# Collective Action and Common Agricultural Policy Lobbying: Evidence of Euro-Group Influence, 1986-2003

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**Abstract**

This paper attempts to explain Common Agricultural Policy (CAP) subsidies to farmers by the influence of farmer interest-groups with an EU-wide membership (so called Euro-groups). The analysis is based on panel-data for fifteen commodities over the period 1986-2003. Because the CAP is set as an overall EU policy, effective lobbying presents a collective action problem to the farmers in the EU as a whole. Indicators of lobbying, which are based on this perception, are found to explain part of the variation in agricultural support, suggesting that farmer Euro-groups influence agricultural policy within the EU.

**Key words:** Agricultural policy, political economy, lobbying.

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# 1 Introduction

The Common Agricultural Policy (CAP) costs European taxpayers over 40 billion Euro per year, or about 40% of the total European Union (EU) budget, while agriculture employs less than 2% of the EU's workforce. Moreover, about 80% of EU agricultural subsidies are paid to the richest 20% of farmers (Economist, 2005; Court of Auditors, 2005; Kay, 1998). It is not far-fetched to assume that these subsidies are largely a consequence of political activities (lobbying) organized by the beneficiaries. Empirical studies of American data show that indicators of the ability to lobby efficiently are important determinants of agricultural subsidies in the U.S.[1] But there has not been much research dealing with political economy determinants of the CAP. Olper (1998) finds that indicators of the national lobbying-strength of farmers explained part of the variation in total agricultural support (including CAP levels) in a panel of seven EU member-states over fourteen years.[2]

However, the influence of national (as opposed to EU-wide) lobbying groups may not fully capture the effect of lobbying on the CAP. The influence of lobbying groups with an EU-wide membership ("Euro-groups"[3]) must also be considered. The present paper assesses this influence. The CAP is analyzed separately from complementary national policies, using variables indicating the effectiveness of EU-wide lobbying groups. The study is based on a panel dataset with a total of 270 observations on fifteen commodity groups over the 18-year period 1986-2003.

The main motivation for studying EU-wide lobbying is that an implemented regulation

[1] De Gorter and Swinnen (2002) review the political economy literature on agricultural policy. The main reference on American farm-policy is Gardner (1987), but determinants of U.S. farm subsidies have also been studied by Lopez (2001), Gawande (2005), and Gawande and Hoekman (2006). Studies based on cross-country data also show that indicators of lobbying efficiency have an influence on agricultural support (e.g. Miller, 1991; van Bastelaer, 1998; and Swinnen et al., 2000).

[2] Other studies have predominantly focused on the decision-making structure of the CAP by addressing its specific features theoretically: Burton (1985) analyzed implementation of the EC milk quota, and Gallagher (1988) investigated implementation of an EU co-responsability levy for the grain farmers.

[3] The term "Euro-groups" is borrowed from van der Zee (1997) and is defined as "transnational EC-wide interest-groups". This definition will also be employed here. Van der Zee also presents lists of the Euro-groups involved in lobbying for CAP subsidies.

becomes a public good to the beneficiaries. Consider a group of farmers successful in their effort to obtain a subsidy for the good they produce. Since they cannot exclude other farmers who produce the same good, there can be free-riders who contribute nothing but enjoy the fruits of lobbying conducted by others, a classic collective action problem (Olson, 1965). With the CAP, the collective-action problem would be EU-wide. If beef farmers in France successfully lobby for a subsidy, beef farmers in Greece would benefit as well.

A study of EU-wide lobbying could also be motivated by considering the CAP decision making structure. The EU Commission initiates CAP legislation and frequently uses the special knowledge of interest groups, even encouraging the establishment of EU-wide agricultural interest-groups (van der Zee, 1997). This demand for outside expertise arises because the Commission bureaucracy is relatively small compared to that of national governments. The expertise provided by Euro-groups is more valuable to the Commission than that of national lobbying groups, since it represent the interests of all beneficiaries of the policy (Mazey and Richardson, 1993). Hence, "there exists a natural tendency for the Commission to deal with Euro-groups" (van der Zee, 1997). However, although Euro-groups are a more or less official part of CAP policy-making, some authors doubt their influence. Field and Fulton (1994) characterize Euro-groups as "ineffective at the supranational level". A formal analysis of the determinants of CAP subsidies may help to resolve this debate.

Following earlier literature, this paper relates the level of agricultural support to indicators of the effectiveness of lobbying. Besides the subsidies themselves, the main indicators of the effectiveness of lobbying are the number of firms and their size-dispersion. The results imply that farmer Euro-groups have an influence on the CAP.

The outline of the paper is as follows. Section 2 briefly reviews the formal and informal lobbying structures regarding the CAP, while Section 3 presents a simple theoretical model for lobbying group influence on agricultural support. Section 4 then discusses the literature on collective action in order to distinguish proxy-variables for measuring the effectiveness of lobbying. Section 5 describes the data and the variables included in the empirical model. Section 6 describes the empirical model and Section 7 presents the

results. Finally, Section 8 summarizes and draws conclusions.

## 2 A brief overview of the CAP lobbying structures

Euro-groups enjoy an exclusive position in the EU political process, as the establishment by the Commission of formal advisory committees has institutionalized their role, particularly in the formation of agricultural policy (Van der Zee, 1997). Their activities with regard to the CAP are organized through the main umbrella interest-group organization for agricultural producers, COPA-COGECA, the memberbase of which consists mainly of national producer associations.[4] The committees are only consultative and have no official power, however, so that lobbyists consider their formal influence to be negligible (Mazey and Richardson, 1993). Instead the committees establish access for further, less formal contacts with decision-makers.

This informal lobbying is often conducted via *ad hoc* coalitions (Pinjenburg, 1998; Berry, 1989), which poses a greater collective action problem, since support for lobbying has to be built from among the presumptive beneficiaries. Summarizing a number of studies which have discussed the (possibly high) organization-cost carried by informal lobbying groups, Woll (2006, p) concludes that "effective collective action at the supranational level is difficult even for groups of large and powerful actors." However, the fact that Euro-groups still use these methods indicates that the benefits of doing so are perceived to outweigh the costs.

Another feature of CAP decision making is the strong position of the Council of Agricultural Ministers. The Council of Agricultural Ministers represents the member-state governments in the CAP decision making process. For them to become effective, the Council has to approve Commission proposals by a qualified majority. This means that lobby-groups have to focus their efforts at both the national and the EU-level (Runge

[4]COPA-COEGA is the merger of the two former separate EU producer organizations COPA (*Comité des Organisations Professionnelles Agricoles de L'Union Européenne*, Committee of Professional Agricultural Organisations in the European Union) and COGECA (*Confédération Générale des Coopératives Agricoles de l'Union Européenne*, General Confederation of Agricultural Co-operatives in the European Union)

and von Witzke, 1987). Nevertheless, the collective-action problem they face is EU-wide. Successful lobbying efforts will result in policies effective throughout the EU, so the incentives of producers throughout the EU to participate in lobbying must be considered.

# 3 Modelling CAP lobbying

Gardner (1987) considers a unitary government which maximizes a weighted sum of consumer's surplus and producer rents for agricultural commodites in a partial-equilibrium model. The resulting support-level for each commodity is a function of lobbying effectiveness, measured by various group characteristics. Following Gardner, it is assumed here that policy-makers face a redistribution problem between consumers and producers when setting agricultural support-levels. The benefit for consumers of commodity $i$ - given by $C\left(s^i\right)$, where $s^i$ is the level of agricultural support - is assumed to be separable from that obtained from other commodities. The rent to the producers is given by $P\left(s^i, \mathbf{X}^i\right)$, where $\mathbf{X}^i$ is a vector of commodity- or producer-specific exogenous variables. The government objective function can then be written as

$$\Omega^i = C\left(s^i\right) + \theta^i P\left(s^i, \mathbf{X}^i\right) \tag{1}$$

where $\theta^i$ $(\geq 1)$ is the weight attached to producers of commodity $i$, determined by how effective their lobbying is. Note that a subsidy could benefit both consumers and producers, whereas the cost would be carried by taxpayers. Hence, there is an implicit budget-restriction in the redistribution problem for each commodity as written in eq. (1). Maximization of equation (1) with respect to $s^i$ yields

$$s^i = f\left(\theta^i, \mathbf{X}^i\right) \tag{2}$$

assuming, in line with earlier literature, that there are no cross-commodity linkages (Gardner, 1987).

However, if resources available for supporting agriculture as a whole are scarce, so that increasing support to one group would mean decreased support to one or more other groups, then there would be an immediate link between the lobbying activities of one

group and the support-levels attained by others (e.g. Gawande and Hoekman, 2006).[5] With the budget-constraint written as

$$\tau = \sum_i s^i \tag{3}$$

where $\tau$ is the exogenously given total expenditure for the CAP as a whole, and assuming that the overall objective is the sum of the product-specific objectives, i.e., $\Omega = \Omega^1 + ... + \Omega^n$, then the resulting expression for $s^i$ is

$$s^i = f\left(\theta^1, ..., \theta^n, \mathbf{X}^1, ...\mathbf{X}^n, \tau\right) \tag{4}$$

for $i = 1, ..., n$. Therefore, the empirical specification below includes the possibility of such cross-commodity linkages.

# 4 Collective Action

To find operative measures of $\theta^i$, the group-characteristics that resulted in effective lobbying, the theory of collective action (Olson, 1965), which builds on the observation that political regulations are public goods for those affected, is applied to the CAP.

Consider a regulation guaranteeing a higher price for a particular agricultural commodity, so that any and all producers of the commodity benefit but may or may not choose to participate in lobbying for the regulation. In a Nash equilibrium, each firm will lobby up to the point where its marginal benefit from the regulation equals its marginal cost of lobbying, taking the efforts of other firms as given, and the overall level of lobbying will be sub-optimal. However, some producer-groups lobby more effectively than others, which may depend on characteristics of those groups.

The literature suggests two characteristics of producer-groups as particularly important indicators of the overall level of lobbying-efforts (Magee et al., 1989 and Bombardini, 2005);

- *Number of firms.* Other things equal, the fewer the number of firms, the greater will be the overall lobbying effort. In the case of a monopoly, the owners of this

[5] Olper (1998) use data aggregated over commodity groups, and thus do not face this issue.

particular firm benefit completely from any subsidy its lobbying effort can generate. The more firms there are, however, the less will the results be clearly related to the efforts of any one, and the more likely it is that the effort made by any such firm is suboptimally low from the perspective of the industry as a whole. Transaction costs of organization are also higher with more firms, while selective incentives, penalizing those who do not contribute and rewarding those who do, become more difficult.

- *Size-heterogeneity.* Other things equal, the less homogenous are the producers in size, the greater will be the overall lobbying effort. This is because of certain minimal "fixed-costs" of lobbying (Bombardini, 2005), which only the larger firms will be able to (or motivated to) cover. With a more homogenous grouping, none may be able or motivated to lobby, whereas with a more heterogenous grouping at least large producers may.

Earlier studies have confirmed these characteristics as indicators of lobbying-effort (and effect) at the national level. Using national European data Olper (1998) finds a negative relationship between the number of farms and agricultural support; as do Helfand (2000) on Brazilian data, and Miller (1991), Fulginity and Shogren (1992), Sarker et al. (1993), van Bastelaer (1998) and Swinnen et al. (2000) on cross-country data. The effect of firm-size on support-levels is not as well documented but, using American data on non-agricultural as well as agricultural products, Bombardini (2005) finds that greater size-heterogeneity correlated with more support.

# 5 Data and measurement

The econometric analysis covers 15 commodities - listed in Table 1, along with their 2003 shares of total CAP support - over the period 1986-2003.

**Table 1:** EU agricultural commodities and their shares of total CAP support, 2003

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| beef | 0.188 | pigmeat | 0.050 | sugar | 0.027 | oats | 0.009 |
| milk | 0.142 | barley | 0.044 | durum wheat | 0.025 | rice | 0.002 |
| coarse grains | 0.078 | sheepmeat | 0.038 | maize | 0.025 | eggs | 0.001 |
| common wheat | 0.059 | poultrymeat | 0.029 | oilseeds | 0.017 | TOTAL | 0.735 |

Note: Some of the commodities subject to support - primarly fruits and vegetables, tobacco, and cotton - are excluded due to lack of data

The dependent variable is producer support in percent of total revenues, based on annual producer support estimates (PSE), available only since 1986. PSE, an aggregate measure of the annual monetary value of gross transfers to producers, includes both implicit and explicit payments, such as guaranteed price caps on inputs and guaranteed price-floors on outputs, tax-exemptions and direct payments.

As key regressors, the number of farms producing commodity $i$ in the EU and their size-heterogeneity are used, corresponding to the collective action indicators discussed above. Table A1 in Appendix describes the variables and data sources

Four control variables are included; geographical concentration of production by region; the relative market-price; output per producer and annual CAP expenditures. Geographical concentration of production is measured by a Herfindahl index. Complete concentration in one region would generate a Herfindahl index of 1, whereas a less concentrated industry would yield a lower index. The inclusion of geographical concentration is to control for the additional cost of organizing lobbying because of geographical dispersion. Turning to the measures of relative market price and output per producer, one of the main objectives of the CAP is to ensure "a reasonable standard of living for the agricultural population" (OEEC, 1957: first paragraph of Article 39 of the Treaty of Rome), which presumably means high and stable income. Relative market price and output per producer are thus included as indicators of short-run agricultural income. Relative market-price is hypothesized to have an inverse effect on support per unit of output because, given output, a higher price means higher income and thus lower need for support. Output per producer is also hypothesized to have an inverse effect on support, becuase at a given price, more output means higher income and lower need for support. In the

regressions, these two variables are lagged one period to reduce endogeneity arising from the fact that the dependent variable, producer support in percent of total revenues, causes changes in income. Finally, as discussed earlier, an effective budget-restriction on CAP expenditures would give rise to cross-commodity linkages. In order to test for such effects, the total CAP expenditures are included as an additional variable, as are collective-action and industry-characteristics for all commodities other than the one tested. This is discussed further in the next section.

Descriptive statistics for the variables used in the estimation are presented in Table 2.

**Table 2:** Summary statistics

| Variable | Mean | Std. dev. | Min | Max | Expected sign |
|---|---|---|---|---|---|
| estimated support in percent of revenues (PSE) | 45.68 | 18.14 | -2.84[a] | 76.78 | |
| number of farms | 1180.0 | 757.5 | 22.66 | 3631 | (-) |
| size-heterogeneity | 33.49 | 30.62 | 8.68 | 142.9 | (+) |
| geographical concentration | 0.047 | 0.039 | 0.04 | 0.22 | (+) |
| relative market-price | 370.7 | 474.9 | 8.53 | 1967 | (-) |
| output per producer | 0.041 | 0.042 | 0.001 | 0.2 | (-) |
| CAP expenditures | 46023 | 12258 | 23382 | 61058 | (+) |
| sum. number of farms | 16520 | 3767 | 10328 | 25922 | (+) |
| sum. size-heterogeneity | 468.8 | 53.01 | 339.3 | 574.0 | (-) |
| sum. geographical concentration | 0.658 | 0.055 | 0.50 | 0.77 | (-) |
| sum. relative market price | 16.12 | 1.70 | 9.97 | 17.88 | (+) |
| sum. output/producer | 0.029 | 0.087 | 0.012 | 0.048 | (+) |

Notes: [a]There are two negative observations for the PSE, pigmeat (1992) and eggs (1994). This negative post in the aggregate PSE measure is a result of penalties for not respecting production quotas.

# 6 Empirical regression model

The data available restricts the choice of model to be estimated. For each of the fifteen commodities, seventeen annual observations are available. The dataset could thus be

considered as a long (and narrow) panel, i.e. one could estimate a separate equation for each commodity. However, only seven original observations per commodity are available for most of the explanatory variables (see Appendix). Hence, a pooled data model seems most appropriate. Gardner (1987), Olper (1998) and van Bastelaer (1998) all estimated similar pooled-data models.

The model can be expressed as

$$PSE_{it} = \alpha_i + \sum_k \beta^k X_{it}^k + \delta_t + \varepsilon_{it} \tag{5}$$

where subscript $i$ denotes the commodity and subscript $t$ the year, while the superscript $k$ refers to the $k$th explanatory variable.

A linear-in-variables model was estimated (results not included here) with no statistically significant collective action effects found. However, F-tests (in the fixed effects model) and $\chi^2-$tests (in the random effects model) showed that including the squares of the collective-action variables, number of farms and size-heterogeneity, increased the explanatory power of the model (Table 3, below).[6] Since the theory provides no guidance regarding functional form, this more general specification is used. The possibility of interaction effects between the key regressors is also allowed (specification 3).

Equation (5) contains commodity-specific and time-specific effects and F-tests and $\chi^2-$tests support the inclusion of such effects into the model. Commodity-specific effects may capture, among other things, the cost of redistribution due to differences among commodities with respect to demand and supply elasticities. The time specific effects are likely to capture structural shifts of policy. In 1992 price support policies were to a large extent replaced by direct payments to farmers as was the effect of the Agenda 2000 reform. The enlargement in 1995, which added Sweden, Finland and Austria as new members, represents such a shift as well.

A Hausman specification-test suggests that the fixed-effects estimator is better than the random-effects estimator in the second, third and fourth specifications, but not in the

[6] In order to reduce the multicollinearity that may arise when such transformations of explanatory variables are used, the average of the variable was subtracted before taking the square; i.e., $nfarm^2$ was calculated as $(nfarm - ave\,(nfarm))^2$, where $nfarm$ is the number of farms and $ave\,(nfarm)$ is the average over commodities and time.

first (Table 3, below). Serial correlation and groupwise-heteroskedasticity is found in all specifications and the t-values are calculated using robust standard errors to account for that.

Cross-commodity linkages, for the collective-action and control variables, are allowed in specification 4, by including total CAP-expenditures and six cross-commodity variables. Each such cross-commodity variable is measured as the sum over all commodities other than commodity $i$ of the original variable (Table 2 above shows descriptive statistics for the cross-commodity variables). Where the original variables are lagged, so are the summed variables. By summing the variables, it is assumed, for example, that the number of farms producing commodities $j$ and $k$ affect support for commodity $i$ in the same way. This simplification is used in order to avoid the multicollinearity which would have otherwise resulted.

# 7 Results and discussion

Table 3 (below) shows the results of the estimations. Specification 1 includes only collective action variables; specification 2 adds variables controlling for geographical concentration and short-run income fluctuations ; specification 3 allows for interaction effects and specification 4 controls for cross-commodity linkages.

**Table 3:** Effects of collective-action variables on CAP support, 1986-2003

| | (1) | | (2) | | (3) | | (4) | |
|---|---|---|---|---|---|---|---|---|
| Variable | Coeff | t | Coeff. | t | Coeff. | t | Coeff | t |
| number of farms | -0.008 | -1.83 | -0.016 | -2.02 | -0.020 | -2.49 | -0.015 | -1.87 |
| squared number of farms | $-5x10^{-7}$ | -0.27 | $6x10^{-6}$ | 1.87 | $5x10^{-6}$ | 1.54 | $7x10^{-6}$ | 2.35 |
| size-heterogeneity | 0.163 | 2.66 | 0.187 | 3.13 | 0.09 | 1.15 | 0.136 | 2.29 |
| squared size-heterogeneity | -0.002 | -2.68 | -0.002 | -2.69 | -0.002 | -2.81 | -0.002 | -2.79 |
| geographical concentration | | | 358.0 | 3.99 | 383.4 | 4.35 | 473.8 | 5.09 |
| lagged relative market price | | | -0.021 | -5.01 | -0.02 | -4.85 | -0.006 | -0.97 |
| lagged output/producer | | | -308.45 | -4.23 | -333.50 | -4.53 | -239.8 | -3.07 |
| (n. farms)*(size-het.) | | | | | $9x10^{-8}$ | 1.70 | | |
| CAP expenditures | | | | | | | -0.014 | -0.68 |
| sum. number of farms | | | | | | | 0.004 | 2.85 |
| sum. size-heterogeneity | | | | | | | -0.045 | -2.64 |
| sum. geographical con. | | | | | | | 98.01 | 3.01 |
| lagged sum. relative m. price | | | | | | | 3.46 | 2.02 |
| lagged sum. output/producer | | | | | | | 1833.8 | 3.15 |
| $R^2$ adjusted | 0.17 | | 0.34 | | 0.34 | | 0.29 | |
| $F/\chi^2$, listed variables | 51.43 | | 6.38 | | 6.25 | | 43.34 | |
| $F/\chi^2$, quadratic variables | 5.24 | | 4.29 | | 4.27 | | 5.00 | |
| F, cross-commodity var. | | | | | | | 2.66 | |
| $F/\chi^2$, commodity fixed effects | | | 47.58 | | 39.33 | | 44.87 | |
| $F/\chi^2$, time fixed effects | 64.70 | | 2.54 | | 2.64 | | 6.33 | |
| Time effects | Yes | | Yes | | Yes | | No[a] | |
| Hausman | 1.00 | | 15.60 | | 17.82 | | 29.84 | |
| Wald (group. heterosked.)[b] | 761.22 | | 50.44 | | 52.63 | | 42.02 | |
| Durbin-Watson (serial corr.)[c] | 0.64 | | 0.93 | | 0.94 | | 1.01 | |

Notes:[a]Exclusion of time-specific effects are due to problems of multicollinearity (see below)

[b]Based on Greene (2003)

[c]As modified by Bhargava et al. (1982)

In line with earlier studies (discussed in Section 4), the collective-action variables appear to have affected CAP support, which decreases with the number of farms and increases with size-heterogeneity. Specifications 1 and 3 find a negative linear relationship between the number of farms and support, whereas specifications 2 and 4 find a nonlinear relationship, yet negative within the sample. Gardner (1987) finds an inverse-U-shaped relationship between the number of farms and support, contradicting this result and the collective-action predictions.[7] However, Gardner's results may combine a variety of policy-mechanisms. Politicians favour large groups because of their voting power (Pincus, 1972; Lindbeck, 1985), so the inverted-U relationship could result from this voting-power effect (better with large numbers) counteracting the collective-action effect (better with small numbers). But the voting-power explanation is not equally applicable to the CAP, since supranational EU decision-making is more detached from voter influence. The results here confirm this.

The estimated coefficients for specification 2 indicate that, all else equal, a decrease in the number of farms by 10 000 would increase the support level by 0.16 percentage points ( 0.35% at the mean of the data). Olper (1998) investigates the effect of the number of farms on support aggregated over commodities in single EU member-states during 1975-1989 and finds that, in the average EU state, a decrease in the number of farms by 10 000 increased support by 0.03 - 0.06 Euro per unit of output.[8]

The estimated coefficients for size-heterogeneity (and squared) in specification 2 mean that if the standard deviation of the distribution increases by one unit, support would increase by 0.19 percentage points (or 0.41% at the mean of the data). Using aggregate U.S. data, Bombardini (2005) also finds a positive effect.[9] The squared term here indicates that the positive effect diminishes with size, however.

[7] Gardner's results suggest that there is "an optimal industry size" with respect to the effectiveness of lobbying (25000-150000 farms), different from collective-action theory.

[8] As dependent variable Olper uses the "nominal protection rate" (NPR), normalized by output, which does not include the effects of decoupled income transfers as here. However, such transfers became a substantial part of CAP support only after 1992.

[9] American firms are required to report lobbying expenditures, which enables the researcher to test hypothesis on micro data. Bombardini thus tests the hypothesis empirically on firm-level data, finding that the amount of political action committee (PAC) contributions by each firm increases with size.

The interaction effect between the collective-action variables *number of farms* and *size-heterogeneity* (specification 3) is found to be statistically significant (on the ten percent level) and positive, though quite small. The intuition is that, as the number of farms increases, greater size-heterogeneity means more large farms, yielding more contributions (which is in accordance with the theory of collective action).[10] However, with this interaction effect allowed, the coefficient of size-heterogeneity is found not to be statistically significant.

Adjusted $R^2$ is 0.17 in specification 1 and jumps to 0.34 when the short-term income indicators and interaction effects are added, which is in line with earlier studies. The statistically significant effects of relative market price and output per producer suggest that policymakers consider the variability in agricultural income when deciding CAP support. When controlling for cross-commodity effects the adjusted $R^2$ increases to 0.43.

The geographical concentration of agricultural production within the EU has a statistically significant effect on support in all specifications, suggesting that a more geographically concentrated agricultural production leads to more efficient lobbying. The intuition is that the more geographically concentrated the industry, other things equal, the lower will be the cost of organizing effective lobbying.

All cross-commodity effects are statistically significant (specification 4). Note, however, that the model was estimated without time specific effects. This is because the full specification, including cross-commodity variables and time-specific effects, led to severe multicollinearity problems. In order to avoid (part of) the effect of multicollinearity the time specific effects were excluded, despite their significant effect as indicated by the F-test in Table 3. Hence, the results from this model should be interpreted with caution, as it is restricted both by the summation of cross-commodity variables and the exclusion of time-specific effects (restrictions which are all imposed to avoid multicollinearity).

The number of farms producing other commodities has a positive effect. One interpretation is that the less effective the lobbying for support to other commodities, other things

[10]Note that this interpretation presupposes a given industry size. However, the control for industry size, measured as the mean of the distribution economic size per commodity (see Appendix and the measurement of size-heterogeneity for a description of this measure), was found to be insignificant in all regressions and, therefore, excluded from the final regressions.

equal, the more support (out of a given budget) will be available to commodity $i$. If farms producing other commodities increased by 10 000, support to commodity $i$ increased by 0.14 percentage points. Size-heterogeneity of other commodities has a negative effect. Again, this is in line with the theory of collective-action. The estimated coefficients for the other cross-commodity variables can be given a similar interpretation. However, the cross-commodity effect of geographical concentration takes the opposite sign to what was expected; the more concentrated the production of other commodities, the higher is the support for commodity $i$. Finally, the effect of total CAP expenditures is not statistically significant, though positive.[11]

# 8 Summary and conclusions

When analyzing the influence of interest-group lobbying on the CAP, one must recognize that farmers in the EU as a whole are affected, so that there is an EU-wide collective-action problem. Thus the influence of lobbying groups with an EU-wide member-base - so called "Euro-Groups" - is studied using data from 1986-2003. In accordance with predictions from collective-action theory, the number of farms producing a given commodity and their size-heterogeneity are found to explain part of the variation in support for that commodity. This suggests that Euro-group lobbying has been able to influence the CAP. To some extent the results diverge from what is found in other studies, particularly on American data, perhaps because of the relatively lower direct influence of voters on agricultural policy in the EU.

More research is needed to more precisely identify the mechanisms of influence on the CAP, such as the interactions between EU-wide and national lobbying groups Many policies determined at the national level (e.g., VAT taxes) have a considerable impact on the food industry, and thus may attract attention of national agricultural lobbying groups. The problem for the individual firm of how to allocate its lobbying expenditures

[11]The treatment of CAP expenditures is a difficult practical problem, since CAP expenditures are *compulsory*, which means that support-levels are set first, then total expenditures are determined (Ackrill, 2000, p. 79). As a result, CAP expenditures might be endogenous, not exogenous as assumed here.

between national and EU-wide levels is thus an issue for further scrutiny. The interaction between interest groups competing for the same resource would also bear further research. The test for cross-commodity linkages in the present study could be extended. However, the lack of firm-level data on lobbying contributions in the EU is a major obstacle to this research.

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# Appendix

**Table A:** Description of variables and data sources[a]

| Variable | Description | Data source |
|---|---|---|
| estimated support | Monetary support in percent of total revenues | OECD |
| number of farms | Thousands of farms producing commodity $i$ | Eurostat |
| size-heterogeneity | Standard deviation of the distribution of farms' standard gross margin[b] | Eurostat, own calculations |
| geographical concentration | Herfindahl index of geographical concentration[c] | Eurostat, own calculations |
| relative market price | $\frac{\text{world market-price of commodity } i \text{ (Euro)}}{\text{EU-level CPI}}$ | OECD |
| output per producer | Commodity output in 1000 tonnes per farmer | Eurostat |
| CAP expenditures | Annual CAP expenditures (Euro). Deflated with EU-level CPI (1995=100). | OECD |
| sum. number of farms | Sum of number of farms for commodities $k \neq i$ | Eurostat |
| sum. size-heterogeneity | Sum of size-heterogeneity for com. $k \neq i$ | Eurostat |
| sum. geo. concentration | Sum of geographical concentration for com. $k \neq i$ | Eurostat |
| sum. relative market price | Sum of relative market-price for com. $k \neq i$ | Eurostat |
| sum. output/producer | Sum of output per producer for com. $k \neq i$ | Eurostat |

Notes: [a]Data include producer support estimates, prices, output, economic size distributions and the number of farms producing the commodities. The number of producers and output are based on survey data, available for the years 1987, 1990, 1993, 1995, 1997, 2000, and 2003. Following Gardner (1987) these data were interpolated between the years of the surveys.

[b]The standard gross margin is defined by Eurostat (2003) and is calculated as the value from one hectare or one animal, less the cost of variable input to produce that output. The data is the divided into nine economic size units (ESU) categories. The standard deviation of the size distribution of farms by category is then calculated. Because largest ESU is open-ended, a distributional assumption had to be made. Based on de Wit (2005), the ESU distribution is assumed to be log-normal. Class-limits are deflated using EU-level CPI (1995=100).

[c]Each member state of the EU is divided into regions, based on population. The Herfindahl

index for commodity $i$ in period $t$ is then for $m$ regions ($j = 1, ..., m$ ) calculated as (in the case of crops): $\sum_j \left( acre_{ijt} / \sum_j acre_{ijt} \right)^2$