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Preface

This article tests the Grossman-Helpman Protection for Sale model using panel data from U.S. food processing industries with endogenous protection, imports, and political organization of industries. The results support the key predictions of the model: organized industries are granted higher protection that decreases with import penetration and the price elasticity of imports, but in unorganized industries protection increases with import penetration. In spite of substantial differences in data sets and empirical procedures, the estimated weight on aggregate welfare is strikingly similar those found by Goldberg and Maggi (1999) and Gawande and Bandopadhyay (2000), implying that protection is not for sale in these industries. Furthermore, the presence of import quotas raises the level of protection substantially.

Key Words: Trade protection, tariffs, lobbying, political economy, food manufacturing.

1. Introduction

The last two decades have witnessed an increasing interest in the political-economic determinants of trade protection. In part, this interest is derived from the need to explain observed patterns of trade protection in order to support ongoing efforts to liberalize trade and to better understand the factors that derail policies from a social planner's path. Obviously, these patterns cannot be explained by economic efficiency alone but rather by redistribution motives, i.e., political economy. Earlier efforts to explain the political economy of trade protection relied on ad hoc, reduced form equations (e.g., Caves, 1976; Ray, 1981) which not only yielded ambiguous empirical results but also left interpretation hostage to empirical findings. Several structural and more formal conceptual models have been offered under the so-called "New Political Economy" framework, from the work of Findlay and Wellisz (1982) of tariff-formation functions to Mayer's (1984) model of direct democracy to Grossman and Helpman's "Protection for Sale" model (see Rodrik, 1995 for a review).

The most influential of the last wave of conceptual models of the political economy of trade policy is the "Protection for Sale" model developed by Grossman and Helpman (1994, henceforth G-H). Its main contribution is to provide micro-foundations to the behavior of policymakers and organized lobbies and crisp predictions of the determinants of the structure of trade protection. So far, however, only two studies have explicitly tested its predictions (Goldberg and Maggi, 1999, henceforth G-M; Gawande and Bandyopadhyay, 2000, henceforth G-B) using cross-section data of the manufacturing sector, but no previous studies have focused on the U.S. food manufacturing sector.[1] In addition, both G-M and G-B attempt to deal with two weaknesses of their data. One is the use of coverage ratios to measure trade barrier protection. Another is the use of external estimates of the price elasticities of imports, taken from Shiells, Stern and Deardoff (1986).[2]

This article tests the "Protection for Sale" model using panel (instead of cross-section) data from the U.S. food processing industries at the 4-digit SIC level, involving actual tariff rates or tariff equivalents instead of NTB coverage ratios, with endogeneous import elasticities. In addition, it presents further results separating out the impact of tariff vs. import quotas to assess the impact of instrument choice on the level of protection. The empirical results provide further support for the G-H model and are consistent with the estimated welfare weights found by G-M and G-B for the whole manufacturing sector, tempering the conclusion that protection is not for sale in the food industries. The findings also provide support to the assertion that the use of import quotas raises the level of protection.

2. The Protection for Sale Model

In the G-H model (summarized here only for exposition purposes), politicians value both the total level of political contributions and the aggregate well-being of the population. The latter can be expressed either net (excluding) or gross (including) of contributions. As in G-M, the government's objective function (U^G) is assumed to be a linear, weighted average of general welfare *(W)* (net of contributions) and contributions by lobbies ($C_i = 1,\ldots,n$ sectors):

$$U^G = q\,W + (1-q)\sum_{i\in L}^{n} C_i\,, \tag{1}$$

where $q \in [0,1]$ is the weight given to general welfare vs. campaign contributions, L represents the set of politically organized sectors, and W includes tariffs and represents the sum of indirect utilities over all sectors,

[1] Lopez and Pagoulatos (1996) use an ad hoc model of trade protection in the U.S. food manufacturing at the 4-digit SIC level for 1987. The U.S. food industries provide a good case study to analyze trade protection. First, they provide a wide range of trade protection, from industries receiving little or no protection (e.g., roasted coffee (2095) and macaroni and spaghetti (2098)) to those with nominal protection coefficients often exceeding 50% (cane sugar (SIC 2061), dairy products (2021-2026), and frozen specialties (2037)). Second, import penetration (the ratio of imports over domestic production) ranges from less than 2% for milk (SIC 2026) to over 40% for wine and spirits (2084). Third, these industries show a wide range of political participation and organization as reflected by their campaign contributions. Fourth, the food processing industries are the largest manufacturing sector in the U.S. economy, accounting for 14% of total U.S. manufacturing output, involving 26,000 establishments and 1.5 million workers (Connor and Schiek, 1997). Finally, panel data (import prices and import values) were readily available to conduct an independent application of the Protection for Sale at the 4-digit SIC level.

[2] While G-M use cross-section data for the manufacturing sector at the 3-digit SIC level, G-B use 4-digit SIC data both for 1983. G-M present several specifications to correct for heteroscedasticity for their NTB coverage ratios. G-B focus instead on error-corrections for the import price elasticities. A potential inconsistency is that the import price elasticity of Shiells, Stern and Deardorff used by GM and G-B uses a formulation based on imperfect competition (Armington, 1969) in comparison to the G-H model, which assumes product homogeneity.

organized and unorganized. Using the concept of "truthful" contributions under the framework of Berheim and Whinston (1986), let W_i, the welfare of the organized sector i, replace C_i in equation (1) to obtain the first-order conditions with respect to tariff rates (t_i):

$$t_i = \frac{t_i}{1+t_i} = \frac{I_i - a_L}{a + a_L}\left[\frac{Z_i}{e_i}\right], \qquad (2)$$

where t_i is the tariff rate as a percentage of the domestic price (rather than the import price), t_i is an ad valorem tariff rate in industry i, I is a dummy variable equal to 1 if the industry is politically organized (0, otherwise), a_L is the proportion of the population represented by a lobby, $a = (q/(1-q))$ is the weight the government attaches to general welfare (gross of contributions) relative to the weight attached to total contributions, Z_i is the ratio of domestic output to imports, and e_i is the absolute value of the price elasticity of imports.

From (2), the G-H model yields two crisp predictions to be tested: (1) industries that are not politically organized face negative rates of protection, while industries that are organized are granted protection; (2) for the protected industries, the level of protection is negatively related to the price elasticity of imports and to import penetration. The result that protection levels are inversely related to import penetration is, of course, contrary to the traditional view of trade protection (e.g., Anderson, 1980; Lee and Swagel, 1997).[3]

3. Empirical Model

Equation (2) provides the basis for empirical specification. Adding an error term U_{1it} to make the equation stochastic and adding a time dimension to denote T time periods $(t = 1,\ldots,T)$, the empirical analogy of equation (2) is

$$t_{it} = d(Z_{it}/e_{it}) + gI_{it}(Z_{it}/e_{it}) + U_{1it}, \qquad (3)$$

where $d = -a_L/(a + a_L)$ and $g = 1/(a + a_L)$. Note that there are only three explanatory variables: Z_{it} e_{it} and I_i. Note also that according to the G-H model, it is expected that δ<0, g >0 and δ + γ >0. The welfare weights and the percentage of the population that is politically organized (a_L) can be recovered from d and g. That is,

$$q = (1+d)/(1+d+g), a = (1+d)/g,$$

and

$$a_L = -d/g.$$

Recent work has underscored the necessity of endogenizing import penetration (the inverse of Z_{it}) in the determination of trade barriers (Trefler, 1993; Lee and Swagel, 1997). To gain information, however, the import and output equations were estimated separately.[4]

The import demand function is specified in log-linear form. This choice is based on two factors: (1) the necessity of obtaining direct estimates of the price elasticity of import demand and (2) deeming the log-linear functional form of the import equation the most appropriate for estimates using the Box-Cox analysis of transformations (Boylan, Cuddy, and Muircheartaigh, 1982). Given the assumption of product homogeneity, and following Kohli (1982) and Goldstein and Khan (1985), the import demand function used in this paper is as follows:

$$\ln M_{it} = b_0 + \ln P_{it}^M\left[\sum_{i=1}^{n} e_i D_i\right] + \sum_{j=1}^{J} b_j V_{jit} + U_{2it}, (4)$$

where ln is the natural log operator, M_{it} is the volume of imports facing industry i in year t $(i = 1,\ldots,n; t = 1,\ldots,T)$; P_{it}^M is the tariff-adjusted price of imports; D_i is a discrete variable equal to 1 for the i[th] industry, 0 otherwise; V_{jit} is a vector of import demand shifters, the

[3] Likewise, Trefler (1993) finds that the growth of import penetration leads to higher levels of protection. G-H argue that this and other similar results are due to ignoring the price elasticity of imports and point out the lack of theoretical underpinning guiding those results.

[4] Since part of the contribution of this article is to simultaneously estimate price elasticities of demand rather than using external estimates, one could in principle apply an Armington model to endogenize import penetration (the inverse of *Z)* as a function of import and domestic price ratios, as done by Shiells, Stern and Deardoff (whose elasticities are used by G-M and G-B). Although interesting, that formulation is based on product differentiation which, as noted above, is inconsistent with the G-H model.

e_i's and b_i's are parameters to be estimated, and U_{2it} is an error term.

To instrumentalize output (the other component of Z), a linear production function model is specified as follows:

$$Q_{it} = f_o + \sum_{j=1}^{F} f_j X_{jit} + U_{3it}, \qquad (5)$$

where Q_{it} is the level of output by domestic industry i in year t, X_{jit} is a vector of inputs; f_0 and f_j's are parameters to be estimated; and U_{3it} is the error term.

Since political organization is a discrete 0-1 variable, the probability of obtaining the dependent value of 1 is assumed to follow a logistic function of explanatory variables (W) that determine political organization, given by

$$prob(I_{it} = 1) = e^{Wy} / (1 + e^{Wy}),$$

($WY = y_o + \sum_{j=1}^{K} y_j W_{jit} + U_{4it}$ where W_{jit} is a vector of factors determining political organization, y_0 and y_t are parameters to be estimated, and U_{4it} is an error term).

4. Data and Estimation

Annual time series data (1978-92) from 34 food processing industries at the 4-digit 1972 SIC level were used to operationalize the empirical model.[5] The NBER database on manufacturing productivity by Barstelman and Gray (1996) provided the values of domestic outputs and inputs as well as corresponding price indexes. Output and input quantity indexes were obtained by dividing the value of shipments and input expenditures by their respective price indexes.

The values of imports at the 4-digit SIC levels were taken from Feenstra (1996). Average tariff rates were computed by dividing total duties collected by CIF import values from a tape supplied by the US International Trade Commission (1978-90) and its website (dataweb.usitc.gov) for 1991-92. Tariff-rate equivalents were used for four industries protected by import quotas: sugar (SIC 2061), meat packing (SIC 2011), cheese (SIC 2021), and milk (SIC 2026). The tariff-rate equivalents were taken from two reports of the U.S. International Trade Commission (1990a, 1990b) and a U.S. Department of Agriculture (1994) report.[6]

Data on import prices at the 4-digit SIC level are not readily available. However, the FAO website and Foreign Agricultural Trade (USDA, various years) databases provided data on quantity and price for most processed agricultural products. Import price indexes were constructed by aggregating products by SIC definitions and by weighting available quantity and price values.[7]

Following G-M, political action committee (PAC) campaign contributions to congressional candidates were used to construct the political organization variable I by assigning PAC contributions to 4-digit SIC codes. The PAC data came from four reports of the Federal Election Commission (1978-92) encompassing the biannual congressional election cycles. Then contributions for industry/year contributions were deflated by the producer price index (1992 = 1.0) and sorted in ascending order. The resulting distribution of contributions by industry per year is shown in Figure 1.

Following G-M, the discrete variable for political organization (I_{it}) was defined based on PAC contributions. To endogenize this variable, an additional equation was specified, based on the work of Mitra (1999), Grier et al. (1991) and others who emphasize industrial concentration, capital stock, and industrial characteristics as determinants of PAC contributions.

The vector W_{jit} includes the Herfindahl index to denote industrial concentration, deflated sales to denote the size of the industry, and capital intensity (the ratio of fixed capital assets to sales).

Once all the data were operational, the parameters of equations (3)-(5) were estimated by the generalized method of moments (GMM). Estimation proceeded in three steps. First, increments of thresholds of PAC contributions (from zero to \$200,000 in \$5,000 increments) were used to define I_{it}. Second, a logit

[5] Due to data availability limitation constraints, the 1972 (instead of the 1987) SIC definitions were used. Data translation tables were used for the cases where only the 1987 SIC or USITC data were available. A handful of industries were excluded due to missing data on import prices. Also note that although it would have been desirable to extend the analysis to more recent years, missing data on import values and especially for import prices made it impossible to include years after 1992.

[6] We are grateful to Frederick Nelson of USDA's Economic Research Service for providing updated data on tariff-rate equivalents of import quotas.

[7] We are grateful to professors Elena Lopez and Emilio Pagoulatos for furnishing their import price indexes for the 1972-87 period. These price indexes were extrapolated adopting their methodology (Lopez and Pagoulatos, 2002).

model was estimated and those observations with predicted values greater than 0.5 were taken to correspond to organized sectors ($I_{it} = 1$; 0 otherwise). Third, equations (3)–(5) were estimated simultaneously using GMM and the SHAZAM 8.0 software. This process was repeated until the best set of parameter estimates were obtained at a threshold PAC of $75,000 to define I_{it} in step 1.[8]

Note that import penetration is endogenous and e_i is an explanatory variable in the tariff equation as well as the import demand equation.

To further assess the basic model, additional versions of the Protection for Sale model were estimated. The first includes an intercept term in the tariff equation. The second includes a dummy variable for industries protected by import quotas to assess the impact of policy instrument of choice on the level of protection. The empirical results are presented in the following section.

5. Empirical Results

Table 1 presents the estimates for the Protection for Sale model while the appendix table presents the results for the imports, output, and the political organization equations.

Note that the estimated import price elasticities vary across industries $(\hat{e}_i = \hat{b}_i D_i)$. Only two out of 34 industry coefficients did not have the expected sign, and they are all significantly different from zero at the 5% level.[9] Thus, the results appear plausible in terms of the signs and magnitudes of the price elasticities of import demand.

Table 1 shows the parameter estimates for d and g in the food manufacturing industries. Since the estimated δ is negative while the estimated γ and the sum of the two are positive, the results confirm expectations. Among the organized industries, it is of interest to assess the weight the government attaches to aggregate welfare (θ) compared to campaign contributions (1-θ). Two tests of the welfare weight were conducted. The first test hypothesized that the government does not care about welfare $(q = 0)$. The null hypothesis that θ = 0 was rejected at the 95% level. The second test, which hypothesized that the government is a pure welfare maximizer (θ = 1), could not be rejected at the same level.

All critical coefficients are statistically significant at the 95% level. The results also coincide with the predictions of the G-H model (i.e., δ<0, γ>0 and δ+ γ >0), meaning that organized sectors tend to receive protection and unorganized sectors tend to be taxed with decreases in import penetration or the price elasticity of import demand. G-M found weak support for the latter results with respect to unorganized sectors. Clearly, protection positively varies with (Z_i / e_i) in the organized sectors. These results provide further support for the fundamental predictions of the G-H model.

From the above parameter estimates, the implied weight (θ) that the government attaches to aggregate welfare is 0.99997, quite close to that found by G-M for the U.S. manufacturing sector (0.986) and the one that can be imputed from G-B's results (0.9997).[10] It is remarkable that all three of these studies yield quite similar weights on net aggregate welfare vs. campaign contributions, suggesting that protection is not for sale.

The null hypothesis that the government does not care about aggregate welfare $(q = 0)$ was rejected at the 5% level. An alternative test (H_0: θ = 1), suggesting that the government is uninfluenced by campaign contributions, was also rejected at the 5% level. Judging from the magnitude of the welfare weights, the government mostly cares about general welfare in setting commercial policy. Judging from the hypotheses tests, the government is sensitive to both aggregate welfare and campaign contributions.

The relative weight placed on aggregate welfare is rather large (a = 35,749) but lower than that found by G-B for the whole manufacturing sector (3,175). As observed by G-B, high values of a imply that the relative weight placed on gross aggregate welfare versus the weight placed on campaign contributions is close.

[8] In comparison, G-M used any positive values of predicted I_i to define industries with organized sectors, using a standard (non-discrete choice) equation model.

[9] The exceptions are poultry & egg processing (SIC 2017) and creamery butter (SIC 2024).

[10] From the G-H model, the government's objective function is $G = C + aW$, which is equivalent to $\tilde{G} = a_1 C + a_2(W - C) = (a_1 - a_2)C + a_2 W$ with $a = a_2/(a_1 - a_2)$ provided that $a_1 > a_2$. This is the interpretation followed by G-B. Since a is unbounded but homogeneous of degree zero with respect to the scale of a_1 and a_2, a sensible assumption is to follow G-M and normalize a_1=1 and let a_2=q provided that $1 > q$ (a restatement of $a_1 > a_2$). Thus, $q = a/(1+a)$ is used to calculate the weight to be compared to G-M.

However, a high value of a is a necessary but not a sufficient condition for such a conclusion.[11]

A second version of the model that included an intercept term was estimated. The results remained consistent, although the significance of the d and g coefficients was somewhat lower. Nonetheless, the estimated intercept term was positive and highly significant, indicating that even if the food industries are not organized, they could be granted positive levels of trade protection. This is consistent with the data in that protection levels were either zero or positive.[12]

A third version of the model included a dummy variable indicating the presence of a non-tariff barrier (i.e., an import quota). As Lopez and Pagoulatos (1996) found, the use of import quotas might result in higher levels of protection, as their use may be more politically expedient than the more transparent tariff rates.[13]

When the basic G-H model is augmented with the import quota dummy variable introduced as a shifter of the weight on organized sectors (g), the parameter estimates of δ and γ display the same coefficient signs, though somewhat lower in magnitude.[14] The welfare weights continue to be significantly different from zero and θ significantly different from 1 at the 95% level. The welfare weight on aggregate welfare is estimated at q = 0.99995, restating that protection is not for sale. Thus, the results continue to support the G-H model predictions. The quota-dummy coefficient is statistically significant, indicating policymakers' bias towards raising the level of protection when an import quota is in place. More specifically, given that other conditions remain the same, the government will increase the welfare weight on organized sectors when using an import quota in lieu of a tariff.

Another result of interest is the estimated proportion of the population that is politically organized (a_L). The results in Table 1 stated that the majority of the population is politically organized approximately between 77 and 90%). G-M found that 88% was politically organized. The derived a_L parameters from G-B results (-0.000309/0.0003151) indicate that 98% of the population appear to be politically organized. Thus, the results in Table 1 are 0, in the same range as G-M's and G-B's results in terms of a_L. This finding is consistent with the high weight placed on aggregate welfare in that if everyone is politically organized, protection levels converge to zero (i.e., free trade).

6. Summary and Conclusions

This article tests the predictions of the Protection for Sale model for the structure of protection in the U.S. food processing industries using more direct measures of tariff rates and more disaggregated data than previous work, namely the studies by Goldberg and Maggi (1999)

[11] Following the notation in footnote 10, if $a_1 = a_2 + e(e \to 0)$, then $a_1 - a_2$ is quite small relative to a_2, leading to a large relative weight a, as G-B found. This is equivalent to saying that $1-q$ is small. The upper limit of a is not bounded, and large values of a could be taken (as G-B did) as evidence of nearly equal importance of campaign contributions vs. aggregate welfare gross of (including) campaign contributions. However, campaign contributions appear in both terms whose weight we are trying to assess. Using the term a makes it confusing to test pure aggregate welfare maximization on the part of the government (a rejection of any kind of protection for sale). Thus, q is taken as the preferred reference weight to test the protection for sale hypothesis.

[12] In spite of a number of observations with zero values for t_{it}, a tobit model was not used. As stated by Maddala (1988), the tobit model is reserved for truncated variables of when the dependent variable is censored (the researcher is not allowed to observe them). However, zero observations in this case correspond to actual government decisions and are, therefore, non-censored observations.

[13] As in G-M and G-B, this article does not address the problem of policy instrument choice (tariff vs. quota). One fact that hampered endogenous estimation of the quota dummy was the sparcity of data, as import quotas were used in only four industries (sugar experienced a brief period of trade liberalization between 1974 and 1981). Results using only tariffs (excluding tariff equivalents of import quotas) led to poorer but still significant results that support the high weight placed on general welfare vs. campaign contributions. According to the Chicago School, policy instrument choices are driven by efficiency considerations, as in the use of quantitative restrictions for commodities that have a relatively low elasticity of demand (vs. supply elasticity), as argued by Gardner (1987). In the sample, this is certainly the case in sugar and dairy products both of which are protected primarily through import quotas and face quite low price elasticities of demand.

[14] Note that the NTB dummy was introduced as a weight-shifter rather than an intercept shifter. The results presented in Table 1 produced better statistical results than those obtained with the NTB dummy as an intercept shifter. In addition, the Protection for Sale model in its pure form does not accommodate the latter. In addition, the inclusion of cross section and time fixed effects in the Protection for Sale equation led to poorer statistical results, perhaps due to increased multicollinearity (especially with those specifying the import elasticities) and the fact that they did not add sufficiently significant information to the variables already included in the model.

and Gawande and Bandyopadhyay (2000). In addition, the price elasticity of imports is determined within the same model using panel data.

The empirical results strongly support the key predictions of the Grossman and Helpman (1994) model with regard to the structure of trade protection. Organized sectors are granted protection while unorganized sectors suffer negative or lower levels of protection (the latter found only weakly in Goldberg and Maggi's study). Unequivocally, protection is negatively related to import penetration and the price elasticity of import demand within the organized sectors.

In spite of stark differences in data set and empirical procedures, the key results are strikingly similar to those of G-M and G-B for the whole manufacturing industry in 1983 indicating that protection is not for sale. The parameter estimate for θ is close to its upper limit (around 0.99997) and is consistent with tha found by Goldberg and Maggi (0.986) and that imputed from Gawande and Bandyopadyay (0.9997), indicating that the government places a much heavier weight on aggregate welfare net of contributions vis-à-vis campaign contributions. The parameter estimate for a is large (between 20,175 and 35,749) and is higher than the one found by Gawande and Bandyopadhyay but still indicating quite a large weight placed on general welfare relative to campaign contributions.

The results from all three studies still beg the question raised by G-B as to why empirically the G-H model yields such high weights on aggregate welfare, suggesting that protection is not for sale. A particular assumption that is at odds with empirical observation is that of "truthful contributions," which implies that industries render all welfare gains from trade as campaign contributions. For example, trade policy benefits to U.S. food industries have been estimated at approximately $32.9 billion in 1987 (Lopez and Pagoulatos, 1994) while these industries contributed only $8.2 million to congressional candidates in the 1987-88 election cycle. Industry welfare gains were, therefore, about 4,000 times larger than campaign contributions. Lopez (2001) found that on average policy transfers to agricultural subsectors were more than 2,000 times larger than the size of their PAC contributions in 1987.

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Table 1. Results from Alternative Specifications of the Protection for Sale U.S. Food Manufacturing Industries, 1972-92.

Variable	Parameter	Basic Model	Model w/Intercept	Model w/NTB
<u>*Structure of Protection:*</u>				
Z_{it} / e_{it}	d	-0.000022 (0.000003)	-0.000039 (0.000005)	-0.00002 (0.000005)
$Z_{it} / e_{it} * I_{it}$	g	0.000028 (0.00003)	0.000043 (0.00005)	0.00002 (0.000006)
Constant	c		0.095 (0.001)	0.103 (0.001)
$Z_{it} / e_{it} * I_{it} * NTB$	r			0.000031 (0.000006)
<u>*Implied Parameters*</u>				
Weight Net of Contributions	q	0.99997 (0.00003)	0.99996 (0.000005)	0.99995 (0.000008)
Relative Weight on General Welfare	a	35,749 (4,050)	23,138 (2,562)	20,715 (3,397)
Proportion of Population that is Politically Organized	a_L	0.772 (0.032)	0.891 (0.021)	0.897 (0.018)

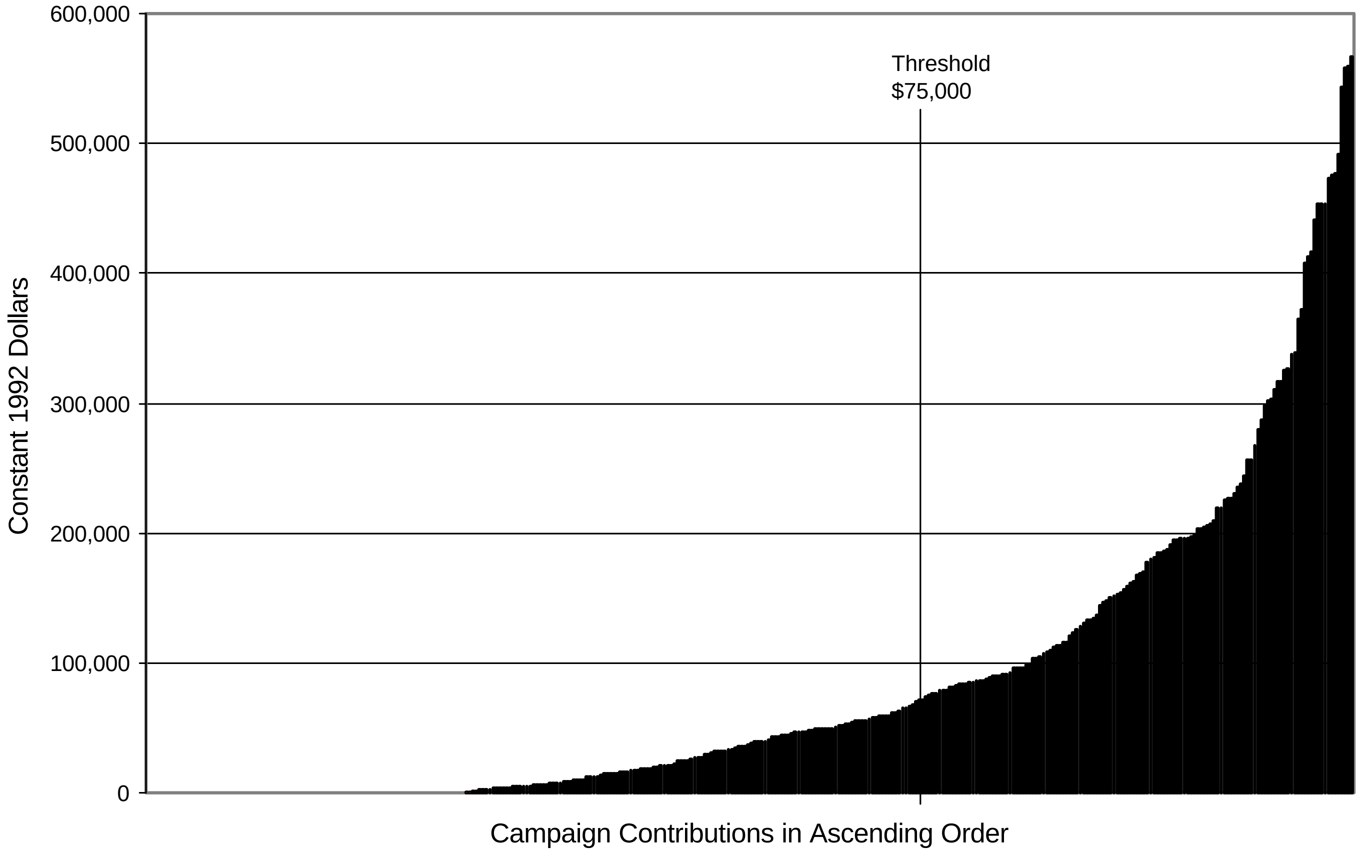
Note: Number of observations = 510 (N=34, T=15). Industries are defined at the 1972 4-digit SIC levels. Protection for sale was estimated jointly with the import demand and output equations for a threshold of $75,000 in PAC contributions to define politically organized sectors. The estimates for the implied parameters for the model with the NTB dummy are computed setting the dummy value at its mean of 0.1745

Table A. Results for the Demand, Output and Political Organization Equations (Basic Model)

Variable	Parameter	Coefficient	Standard Error
Import Demand:			
D1: Meat Packing Plants	e_1	-1.4028	0.032659
D2: Sausage & Prepared Meats	e_2	-1.1164	0.025983
D3: Poultry Dressing Plants	e_3	-0.10402	0.023790
D4: Poultry & Egg Processing	e_4	0.51327	0.064214
D5: Creamery Butter	e_5	0.44343	0.040604
D6: Cheese, Natural and Processed	e_6	-1.1513	0.033418
D7: Condensed & Evaporated Milk	e_7	-0.98016	0.032264
D8: Fluid Milk	e_8	-0.23498	0.022936
D9: Canned Specialties	e_9	-0.13978	0.020366
D10: Canned Fruits & Vegetables	e_{10}	-1.1983	0.019992
D11: Dried/Deh. Fruit & Veg.	e_{11}	-0.68428	0.021458
D12: Pickled Sauces & Salad Dress.	e_{12}	-0.69899	0.019507
D13: Frozen Specialties	e_{13}	-1.0478	0.019218
D14: Flour & Grain Mill Products	e_{14}	-0.62035	0.016817
D15: Cereal Preparations	e_{15}	-0.26038	0.023727
D16: Rice Milling	e_{16}	-0.42157	0.044526
D17: Wet Corn Milling	e_{17}	-0.66563	0.025643
D18: Prepared Feeds	e_{18}	-0.65136	0.021750
D19: Bread & Bakery Products	e_{19}	-0.72168	0.017709
D20: Raw Cane Sugar	e_{20}	-0.99218	0.016430
D21: Cane Sugar Refining	e_{21}	-1.1192	0.033263
D22: Candy & Confectionary Prod.	e_{22}	-1.0946	0.024009
D23: Chocolate & Cocoa Products	e_{23}	-0.79951	0.027255
D24: Chewing Gum	e_{24}	-0.22535	0.024030
D25: Cottonseed Oil Mills	e_{25}	-0.38591	0.020182
D26: Vegetable Oil Mills	e_{26}	-0.37642	0.020586
D27: Malt Liquors	e_{27}	-1.0841	0.017197
D28: Wine & Brandy Spirits	e_{28}	-1.2580	0.023550
D29: Distilled Liquor, Exc. Brandy	e_{29}	-1.2357	0.024794
D30: Bottled & Canned Soft Drinks	e_{30}	-0.61242	0.030734
D31: Flavor Extracts Syrup	e_{31}	-0.49091	0.034455
D32: Canned & Cured Seafood	e_{32}	-1.0846	0.019141
D33: Roasted Coffee Processors	e_{33}	-0.74699	0.037887
D44: Macaroni & Spaghetti	e_{34}	-0.62881	0.017773
Income	$\hat{a}_1$	1.558	0.706
Trend	$\hat{a}_2$	-0.008	0.023
Constant	$\hat{a}_0$	-11.338	5.619
Output:			
Materials	f_1	0.974	0.005
Labor	f_2	45.617	3.729
Capital	f_3	0.691	0.017
Constant	f_0	15.476	71.818
Political Organization:			
Herfindahl Index	$\emptyset_1$	-0.0017	0.0002
Value of Shipments	$\emptyset_2$	0.0003	0.00005
Capital/Labor Ratio	$\emptyset_3$	-0.0009	0.0019
Export Intensity	$\emptyset_4$	-4820.4000	1301.8000
Constant	$\emptyset_0$	1.391	0.309

Note: Number of observations = 510.
The import and output equations were estimated simultaneously with the tariff equation reported in Table 1 while the political organization equation was estimated via a logit model.

Figure 1. Campaign Contributions for Industry/Year Combinations



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