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Campaign Contributions and Agricultural Subsidies

by Rigoberto A. Lopez

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Preface

This article examines the influence of campaign contributions on agricultural subsidies. Empirical results revealed that rent seeking works, i.e., campaign contributions of agricultural-related industries influence agricultural subsidies in the manner they best serve contributors' economic interests. Eliminating campaign contributions would significantly decrease agricultural subsidies, hurt farm groups, benefit consumers and taxpayers, and increase social welfare by approximately $5.5 billion. Although contributions are not the only determinants of agricultural subsidies, investment returns to farm PAC contributors are quite high ($1 in contributions brings about $2,000 in policy transfers). In fact, the results are in sharp contrast to the "truthful contributions" assumption of the Grossman-Helpman model.

1. Introduction

U.S. agricultural policy programs involve a wide array of policy instruments that range from output and input subsidies to public expenditures for research and infrastructure. Evidence suggests that when the government feels that free-market farm incomes are too low, it often intervenes by increasing farm prices and/or decreasing input prices; but why according to a U.S. Department of Agriculture report (1995), are program benefits (as a percent of the value of production) high for rice, sugar, peanuts, and tobacco and minimal for oats, soybeans, pork, or carrots? In fact, critics contend that agricultural subsidies have brought about large benefits to special interest groups at the expense of taxpayers and that they have not necessarily addressed the problem of low income farms (Gardner, 1992), suggesting that the structure of agricultural subsidies may also be influenced by the lobbying activity of farm groups.

One potentially important and measurable type of lobbying activity is campaign contributions by Political Action Committees (PACs). While some studies contend that PAC contributions have a positive but weak influence on government policy (Welch, 1982; Wilhite and Theilmann, 1987; Goldberg and Maggi, 1999), others find that PACs have a strong role in influencing policy makers (Abler, 1991; Stratman, 1991; Mueller and Stratman, 1994; Lopez and Pagoulatos, 1996). This is a key question since the impact of campaign financing reform would be inconsequential if the impact of PACs on policy is hyper-marginal. From the standpoint of agricultural subsidies, the key question is: Are PACs important in shaping agricultural subsidies? If so, what would the welfare impacts of eliminating them be? A further question is: What are the returns on investment by contributors?

This article analyzes the effects of contributions from PACs on agricultural policy as represented by changes in output and input subsidies. It first estimates a three-equation model of agricultural subsidies and campaign contributions and then simulates the impact of the elimination of campaign contributions on welfare. The econometric results indicate that while contributions by farm commodity groups (e.g., the beef industry) and by supporting industries (e.g., feed manufacturers) increase output subsidies, those of opposing organizations lower them. Input subsidies, on the other hand, increase with the contributions of supporting organizations. Simulation results indicate that if PAC contributions were eliminated, agricultural subsidies would decrease significantly, hurting farm groups but benefiting consumers and taxpayers while increasing social welfare by approximately \$5.5 billion (in 1987 adjusted to year 2000 dollars). Although equity, trade disadvantage, and policy instrument choice also play a strong role in determining agricultural subsidies, the returns on investment to farm PAC contributors are quite large.

2. Theoretical Framework

Consider three common types of agricultural policy instruments used in the United States: (1) *supply control* (Q); (2) implementing a *target price* (P) via deficiency payments (e.g., a subsidy covering the difference between target and the market clearing price); and (3) *input subsidies and infrastructure support* (I). Note that policy (3) is present in virtually all U.S. commodity markets.

Assume that the total farm cost function (C) takes the following form:[1]

$$C(Q,I) = \alpha\, I^{-\beta} Q^{1+1/\varepsilon}, \tag{1}$$

where Q is the level of output, I is public expenditures on input and infrastructure services, α is a scale parameter, â is the elasticity of cost reduction with respect to I, ε is the elasticity of supply and α, β, $\varepsilon>0$.

Let the government's objective function be to maximize the weighed average of the welfare of various interest groups. For a supply control regime, this objective function is defined as:

$$\underset{Q,I}{Maximize}\; W_1 = CS_1 - I + \theta\, PS_1\,, \tag{2}$$

where consumer surplus is given by $CS_1 = \int_0^Q P(Q)dQ - P(Q)Q$ and producer surplus is given by, PS_1=$P(Q)Q$-$C(QI)$ where $P(Q)$ represents the inverse market demand function. The maximization of (2) with respect to Q and I yields:

$$\kappa \equiv \frac{P(Q^*) - C_Q(Q^*,I)}{P(Q^*)} = \eta^{-1}\left(1 - \frac{1}{\theta}\right), \tag{3}$$

[1] For simplicity, a Cobb-Douglas specification of the cost function is used. This implies that cost is zero if infrastructure expenditures are zero - an irrelevant point since the U.S. government provides infrastructure support to virtually all domestic farmers through the support of Land Grant colleges, research experiment stations, and a multiplicity of other means (Rose-Ackerman and Evenson, 1985).

$$r \equiv \frac{I^*}{P(Q^*)Q^*} = \frac{b}{1+e^{-1}}[q - h^{-1}(q-1)] \qquad (4)$$

where κ is the optimal producer subsidy (as a percentage of the value of production) achieved via a restriction of Q, r is the corresponding input subsidy (as a percentage of the value of production), h is the absolute value of elasticity of demand, Q^* is the regulated level of output, and q is the relative welfare weight assigned to producers. The left side of (3), the same as in Gardner's (1987) result and analogous to a Lerner index of oligopoly power, is thus defined by the price-cost margin as a percentage of the product price.

Under a deficiency payment regime, on the other hand, the government's objective function is defined as:

$$\underset{P,I}{Maximize}\ W_2 = CS_2 - T - I + q\,PS_2\,, \qquad (5)$$

where,

$CS_2 = \int_{D^{-1}[S(P,I)]}^{b} D(P_d)\,dP_d$, $PS_2 = \int_a^P S(P,I)dP$, and, $T = S(P,I)[P - D^{-1}(S(P,I))]$, which represent respectively consumer and producer surpluses and the total government payments necessary to maintain the target price. The terms $D(\cdot), D^{-1}(\cdot)$ and $S(\cdot)$ denote the demand, inverse demand and supply functions, and P and P_d are the target and the demand prices, respectively. Finally, a and b represent the economically meaningful levels of supply and demand prices when the level of output $Q = 0$ or $Q \to 0$, and other notations are as defined before. The maximization of (5) with respect to P and I yields:

$$p \equiv \frac{P^* - D^{-1}[S(P^*, I)]}{P^*} = e^{-1}(q - 1)\,, \qquad (6)$$

$$g \equiv \frac{I^*}{P^* S(P^*, I^*)} = \frac{b}{1+e^{-1}}[1 - e^{-1}(q-1)] \qquad (7)$$

where p is the output subsidy as a percent of the market price and g is the input subsidy as a percent of the market value of production. Thus, both measures of output subsidies $(k$ and $p)$ are positively related to q and to the inverse demand or supply elasticity. In turn, both measures of input subsidies $(r$ or $g)$ are negatively related to q and e^{-1} and positively related to b. For the case of supply control management, the input subsidy rate should be negatively related to h^{-1} (provided that $q > 1$).

To introduce the influence of PACs into this theoretical scheme, let PAC denote the amount of money contributed by a farm commodity group to political candidates. Presumably, the political weight given to producer welfare (q) is a nondecreasing function of campaign contributions. Let Z_k denote other factors that determine this weight. Thus, $q = f(PAC, Z_k)$. By taking partial derivatives of (3), (4), (6) and (7) with respect to PAC, the marginal impacts of an industry's campaign contributions on those subsidies are given by

$$\frac{\partial k}{\partial PAC} = \frac{\partial k}{\partial q}\frac{\partial q}{\partial PAC} = \frac{1}{hq^2}\frac{\partial q}{\partial PAC} \geq 0\ ; \qquad (8a)$$

$$\frac{\partial p}{\partial PAC} = \frac{\partial p}{\partial q}\frac{\partial q}{\partial PAC} = \frac{1}{e}\frac{\partial q}{\partial PAC} \geq 0\ ; \qquad (8b)$$

$$\frac{\partial r}{\partial PAC} = \frac{\partial r}{\partial q}\frac{\partial q}{\partial PAC} = \frac{-be}{1+e}\left(\frac{1}{h} - 1\right)\frac{\partial q}{\partial PAC} \leq 0\ if\ h \leq 1; \qquad (8c)$$

$$\frac{\partial g}{\partial PAC} = \frac{\partial g}{\partial q}\frac{\partial q}{\partial PAC} = \frac{-b}{1+e}\frac{\partial q}{\partial PAC} \leq 0\ . \qquad (8d)$$

Interestingly, the above equations indicate that limiting an industry's campaign contributions (ignoring the contributions of related industries) should reduce the level of price subsidies (equations 8a and 8b) but raise the level of input subsidies (equations 8c and 8d). By the same token, the impact on q of PAC contributions by related industries should depend on whether those industries support or oppose the subsidy in question.

3. Determinants of Agricultural Subsidies

Empirical model specification follows from the conceptual analysis presented in equations (3), (4), (6) and (7). Details on the specification of the empirical variables, their data sources, and data on PAC contributions and agricultural subsidies are in the Appendix. The empirical measures of agricultural subsidies were obtained by decomposing the Producer Subsidy Equivalents (PSE), published by the U.S. Department of Agriculture (1994), into percent output (*PSEO)* and input (*PSEI*) subsidies. Following Gardner (1987), the output subsidies are defined by adding up indirect subsidies generated by supply management interventions (k) and direct subsidies or payments (p).[2]

[2] This aggregation also was an empirical necessity due to lack of observations for stand alone deficiency payment

Their explanation is based on equations (3) and/or (6). Likewise, input subsidies are explained based on equations (4) and/or (7).

The first set of explanatory variables for q—and the main focus of this paper—is campaign contributions to members of Congress by farm commodity groups (*PAC*) and by related industries. Although contributions generally enhance (and presumably cannot reduce) the political power of a special interest group, Esty and Caves (1983) have observed that the significance of PAC contributions as a determinant of policy outcomes depends on whether the PAC has a facilitative or an independent role ("informative" or "persuasive" in Mueller and Stratmann's (1994) language). Nonetheless, a positive relationship is expected between *PSEO* and *PAC*, while a negative one is expected for *PSEI*, as stipulated in (8).

The effectiveness of the campaign contributions of one commodity group (PAC) is conditioned on the contributions of other interest groups affected by policy outcomes (Becker, 1983, and Grossman and Helpman, 1994). Industries affected by agricultural subsidies were classified into two groups: related industries that support output subsidies (*SPAC*) and those that oppose them (*OPAC*). *SPAC* includes those industries supplying inputs and those which have a vested interest in the institution of direct subsidies (such as deficiency payments) since such policies tend to expand their businesses. *OPAC* includes industries buying from a commodity group which face a higher price due to supply control management policies. The categorization of related industries was decided based on the input-output matrix reported by the U.S. Department of Commerce (1996) and the type of output subsidy used (supply management or deficiency payment).[3]

As PAC contributions are not presumed to be the only determinants of the political weight of farmers, three additional explanatory variables are assumed to affect θ: parity price ratio (*PAR*), relative trade advantage (*RTA*), and a trend variable (*TREND)*. Note that their detailed definitions are found in the Appendix. A strong justification for government intervention in the past has been the imbalance of income or price parity in farm as compared to non-farm sectors. A lower parity price ratio puts pressure on policy makers to increase the regulated farm price. Thus, *PSEO* is expected to be negatively related to *PAR*. As argued by Honma and Hayami (1986), the level of agricultural protection is inversely related to comparative advantage. Thus, *PSEO* is expected to be negatively associated with *RTA*, resulting from a protection bias in the cases of import-competing industries. The *PAR* and *RTA* variables are not included as determinants of *PSEI* as these variables appear to address output rather than input prices.[4] The trend variable is introduced in the *PSEO* and *PSEI* equations and is expected to be negatively associated with both types of subsidies as Farm Bills were increasingly driven by budget deficit concerns and a push to move agricultural policy-setting from government intervention to markets.[5]

Recall from the conceptual analysis that agricultural subsidies are also determined by the government choice of policy instruments (supply control and/or deficiency payments) and the price elasticities of demand and supply. Following Gardner (1987), the specification of the model lumping output subsidies into one measure (*PSEO)* needs to be sensitive to which policy instrument is in use for a particular commodity. While supply control decisions rely on the inverse elasticity of demand (equation 3), deficiency payments rely on the inverse elasticity of supply (equation 5). Accordingly, estimates of h^{-1} and e^{-1} are entered interacting with dummy variables (l_1 and l_2) in the *PSEO* equation.[6] When supply control is the

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observations (e.g., corn). In other cases, supply control measures were used in conjunction with (or as a condition for receiving) deficiency payments (e.g., barley, rice, and wheat).

[3] For the multi-product firms (e.g, Philip Morris), contributions were allocated to commodities based on the share of sales in connection to a product related to a farm commodity in the sample. For broad organizations (e.g., the Farm Bureau), contributions were allocated using the farm value of production of the top five commodities. Tables A1 and A2 of the appendix present the PAC data generated.

[4] In addition, the inclusion of *PAR* and *RTA* in the input subsidy equation led to poorer statistical results, perhaps due to the fact that they did not add additional information to the variables already included in the model and increased multicollinearity. The input subsidy equation also included more parameters than the other estimating equations.

[5] Ideology and institutional structure may have changed across the periods analyzed, affecting the levels of both the subsidies and PAC contributions. In particular, the three years in the sample are subject to three different Farm Bills (1980, 1985, and 1990). Knutson et al. (1998) characterize the 1980s as having the same problems: financial stress of farmers, scalating program costs in the midst of government budget deficits, crop surpluses, and declining export competitiveness. The 1990 Farm Bill was more budget-driven. Tight budgets will obviously push for supply control policies as these require no direct treasury outlays. The introduction of time fixed effects into the estimating equations failed, however, to improve the results. In fact, the results of interest deteriorated.

[6] Gardner's (1987) model includes instead the maximum

case, then $l_1 = 1$ (0 otherwise), and when deficiency payment is the case, then $l_2 = 1$ (0 otherwise). In some instances, both $l_1 = 1$ and $l_2 = 1$ must be included to indicate the government's desire to combine supply control and deficiency payments under the so-called "diversion programs." For these instances, $l_1 l_2 = 1$ (0 otherwise). A positive relationship is expected between the presence of diversion programs and both $PSEO$ and $PSEI$ since for a constant level of policy transfers, a lower volume of production is expected. From equation (4) it is clear that the elasticity of demand determines input subsidies only when a supply control regime is in place.

Unfortunately, data on β, the elasticity of cost reduction with respect to public expenditures on input and infrastructure services, were not available. Some of its effects are taken into account by including three explanatory variables in the input subsidy equation: the value of production (VP), a dummy variable for field crops (*CROP*), and a dummy variable for animal products ($ANIM$). The first (*VP*) attempts to capture the size of the sector as a determinant of b, the magnitude of farm cost reduction due to public expenditures on input and infrastructure services. The two dummy variables $CROP$ and $ANIM$ attempt to capture other aspects of b that are peculiar to field crops and animal products (using fruit-and-vegetable as the control group).

4. Determinants of Campaign Contributions

As argued by Magee, Brock and Young (1989), a complete model of policy determination should have both policy decisions and lobbying activity as choice variables. This notion is based on Peltzman's (1976) framework, in which political contributions and income transfers are exchanged within a policy market. Thus, an equation for the determinants of farm PAC contributions in which *PSEO* and *PSEI* are used as explanatory variables is added to the model. These subsidies are directly related to a producer's expected return from rent-seeking activities. As producer surplus is directly related to *PSEO*, a positive impact of *PSEO* on *PAC* is expected. For $PSEI$, it is unclear what the impact of input subsidies is on producer welfare since under inelastic demand (which characterize agricultural commodities), lower costs translate into lower market prices. Thus, no sign is assigned *a priori* to the coefficient of *PSEI* in the PAC equation.

The determinants of *PAC* are also hypothesized to be a function of supporting PACs and opposing PACs (Lopez and Pagoulatos, 1996). While supporting PACs can act as a substitute for an industry's own PAC contributions, opposing PACs will raise an industry's lobbying efforts as a counterbalance. Therefore, *SPAC* is expected to have a negative effect on *PAC* while *OPAC* is expected to have a positive impact.[7]

The determinants of *PAC* include four additional explanatory variables: the number of farms (*N*), the number of farms squared (N^2), geographical concentration (*HD*), and a trend variable (*TREND*). The number of farms influences the cost of organizing political activities as well as number of votes (Peltzman, 1976). Indeed, politically successful groups tend to be small relative to the size of the groups taxed that pay for the subsidies (Becker, 1983). Therefore, *N* is expected to have a negative impact on *PAC*. However, the number of farms (beneficiaries) is expected to have a nonlinear impact on *PSEs*. N^2 is therefore included to capture any nonlinearities of the impact of *N* on *PSE*s.

Following Gardner (1987), greater geographic concentration of production is expected to reduce the organizing costs for political activities. In addition, since both congressional committees on agriculture are usually dominated by senators and representatives from leading agricultural states, a positive relationship is expected between *PAC* and *HD*. Finally, a trend variable is included, as it was in the subsidy equations, to capture any systematic tendencies in ideology and rent-seeking activities across the three underlying Farm Bills.

5. Econometric Model

Although campaign contributions are certainly not

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inverse price elasticity (of demand or supply), assuming that the government takes allocative efficiency into consideration in selecting policy instruments. Empirical data analysis supported Gardner's model specification. However, J-tests indicated that the switch model with dummy variables (as used in this article) is more appropriately specified, and this model is therefore favored over Gardner's. This result may indicate that, beyond allocative efficiency, other factors also affect policy instrument choices significantly.

[7] Causation presumably could run the other way as *OPAC*, and perhaps *SPAC*, could react to farm PAC contributions. Adding equations for the contributions of related industries was not attempted because of the heterogeneity of contributors aggregated into those categories. For instance, supporting PACs for wheat producers typically included PAC contributions from crop services, fertilizer manufacturers, agricultural chemical companies, machinery PACs (e.g., John Deere), among other groups.

independent regressors in the output and input subsidy equations, it seems plausible that agricultural subsidies and an industry's PAC contributions are joined in a simultaneous equation system. The equations that summarize the empirical determinants of the levels of agricultural subsidies and campaign contributions as discussed above are:

$$\begin{aligned} PSEO = {} & \alpha_0 + \alpha_1 PAC + \alpha_2 SPAC + \alpha_3 OPAC \\ & + \alpha_4 PAR + \alpha_5 RTA + \alpha_6 TREND \\ & + \alpha_7\, {}_1\eta^{-1} \lambda_1 + \alpha_8 \varepsilon^{-1} \lambda_2 + \alpha_9 \lambda_1 \lambda_2 + U_1 , \end{aligned} \tag{9}$$

$$\begin{aligned} PSEI = {} & \beta_0 + \beta_1 PAC + \beta_2 SPAC + \beta_3 OPAC + \beta_4 TREND \\ & + \beta_5 \eta^{-1} \lambda_1 + \beta_6 \varepsilon^{-1} \lambda_2 + \beta_7 \lambda_1 \lambda_2 + \beta_8 VP \\ & + \beta_9 CROP + \beta_{10} ANIM + U_2 , \end{aligned} \tag{10}$$

$$\begin{aligned} PAC = {} & \gamma_0 + \gamma_1 SPAC + \gamma_2 OPAC + \gamma_3 N + \gamma_4 N^2 \\ & + \gamma_5 HD + \gamma_6 TREND + \gamma_7 PSEO \\ & + \gamma_8 PSEI + U_3 , \end{aligned} \tag{11}$$

where U_k $(k=1,2,3)$ are error terms and other notation is as defined above. The empirical model in (9)-(11) was applied to a data set of 60 observations involving U.S. agricultural commodities. The 36 commodities include 8 crops, 4 livestock products, 10 fruits and 14 vegetables. Of the 60 observations, crop and livestock products are observed over three years (1982, 1987 and 1992) while fruit and vegetable commodities are observed only for 1987. PAC contributions and the values of production (in equation (8)) were adjusted to 1992 dollars using the general producer price index. The commodities are listed in the Appendix Tables A1 and A2.

The system of equations was simultaneously estimated via the maximum likelihood method with correction for heteroskedasticity, taking into account the time-series and cross-sectional structure of the data.[8] The estimated system of equations was used to simulate the impact of eliminating PAC contributions on the level of subsidies and on the welfare of producers, consumers, and taxpayers for the 36 commodities in the sample for 1987.[9] The SHAZAM 8.0 econometric package was used for all estimations.

6. Empirical Results

6.1 Econometric Results

The estimated coefficients and associated statistics are presented in Table 1. Most critical parameters are significant at the 5% level and have the expected signs.

For the subsidy equations, as expected, an industry's campaign contributions and those of supporting industries increase the levels of *PSEO*. As importantly, the contributions of opposing industries decrease the *PSEO*. In the PSEI (input subsidies) results, the subsidies increase with the contributions of supporting organizations, while the contributions of opposing industries do not have a discernable impact. Contributions of farm commodity groups have a negative influence on input subsidies reflecting the mixed-blessing nature of those subsidies for commodities facing price-inelastic demands: increases in output resulting from cost reductions may lead to lower prices and revenues, as indicated in the theoretical expectation in equations (8c) and (8d). In sum, the results for the subsidy equations empirically confirm that rent seeking works in the U.S. agricultural sector.

The results also indicate the government tendency to support farmers if the actual price is below the parity price and when they experience trade disadvantage. This result grants higher levels of output subsidies for import-

[8] In spite of a number of observations with zero values for *PAC* and *PSEO*, a Tobit model was not used (unlike Gardner, 1987). As stated by Maddala (1988), the Tobit model is reserved for truncated variables or cases where the observations on the dependent variable are censored (the researcher is not allowed to observe them). However, zero observations in this case refer to actual decisions and are, therefore, non-censored observations. In fact, estimating the equations by Tobit regressions (following Nelson and Olson, 1978, to address simultaneity) led to poorer econometric and simulation results.

[9] The year 1987 is used for simulation since it is the most comprehensive in terms of the number of commodities covered (36 vs. 12 in 1982 and 1992). Note, however, that transfers were the highest in 1987 (Tables A1 and A2). Nonetheless, the magnitude of the changes in 1982 and 1992 for the 12 crop and livestock commodities observed over the three periods were similar to those presented in Table 3. Since a combined model explaining both supply management and price and income supports was used in the econometric analysis, the computed welfare changes rely on three components: changes in the level of supply management, changes in deficiency payments, and changes in import tariffs. These changes were allocated in proportion to the share of each component in the observed aggregate PSEO. More details on the welfare estimation procedure are available from the author.

competing farm commodities. Finally, the results indicate a downward trend in both output and input subsidies, reflecting a movement toward government disengagement from U.S. agriculture.

Additional results for the PSEO equation indicate that, as expected, the lower the price elasticity of demand, the higher the intervention level through supply control, reflecting the tendency of the government to redistribute income efficiently (Gardner, 1987). Although the results for the inverse supply elasticity (involving deficiency payment regimes) are statistically insignificant, output subsidy rates are higher for programs using diversion programs where both deficiency payments and supply control are implemented.

The PAC equation results indicate that the most significant stimulus to an industry's campaign contributions is the contributions of opponent groups, while the contributions of supporting groups have a partial substitution effect for an industry's own contributions. Output subsidies play a strong role in determining PAC contributions while input subsidies play practically no role. The coefficients for the number of farms indicate diseconomies of scale in organization cost. The critical N is at only 480 farms, after which PAC contributions start to decline as *N* increases. This result indicates that, *ceteris paribus,* smaller sectors are more effective in raising money than larger ones. Finally, the variables for trend and geographic dispersion of production did not have a discernable impact on campaign contributions.

6.2 Simulation Results

Table 2 presents the subsidy levels with and without PAC contributions as well as the unilateral returns to farm PAC contributors. Table 3 presents the welfare results.

As indicated in Table 2, the model yields quite good predictions of the observed PSEOs and PSEIs. Those results also show that eliminating PAC contributions would reduce both the average output subsidy from 16.602% to 10.322% or a 37.83% decline. Note however that a positive and still significant level of subsidy remains for most commodities. Commodities that have the highest levels of subsidies and larger PAC contributions, such as sugar and milk, would suffer the biggest reductions. One should remark that the PSEOs in selected fruit and vegetables are predicted to increase slightly, mainly due to the elimination of the campaign contributions of powerful opposition groups such as the processors' groups. Finally, the PSEIs are generally expected to decline for nearly all commodities. Again, sugar and milk would experience relatively large increases in PSEI resulting in a slight average increase in input subsidies.

Table 2 also shows the dollar changes in policy transfers resulting from a dollar increase in contributions. The returns to farm commodity contributions is generally very high, ranging from approximate increased policy transfers of \$14 in raspberries to \$16,590 in corn per additional dollar invested in campaign contributions by commodity groups (holding the contributions of other industries constant).[10]

The welfare effects of eliminating PAC contributions in 1987 are presented in Table 3.[11] The estimated welfare changes were adjusted with the GDP implicit price deflator to express them in year 2000 dollars. On aggregate, net social welfare would have increased by approximately \$5.5 billion if all PAC contributions had been eliminated. The gain to consumers/buyers would have been approximately \$9.1 billion. Producers would have lost approximately \$11.9 billion. Public expenditures on cost-reduction programs would have decreased by \$299 million while direct governmental outlays would have been reduced by approximately \$7.9 billion including changes in tariff revenues in selected commodities. The elimination of PACs would have resulted in an additional saving of \$7.37 million. Clearly, society as a whole loses due to rent-seeking activities by farm and related groups

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[10] These returns were calculated as follows. From Table 1, $MPEO/MPAC = 0.057$ and $MPSEI/MPAC = -0.002$. Since $PSE = PSEO + PSEI$, $MPSE/MPAC = 0.055$, where the PSEs are expressed in percentages and PAC contributions in thousands of dollars. The definition of $\%PSE = (PT/VP) = (PSE/100)$ was used, where the value of production *VP* (evaluated at producer prices) and policy transfers *PT* are expressed in millions of dollars. Let $Transfers = 1000*PT$ denote policy transfers in thousand of dollars. Then, $MTransfers/MPAC = [0.055*VP + (MVP/MPAC)\ PSE]*10$, where $MVP/MPAC = (MP/MPAC)Q + (MQ/MPAC)P$.

[11] The benchmark for simulation was the observed values of *PSEO* and *PSEI*. These values were then adjusted with the predicted changes from the elimination of all PAC contributions from Table 2. One modification was necessary for predicted *PSEO*s: in the few cases where the predicted decline in PSEO exceeded its observed level, then the predicted *PSEO* was set to zero. This modification was not necessary for the *PSEI*s. It should be stressed that these are approximate estimates as the welfare changes are more exact for small changes in intervention. Setting all PAC contributions equal to zero involved large changes in interventions for selected commodities such as sugar and milk. In addition, various farm groups often form coalitions that are not reflected by eliminating PAC contributions on an individual commodity basis. Finally, to the extent that PAC contributions are correlated with other less quantifiable but also important lobbying activities, by omitting these activities, the effects of PAC contributions may be overstated.

seeking to influence agricultural subsidies.

Note that the largest changes in welfare occur in the crops and animal product sectors, particularly the milk, corn, wheat and sugar sectors, which are among the largest in size and/or in contributions. In most crop cases, consumers and producers lose as many deficiency payment subsidies would have been reduced, resulting in higher consumer prices and lower producer prices but saving taxpayer dollars. Producer surpluses for all commodities, except for selected fruit and vegetables, would decline with campaign finance reform eliminating PACs. Also note that in many cases, the distributional impacts would have been large in spite of a relatively modest aggregate welfare effect. For instance, the impact on the sugar program of eliminating PAC contributions would have resulted in an increase in consumer surplus by approximately $1.36 billion, while the loss to producers would have been $1.17 million with no repercussions to taxpayers since the sugar price is supported through an import quota. However, the aggregate welfare gain would have been nearly $100 million, less than 10% of the transfers involved.

7. Concluding Remarks

This article examined the influence of campaign contributions on agricultural subsidies. It used three-equation model of farm PAC contributions as well as output and input subsidies. This model was applied to data on 36 agricultural commodities over three periods between 1982 and 1992. Econometric results revealed that rent seeking works, i.e., in the manner they best serve contributors' economic interests, campaign contributions of farm groups and related industries significantly influence agricultural subsidies. Thus, the model yielded plausible results and predictions and was therefore used for simulation analysis.

Simulation results revealed that if campaign contributions were eliminated, roughly one-third of output subsidies would vanish with rather modest effects on input subsidies. However, the percent changes in subsidies are much larger for milk and sugar, which are the highest PAC contributors. Furthermore, the returns to commodity group contributors are quite large. For every dollar invested in PAC contributions (holding the contributions of related industries constant), farm groups obtained on average approximately $2,132 in policy transfers, ranging from $14 dollars in raspberries to nearly $16,600 for corn producers.

The distortionary effect of PAC contributions is illustrated by the fact that the aggregate welfare gains from eliminating them is estimated at $5.5 billion in 1987 (expressed in year 2000 dollars). Both the consumers and taxpayers stand to gain while producers would be hurt in most cases. However, the most severe distortionary impacts are concentrated in a handful of industries. Ninety percent of the aggregate welfare gains would have occurred in reforming milk, wheat and corn markets alone. In other cases, e.g., in the oats and pork sectors, the impact on aggregate welfare of eliminating PAC contributions would have been relatively modest, at less than $300,000. On the other hand, in some cases such as the sugar sector, welfare gains would have been relatively modest but the distributional impacts would have been large.

The results of this article are in sharp contrast to the "truthful contributions" assumption of the Grossman-Helpman model implying that all welfare gains from influencing policy are donated as campaign contributions. The sum of agricultural-related campaign contributions are estimated at only 0.13 percent of the aggregate welfare gains from their elimination. Using the "truthful contributions" assumption, Maggi and Goldberg (1999) found that the government attaches overriding importance to general welfare vs. campaign contributions, leading one to believe that campaign contributions play a weak role. However, according to the findings of this article, the leverage afforded by campaign contributions makes them untruthful and a powerful mechanism that can seriously distort the economy.

Although PAC contributions are certainly important in shaping both farm output and input subsidies, they are not the only instrument of rent-seeking activity or the only driving force in the politics of U.S. farm policy. As suggested by the empirical results of this article, the government considers price parity, trade disadvantage positions, and efficient redistribution mechanisms to be important in determining agricultural subsidies. Even if campaign contributions were eliminated and subsidies lowered, most farm programs would survive, as they did historically before PACs in their current form came into existence.

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Table 1. Determinants of U.S. Agricultural Subsidies and Campaign Contributions.

Variable	PSEO	PSEI	PAC
Own Contributions (PAC)	0.054***	-0.002**	
	(7.560)	(2.264)	
Supporting Contributions (SPAC)	0.052**	0.007*	-0.544**
	(2.447)	(1.786)	(2.062)
Opposing Contributions (OPAC)	-0.118***	0.0001	4.968***
	(3.222)	(0.024)	(8.302)
Price Parity (PAR)	-0.470**		
	(2.466)		
Relative Trade Adv. (RTA)	-0.295		
	(1.424)		
Trend	-3.066*	-1.681***	11.901
	(1.806)	(6.746)	(0.498)
Inv. Demand Elasticity $(l_1 h^{-1})$	1.509***	-0.008	
	(2.861)	(0.308)	
Inv. Supply Elasticity $(l_2 e^{-1})$	0.393		
	(0.236)		
Inv. Supply Elasticity (e^{-1})		-0.012***	
		(7.186)	
Diversion Dummy $(l_1 l_2)$	32.198***	0.005	
	(8.056)	(0.009)	
Value of Production (VP)		0.00008**	
		(2.455)	
Field Crops Dummy (CROP)		2.719***	
		(3.892)	
Animal Products Dummy (ANIM)		1.520**	
		(2.059)	
Number of Farms (N)			0.960***
			(4.084)
Number of Farms (N^2)			-0.001***
			(5.249)
Geographic Concentration (HD)			-0.033
			(0.076)
Output Subsidies ($PSEO$)			1.870*
			(1.787)
Input Subsidies ($PSEI$)			-2.004
			(0.217)
Constant	32.795***	5.063***	-54.250
	(2.776)	(16.203)	(1.118)

Notes: One, two and three asterisks indicate statistical significance at the 90, 95, and 99 percent levels, respectively. The absolute values of the t-statistics are given in parenthesis. The results are based on 60 observations.

Table 2. Impacts of Eliminating Campaign Contributions on Agricultural Subsidies, 1987.

Commodity	Observed PSEO	Predicted PSEO	Change w/o PACs	Observed PSEI	Predicted PSEI	Change w/o PACs	$\frac{\partial \text{Transfers}}{\partial \text{PAC}}$
Animal Products:							
Beef	2.350	6.010	-3.515	4.940	6.545	0.393	13429
Milk	53.320	57.665	-52.743	3.970	3.689	2.666	996
Pork	0.000	14.428	-13.629	4.720	5.695	0.031	5431
Poultry	18.640	19.840	-13.169	4.720	5.032	0.512	4891
Crops:							
Barley	61.670	52.966	-12.183	8.940	7.664	-1.471	2172
Corn	34.130	25.884	-16.029	10.120	8.552	-0.718	16590
Oats	4.170	7.227	-5.689	4.750	6.870	-0.734	341
Rice	41.390	46.858	-2.630	4.550	6.188	0.030	1687
Sorghum	31.970	24.947	-13.541	8.950	7.890	-1.673	1345
Soybean	0.200	21.065	-16.873	5.220	7.816	-0.819	5900
Sugar	52.950	69.594	-61.822	4.800	2.589	3.637	177
Wheat	53.610	50.548	-6.626	7.960	7.070	-0.259	13434
Fruits:							
Apples	0.000	9.500	-0.038	3.150	3.577	-0.108	556
Blueberries	0.000	5.751	-0.050	4.400	3.364	-0.004	30
Cherries	0.000	1.548	-0.077	3.080	3.373	-0.015	94
Cranberries	0.000	3.024	-3.903	2.750	3.207	0.162	88
Grapes	1.700	17.266	-4.118	3.980	3.460	-0.002	804
Peaches	4.650	5.232	0.027	3.890	3.429	-0.040	227
Pears	4.620	7.718	-0.052	3.880	3.398	-0.017	133
Plums	4.110	8.339	0.032	5.060	3.400	-0.027	143
Raspberries	0.340	9.051	-0.069	2.770	3.336	0.003	14
Strawberries	0.860	0.507	-0.479	2.720	3.429	-0.036	314
Vegetables:							
Asparagus	19.990	5.078	0.090	3.450	3.400	-0.017	285
Beans	24.620	10.318	0.160	3.040	1.450	-0.027	264
Broccoli	16.210	9.859	0.196	2.850	3.399	-0.035	306
Carrots	5.190	7.271	0.266	2.910	3.417	-0.044	191
Cauliflower	11.190	5.100	0.147	2.800	3.400	-0.026	199
Celery	7.580	22.091	0.221	2.730	3.232	-0.036	133
Cucumber	19.000	6.858	0.150	2.730	1.073	-0.026	256
Lettuce	8.480	14.276	0.768	2.880	3.352	-0.132	584
Mushrooms	18.510	6.286	0.722	2.720	3.487	-0.091	800
Onions	16.900	3.004	0.424	3.080	3.452	-0.071	1043
Peas	28.750	5.729	0.124	3.000	3.340	-0.019	291
Potatoes	8.070	18.588	-3.585	3.570	3.681	-0.253	1061
Sweet corn	19.790	6.317	0.292	4.310	3.424	-0.052	621
Tomatoes	21.250	11.914	1.110	3.060	3.674	-0.205	1917
Average	16.561	16.602	-6.280	4.235	4.260	0.013	2132

Table 3. Welfare Effects of Eliminating Campaign Contributions in U.S. Agriculture, 1987.

Commodity	ΔCS	ΔPS	ΔI	ΔT	ΔPACs	ΔSW
	------- Million Dollars -------					
Animal Products:						
Beef	329.10	-218.54	83.28	4.69	-1.17	23.76
Milk	9862.03	-5341.80	454.41	0.00	-1.93	4067.76
Pork	7.00	-4.08	3.08	0.00	-0.29	0.12
Poultry	-853.75	-630.42	4.39	-1546.54	-0.52	58.49
Crops:						
Barley	-140.40	-388.59	-89.57	-604.07	-0.27	164.92
Corn	-1142.19	-2535.28	-525.52	-3761.62	-0.34	610.01
Oats	-2.63	-10.94	-4.41	-9.32	-0.12	0.29
Rice	-16.19	-77.57	-5.14	-104.68	-0.06	16.12
Sorghum	-48.65	-194.18	-55.92	-240.33	-0.30	53.71
Soybean	-23.37	-29.43	-73.22	-0.34	-0.36	21.12
Sugar	1359.42	-1167.40	93.11	0.00	-1.87	100.79
Wheat	-157.37	-1297.11	-183.07	-1630.92	-0.14	359.65
Fruits:						
Apples	0.00	0.00	0.00	0.00	-0.10	0.10
Blueberries	0.00	0.00	0.00	0.00	-0.01	0.01
Cherries	0.00	0.00	0.00	0.00	-0.02	0.02
Cranberries	0.00	0.00	0.00	0.00	-0.10	0.10
Grapes	2.57	-2.46	-0.03	0.17	-0.19	0.16
Peaches	-0.62	0.92	-0.24	0.02	-0.03	0.55
Pears	-0.04	0.13	-0.04	0.00	-0.02	0.15
Plums	-0.09	0.27	-0.04	0.00	-0.02	0.24
Raspberries	0.00	-0.01	0.00	-0.01	0.00	0.00
Strawberries	4.28	-5.51	-0.25	-0.55	-0.06	-0.37
Vegetables:						
Asparagus	-0.76	1.13	-0.03	-0.07	-0.01	0.47
Beans	-0.86	0.64	-0.07	-0.01	-0.01	-0.13
Broccoli	-1.33	3.27	-0.08	-0.02	-0.02	2.05
Carrots	-0.94	2.00	-0.11	-0.02	-0.02	1.21
Cauliflower	-0.94	1.58	-0.05	-0.01	-0.01	0.72
Celery	-0.44	0.51	-0.07	0.00	-0.02	0.16
Cucumber	-0.99	0.69	-0.10	-0.20	-0.01	0.01
Lettuce	-10.24	11.16	-1.31	-0.01	-0.07	2.31
Mushrooms	-17.85	21.33	-0.44	-3.37	-0.04	7.34
Onions	-19.83	26.04	-0.42	-1.43	-0.04	8.09
Peas	-1.04	1.01	-0.02	0.00	-0.01	-0.01
Potatoes	18.76	-17.12	-5.24	0.06	-0.08	6.89
Sweet corn	-5.50	5.30	-0.30	0.00	-0.03	0.12
Tomatoes	-45.39	72.18	-2.60	-2.60	-0.11	32.10
Average	252.59	-327.02	-8.59	-219.46	-0.233	153.84
Total	9172.99	-11895.34	-298.60	-7893.13	-7.370	5476.75

Appendix

Producer Subsidy Equivalents (PSEs): The concept of PSE, developed by the Organization for Economic Cooperation and Development, has been used extensively in GATT agricultural negotiations and research (e.g., Beghin and Kherallah, 1994). Following the U.S. Department of Agriculture (1994) report, it can be defined in percentage terms as:

$$\text{Percentage } PSE = \frac{Q(P^d - P_w) + T + I}{QP^d + T},$$

where Q is quantity produced, P^d and P_w are the domestic price and the world price, respectively, T is direct government payments, and I is infrastructure support. *PSEO* includes all transfers resulting in higher than competitive prices including those due to domestic output quotas, market orders and regulations, and border measures [= 100 * (P^d-P_w) Q / (P^dQ+T)] as well as deficiency payments [=100 *$T/(P^dQ+T)$], i.e., transfers which result in lower prices to buyers of the commodity in question. *PSEI* [(=100 * I / (P^dQ+T)] includes research and extension services, land improvement, subsidies for construction, input subsidies, and marketing assistance. The data for the *PSEs* come from the U.S. Department of Agriculture (1994) report for crops and livestock products, and from Deloitte and Touche (1991) for fruit and vegetables.

PAC Contributions (PAC, SPAC, OPAC): These data on campaign contributions to congressional candidates by agricultural groups come from the Federal Election Commission's *Reports on Financial Activity:* 1991-92, 1987-88 and 1981-82 (vols. III and IV). Some PACs are commodity specific (e.g., American Sugar Cane League) while others represent broader coalitions (e.g., National Farmers Union PAC). In the latter case, the reported contributions were allocated to the five largest commodities in proportion to their production values.

Support PACs include those of crop and animal services, agricultural finance and insurance industries, agricultural chemical and fertilizer companies, veterinarian industries and food processing industries that benefit from deficiency payment subsidies. For multi-product agribusiness corporations (e.g., Philip Morris) contributions were allocated to commodities based on the share of sales in connection to specific farm commodities. Opposing PACs include food processing industries which must pay a higher price under supply control policies, including import protection of the commodity in question. However, input subsidies ultimately benefit buyers of the commodities (through downward pressure on commodity prices) and industries selling to the farm industry in question.

Number of Farms (N): These data come from the *1982, 1987 and 1992 Census of Agriculture*. In 1987, beef production had the largest number of farms at 841,780 farms, while celery production had the smallest at 377 farms. The average size of all commodity sectors was 97,968 farms.

Geographic Concentration (HD): This variable is measured by the sum of the square of the share of each state in the national output. Thus, it could range from 10,000 when all production occurs in one state to 1/50 if output is evenly distributed across states. The variable was calculated from various issues of the *Census of Agriculture* and *Agricultural Statistics*.

Value of Production: The values for this variable come directly from the 1982, 1987, and 1992 *Census of Agriculture*. For 1987, the range is from $27 million for raspberries to $24.6 billion for beef.

Parity Price (PAR): Data on parity price come from various issues of *Agricultural Statistics*. The USDA defines a parity price as the ratio of the prices received by particular commodity groups to the index of prices received by all farmers, adjusted by the index of prices paid by farmers.

Relative Trade Advantage (RTA): The values for this variable come from the USDA's *Global Competitive Advantages and Overall Bilateral Complementarity in Agriculture* (1992). Its definition is based on the net exports share of a commodity relative to all products, divided by the corresponding net export share of foreign countries.

Time Trend (TREND): This variable takes a value of 1 for 1982, 2 for 1987 and 3 for 1992. It attempts to capture changes in ideology and rent-seeking structure over the underlying Farm Bills of 1980, 1985 and 1990, where many of the subsidies were decided upon.

Elasticities of Supply and Demand (e,h): The estimates of supply and demand elasticities for 8 crops, 3 meats, and 1 milk are taken from Gardner (1987) and are assumed to remain the same for 1987, 1982 and 1992. The supply and demand elasticities for the remaining 10 fruits and 13 vegetables are estimated with data from various issues of *Agricultural Statistics*, *Fruit and Tree Nuts: Situation and Outlook Yearbook* (1992), and *Vegetables and Specialties: Situation and Outlook Yearbook* (1991). For each commodity, a 31 year (1961 to 1990) time series data set was assembled.

The supply elasticity of each vegetable is approximated by the elasticity of its acreage response. Acreage is expressed as a function of lagged price, a lagged price index for all vegetables, current and lagged farm wages, and lagged acreage. All monetary variables are deflated by an index of prices paid by farmers. Coefficients are estimated via ordinary least squares, and long-run elasticities estimates are used. The supply elasticities of fruit crops are estimated via an almond polynomial distributed lag with respect to price, given the perennial nature and long gestation between initial planting and first crop. Model specification follows from Parikh (1979), and long-run supply elasticities are used. The farm-level demand for fruit or vegetables is defined as a function of their own price at the farm level, the farm level price index of all fruits (or vegetables), total disposable income, and a trend variable. All monetary values are deflated by the consumer price index. The equations are specific in log-linear form. Zellner's seemingly unrelated regression technique is applied to demand equations of all fruits as one group and all vegetables as another.

Elasticity of Cost Production (b)*:* Previous related studies mainly provide estimates of returns to research and extension services at the levels of aggregate agricultural, crop, or livestock production. Given the scope of this article, an attempt to partially capture the variations in cost reduction elasticities is made by simply adding two dummy variables to represent three classes of commodities: field crops and animal products, with fruits and vegetables taken as the control group.

Table A1. PAC Contributions and PSEs for Animal Products and Crops.

Commodity	PAC (1000$)			SPAC (1000$)			OPAC (1000 $)		
	1982	1987	1992	1982	1987	1992	1982	1987	1992
Animal Products:									
Beef	146.70	566.92	457.63	42.67	156.08	36.49	112.49	300.23	80.36
Milk	1409.88	1355.67	149.47	30.18	110.40	25.81	131.79	226.76	45.36
Pork	29.24	188.40	166.67	17.69	64.72	15.13	0.00	0.00	0.00
Poultry	48.30	336.21	433.32	13.53	49.49	11.57	0.00	65.24	75.00
Crops:									
Barley	3.78	12.05	0.44	110.08	220.99	174.95	0.00	0.00	0.00
Corn	27.18	142.81	17.99	33.75	158.29	86.69	0.00	0.00	0.00
Oats	0.00	0.70	0.44	54.22	108.34	86.27	0.00	0.00	0.00
Rice	57.97	38.80	29.73	2.82	9.93	5.90	0.00	0.00	0.00
Sorghum	3.78	9.44	0.00	117.74	249.76	208.70	0.00	0.00	0.00
Soybean	24.49	143.82	17.99	66.05	173.43	106.05	0.00	0.00	0.00
Sugar	441.13	1471.75	977.88	0.90	8.91	1.03	136.80	158.60	105.93
Wheat	30.26	62.96	44.14	14.28	61.35	27.87	0.00	0.00	0.00
Total	4329.52	2222.71	2295.70	503.91	1371.69	786.45	381.08	750.83	306.71
Average	360.79	185.23	191.31	41.99	114.31	65.54	31.76	62.57	25.56

Commodity	PSEO			PSEI			Total Transfers (Million $)		
	1982	1987	1992	1982	1987	1992	1982	1987	1992
Animal Products:									
Beef	2.03	2.35	1.62	2.73	4.94	3.30	1919.42	2085.00	1600.00
Milk	44.33	53.32	39.61	1.76	3.97	2.27	10598.57	9918.00	6964.37
Pork	0.00	0.00	0.00	2.52	4.72	3.11	594.60	614.00	400.81
Poultry	0.00	18.64	1.21	2.53	4.72	3.11	342.80	2097.00	586.23
Crops:									
Barley	4.80	61.67	37.61	5.08	8.94	2.88	174.93	971.00	380.57
Corn	0.94	34.13	15.90	8.50	10.12	3.07	3515.23	9825.00	4006.48
Oats	0.00	4.17	3.37	2.69	4.75	3.84	53.56	63.00	27.53
Rice	18.01	41.39	48.73	3.62	4.55	3.74	423.67	856.00	858.30
Sorghum	2.53	31.97	16.47	11.57	8.95	2.83	438.04	950.00	344.94
Soybean	0.99	0.20	0.00	3.38	5.22	3.27	1072.90	785.00	536.84
Sugar	58.40	52.95	47.08	2.34	4.80	3.21	1143.89	1139.00	866.40
Wheat	4.72	53.61	30.32	8.04	7.96	2.95	1912.83	5581.00	2712.55
Total							21990.45	34884.00	19285.02
Average	25.48	10.16	20.86	4.17	6.15	3.02	1832.54	2907.00	1607.09

Table A2. PAC Contributions and PSEs for Fruits and Vegetables, 1987.

Commodity	PAC	SPAC	OPAC	PSEO	PSEI	Total Transfers
	---------------------Thousand $	-------------------		% Value of Production		Million $
Fruits:						
Apples	30.76	27.62	26.03	0.00	3.15	96.06
Blueberries	2.69	1.62	1.53	0.00	4.40	5.43
Cherries	6.54	4.71	4.44	0.00	3.08	7.53
Cranberries	76.49	4.39	4.13	0.00	2.75	5.69
Grapes	99.56	37.37	27.50	1.70	3.98	91.64
Peaches	10.12	9.75	9.19	4.65	3.89	55.91
Pears	6.26	4.87	4.59	4.62	3.88	22.42
Plums	6.49	6.50	6.12	4.11	5.06	23.43
Raspberries	1.26	0.00	0.00	0.34	2.77	1.22
Strawberries	24.72	14.62	13.78	0.86	2.72	23.40
Vegetables:						
Asparagus	1.88	3.25	3.06	19.99	3.45	34.21
Beans	2.37	4.87	4.59	24.62	3.04	52.52
Broccoli	3.47	6.50	6.12	16.21	2.85	51.88
Carrots	3.95	8.12	7.66	5.19	2.91	31.16
Cauliflower	2.60	4.87	4.59	11.19	2.80	28.80
Celery	3.01	6.50	6.12	7.58	2.73	24.75
Cucumber	2.54	4.87	4.59	19.00	2.73	45.59
Lettuce	12.41	24.37	22.97	8.48	2.88	123.54
Mushrooms	2.64	14.62	13.78	18.51	2.72	134.80
Onions	6.35	13.00	12.25	16.90	3.08	111.80
Peas	1.26	3.25	3.06	28.75	3.00	34.45
Potatoes	22.28	45.59	0.00	8.07	3.57	277.11
Sweet Corn	5.34	9.75	9.19	19.79	4.31	105.62
Tomatoes	22.02	38.99	36.75	21.25	3.06	399.30
Total	356.90	299.90	232.05			1788.26
Average	14.87	12.50	9.67	12.22	3.32	74.51

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