. The results also show that political contributions to the Democratic Party are significantly correlated with profits.

The conclusions of this study give good information about the intentions of American agribusiness firms that participate in the political market, but the results should be carefully interpreted.

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