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3 The Determinants of Corporate Political Involvement in Trade Protection: The Case of the Steel Industry

Stefanie Ann Lenway and Douglas A. Schuler

3.1 Introduction

In this paper we analyze the relationship between the magnitude of resources that a firm invests in trade protection and the changes in a firm's market value that result from the imposition of trade restraints. The study focuses specifically on trade protection in the U.S. steel industry between 1977 and 1984. The analysis is grounded in collective action theory, which assumes that firms will only invest in the political process if the expected benefits of their influence over the public policy process are greater than the costs of political activity (Olson 1971). Firms in an industry seek trade protection because the higher domestic prices resulting from the restriction of imports bring income gains in the short run when capital is relatively immobile among industries (Baldwin 1985, 11). Our concern is with the relationship between firm political activity and the change in market value of the firm within a single industry, not with the ability of the steel industry to overcome the free-rider problem.

Several previous studies of the steel industry have estimated the impact of trade restraints on the industry as a whole. Crandall (1981, 46) develops an econometric model of the impact of the trigger price mechanism (TPM) on U.S. import prices, U.S. domestic prices, and the import share of steel in the U.S. market. In this analysis he is specifically concerned with the responsiveness of U.S. steel prices to world market conditions and to pressures from imports. He found that the TPM raised imported steel prices by about 5 percent a year or 10 percent by 1979 and that aggregate domestic steel prices averaged 2.7 percent more than they would have without the TPM. Assuming

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that imports constitute 15 percent of the U.S. market, he found that the price increase of U.S.-produced steel that could be attributed to the TPM was about 1.1 percent (p. 111). He further found that the decline in the value of the dollar and inflation did more to explain the reduction in the market share of imports than the TPM. Crandall concludes that the TPM affected import prices much more than domestic prices.

Hufbauer, Berliner, and Elliott (1986) also estimate the effect of import restraint programs on the domestic price of steel. For the period 1979–81, they estimate that the TPM resulted in a 6.4 percent increase in the cost of domestic steel and about a 15.9 percent increase in foreign steel prices. They further estimate that by 1981, the gains from the restraints to US producers amounted to $2.77 billion.

Tarr and Morkre (1984) and Hickock (1985), using Crandall's (1981) estimates of price elasticities, have estimated the cost of an 18.5 percent import quota on total U.S. steel imports. Tarr and Morkre calculated the discounted present value of the losses to the U.S. economy over a four-year period to be $2.83 billion. The discounted present value of the gains to U.S. producers were estimated to be $1.52 billion while the quota rents to foreigners discounted over the four-year period were about $2.02 billion. Hickock concludes that the cost to consumers of reducing imports to 18.5 percent of the U.S. market would be about $2 billion annually. This is based on her findings that the restrictions will result in a 5 percent price increase on imported steel and a 4 percent price increase on domestically produced steel.

Tarr (1989) states that the proliferation of voluntary restraint agreements (VRAs) on steel imports costs the U.S. $600 million a year in 1984 dollars. This analysis does attempt to estimate the amount that goes to U.S. steel producers. Instead he argues that the U.S. could achieve the same level of import protection at 15 percent of the cost if exporters were not allowed to keep the quota rents.

A 1984 study by the Congressional Budget Office (CBO) analyzes the potential economic effects of a 15 percent quota on steel imports, predicting that from 1985 to 1989, $12.5 billion (1982 dollars) would be transferred to domestic producers. This amount reflects the increase in revenues to firms able to sell their pre-quota amounts of steel at the higher post-quota prices. By 1989, according to the study, domestic producers would be able to charge $51 a ton above the no-quota price (1984, 43).

All the above studies suggest that the potential financial gains to the steel industry as a whole are great enough to motivate individual firms to persuade the government to restrict imports. In contrast, we measure the benefits of trade protection to individual firms, using event study methodology from finance and accounting. The central question we address is whether firms that invest the most resources in attempting to influence trade policy are the biggest beneficiaries from the imposition of trade restraints. More specifically, the objective of the empirical analysis is to determine whether firms that de-

vote the most resources to the political pursuit of trade protection receive the greatest returns, as evaluated by their shareholders, from the reduction of imports.

To provide some context for the empirical analysis, we briefly review the restrictive trade programs for steel put in place between 1977 and 1984. We next discuss the theory of collective action that is used to structure our empirical analysis. This is followed by a description of (1) the empirical model we test; (2) the specific measures used in the analysis; and (3) the regression results. We conclude by discussing the implication of our results for collective action theory and more generally for trade policy.

3.2 The Political Activity of Steel Firms

3.2.1 1977: Trigger Price Mechanism

A sharp downturn in world steel demand in 1975 seriously affected the steel industry worldwide. The ensuing scramble for market shares sent prices downward and eroded profit margins, which especially hurt the relatively inefficient producers in the United States and the European Community. The November 1975 voluntary export restraint (VER) between the EC and Japan provided incentives to both Japanese and European steelmakers to seek expanded export markets, predominantly the U.S. (Jones 1986, 113). Import share of the U.S. market rose from 13.4 percent in 1974 to 17.8 percent by the beginning of 1977 (Hufbauer et al. 1986, 156, 165). (Table 3.1 documents the increase in foreign import penetration in the U.S. steel market.)

U.S. steel producers responded defensively to increased import penetration. Gilmore Steel petitioned against Japanese producers for selling steel plate in West Coast markets below the cost of production. Steel industry lobbyists also descended on Washington, prompting their allies in Capitol Hill's Steel Caucus to propose several pieces of protectionist legislation. Congres-

Table 3.1 **Imported Steel Shares in the U.S. Market**

	Share of U.S. Market Held by				
Period	EC	Japan	Canada	Others	Total
1969–73	6.5	5.9	1.0	1.4	14.8
1974–78	5.2	6.5	1.4	2.4	15.5
1980	4.1	6.3	2.5	3.4	16.3
1982	7.3	6.8	2.4	5.3	21.8
1984	6.3	6.6	3.2	10.1	26.2

Source: U.S. International Trade Commission, "Carbon and Certain Alloy Products," U.S. International Trade Commission Publication 1553, vol. 1 (Washington, D.C.: GPO, July 1984), a-139; Standard & Poor's Industry Surveys, "Steel and Heavy Machinery," Basic Analysis, 7 July 1988, sec. 2, 27.

sional steel sympathizer Rep. Charles Vanik (D.–Ohio), criticized the slow administrative process of antidumping investigations: "By the time you do something with this (dumping) process," he lamented, "industry won't be around in your community anymore" (*Purchasing* 1977b, 9). The industry used the media to tell the American public that imported steel was the cause of massive layoffs and the domestic industry's competitive demise.

Japanese and European steel-producing interests, sensing the protectionist sentiment in the United States, offered to continue voluntary restraint agreements, which were originally implemented in 1969. To avoid violating GATT rules, the Carter administration adopted the trigger price mechanism (TPM), a solution based on referent prices, in December 1977 (effective 1 January 1978). The TPM established a floor price of steel based on Japanese production costs (deemed to be the lowest in the world) plus a margin for transport and profit markups. Any sales of imports below the this price would trigger an immediate antidumping investigation by the U.S. Treasury Department. In exchange for this program aimed at reducing imports from 20 percent to 12–14 percent of the U.S. market (*Purchasing* 1978, 21), U.S. steel firms agreed to abandon their unfair trading petitions against foreign producers.

3.2.2 1980: Trigger Price Mechanism Reinstated

In 1979 steel producers were optimistic about the strength of U.S. steel sales. On 1 January 1979 the trigger price was raised 7 percent, which was expected to cut imports by 20 percent to sixteen million tons annually (*Business Week* 1979a, 64). Steel producers argued that import restrictions contributed to the government's anti-inflation efforts because their costs per ton were lowest when they ran at 90 percent capacity.

Although the implementation of the TPM in January 1978 was initially followed by a reduction in imports (especially from Japan), imports gained shares in mid-1979 and 1980. Several factors contributed to the ineffectiveness of the TPM, including inadequate enforcement; evasion of violations of trigger prices by exporters through various discount and customs adjustments; a policy of import controls among members of the EC which gave European producers a strong incentive to search for export markets; and a strong U.S. dollar. The TPM-initiated antidumping suits filed by the Treasury Department concentrated on small suppliers to the United States (Taiwan, Poland, Spain) while ignoring significantly more disruptive sources of imports from the EC and Japan (Jones 1986, 136). Domestic producers were increasingly vocal in advocating tighter restrictions on imports, evidenced by U.S. Steel's filing of antidumping complaints against seven EC producers in early 1980. In response to this filing, the Carter administration rescinded the TPM.

A summer of poor operating results and layoffs and heated election-year politics forced President Carter to develop a new plan for steel imports. His administration reinstated the TPM in October of 1980, with 12 percent higher

trigger prices and updated monitoring and auditing procedures. In return U.S. Steel withdrew its dumping and subsidy complaints against the European steelmakers.

3.2.3 1982: Voluntary Restraint Agreements with the European Community

Despite a profitable 1981 for most of the large U.S. steel companies, the firms were dissatisfied with the fortified TPM shortly after its reinstatement. High levels of import penetration and sluggish demand weakened the competitive position of U.S. steelmakers in 1981 and early 1982. Furthermore, EC producers, facing their own domestic pressures, disregarded the trigger prices and increased deliveries into the U.S. market in late 1981. Imports in 1981 were six to eight million tons higher than forecasted at the beginning of the year and caused a sharp decrease in domestic shipments (*Industry Week* 1981a, 110). The unprecedented 25 percent import penetration reached during the summer of 1981 prompted U.S. Steel's CEO David Roderick to comment, "Anyone who would say—after the August totals—that the TPM is working . . . well, you have to question his sanity" (*Industry Week* 1981b, 32).

Under pressure from U.S. steel companies, the Commerce Department initiated unfair trade investigations against five countries (Belgium, France, Romania, Brazil, and South Africa) in November 1981. In early 1982, seven U.S. steel firms filed over a hundred antidumping and subsidy suits against several countries, mostly directed against EC producers (Hufbauer et al. 1986, 170). After the filings, the Commerce Department suspended the TPM and its own subsidy investigations (*Industry Week* 1982a, 22).

The Europeans, although upset at U.S. actions, were under economic and political pressures to reach a negotiated resolution rather than risk the possibility that the United States would impose antidumping and countervailing duties. Talks continued with the United States throughout 1982. Meanwhile, the USITC made a preliminary ruling in February 1982 that found injury in thirty-nine of ninety-two cases. U.S. firms, concerned that a broader range of products was not covered, pressured the Commerce Department to find large dumping margins which could be used to bring the EC to negotiate quotas or market-sharing arrangements (Jones 1986, 141).

In a preliminary determination, the Commerce Department did find high margins and required American importers to post cash bonds equivalent to the estimated subsidy and dumping margins (Jones 1986, 141). When the Europeans threatened retaliation, negotiations became tense. The EC and the United States reached an initial agreement in August 1982, but it was rejected by U.S. steel producers.

On 21 October 1982, the EC and the United States finally reached a settlement which limited EC exports to 5.5 percent of the U.S. market on ten steel products, with a separate arrangement for pipes and tubes. The VRA agree-

ment took effect on 1 November 1982, and was to run until 31 December 1985. In exchange for the agreement, forty-five charges of unfair trade practices by eight U.S. producers against European producers were dropped.

3.2.4 1984: Voluntary Restraint Agreement Expanded

The 1982 VRA with the EC managed to stem the tide of imports in the eleven types of carbon steel products from one source. An International Trade Commission analysis of the economic effects of this agreement, however, found only a 1.63 percent decline in imports of total steel mill products (U.S. International Trade Commission 1985, 22). Steel imports continued to come into the U.S. market in relatively high quantities from other countries.

U.S. producers continued to pursue actions against non-EC exporters of carbon steel products. These actions included suits filed against steel pipe and tube producers from South Korea and Taiwan in April 1983; antidumping petitions filed against Mexico, Brazil, and Argentina in November 1983; and an escape clause petition filed by the Bethlehem Steel Corporation and the United Steelworkers of America (USWA) in January 1984. By May, there were 121 cases at the USITC regarding steel products.

Along with the unfair trade and escape clause petitions, a Fair Trade in Steel Act of 1984 (S. 2380, H.R. 5081), pushed by U.S. Steel Corporation and the American Iron and Steel Institute, was introduced in Congress in April 1984. This bill, which died in committee, would have limited imports of all steel products (including specialty steel) to 15 percent of U.S. consumption for a five-year period (Hufbauer et al. 1986, 171).

The USITC found injury on five major products (out of nine) in the Bethlehem-USWA 201 petition. With strong protectionist sentiment in Congress and uneasy American trading partners, President Reagan announced a new set of VRAs aimed at limiting the U.S. market to 20.5 percent of imports. These VRAs were to be negotiated with steel exporters having over 0.3 percent of the U.S. market (in 1983), including Japan, EC, South Korea, Brazil, Mexico, Spain, South Africa, Australia, Argentina, Finland, and Canada. The five-year plan covered all steel products, continuous use of unfair trade laws (per sec. 301) by the Department of Commerce, possible termination of existing unfair trade cases, and negotiations with trading partners over unfair trading practices (Jones 1986, 148–49). By November 1985, the USTR had negotiated fifteen VRAs covering 80 percent of the U.S. imports (Hufbauer et al. 1986, 173).

3.3 Political Investments: A Theory of Costs and Benefits

Olson (1971) offers a model to explain the participation of individual economic actors in the provision of a public good. The decision to allocate corporate resources to political activity is treated like any other investment decision in which the magnitude of the resources allocated to attempting to obtain

the decision is carefully weighed against the expected benefits to the firm. This rational model of political investment has been used primarily to explain the variation in political activity on the part of firms with an economic interest in the provision of a public good.

In Olson's model, size is the key variable that distinguishes participants from nonparticipants and reflects the intensity of a firm's commitment to politics. A critical assumption underlying this model is that there is a positive relationship between the size of the firm and the amount that the firm benefits from the public good. Relatively large firms, which have the most to gain from the provision of a public good, engage in political activity because their expected benefits exceed their political investment. This activity results in free goods for smaller firms. As a result of receiving a large benefit from the public good for free, Olson (1971) argues smaller firms have little or no incentive to contribute to the provision of a public good.

Yoffie (1987, 45), like Olson, believes that economic self-interest is the key motivation for firms to participate in politics. He questions, however, whether firm size explains the degree of a firm's involvement in the provision of a public good. In an effort to explain collective action in terms of behavioral models of corporate decision making, Yoffie raises two objections to Olson's model.

The first involves resource constraints. In contrast to Olson, Yoffie does not assume that every firm that stands to benefit from a public good will have enough resources to invest in political activity. Only the more profitable firms can afford to engage in politics.

Second, Yoffie argues that a firm's strategic choices affect the level of its political involvement. Specifically, he suggests that Olson's model does not take the impact of diversification into account. A firm that derives significant revenues from several divisions may perceive that it gains less from trade protection than a firm that depends heavily on sales of the threatened products. Thus a highly diversified firm is likely to be less active in politics even though the public good would benefit one of its strategic business units.

Yoffie further suggests that a firm's competitive strategy—low cost or differentiation—may affect the nature and extent of the benefits that it expects to receive from the public good. This in turn may have an impact on the intensity of its political involvement.

3.4 The Model

We model first the level of political investment as a function of variables that explain why managers seek trade protection. We then use the same set of independent variables in a regression analysis in which the dependent variable is the increase (or decrease) in the market value of the firm that results from the announcement of trade protection. To determine whether there is a relationship between the level of a firm's political investment and the change in

the value of the firm that results from the announcement of trade restraints, we compare the signs and the significance levels of the coefficients. We cannot use the change in the market value of the firm to explain the level of firm involvement in politics because the actual returns of the investment are unknown and, as such, do not influence the decision to invest a priori.

This model is based on the assumption that managers expect the discounted present value of an investment to be positive, whether resources are allocated to political activity, such as the preparation of antidumping and countervailing-duty petitions, or to a new production technology. Yet there is a critical difference between these two investment decisions because the returns of the investment in the new production technology can usually be captured entirely by the firm making the investment, whereas the returns of a successful antidumping or countervailing-duty petition accrue to some or all of the firms in the industry. We further assume that the benefits to an individual firm are capitalized when a specific trade policy is announced, not when a specific political action is taken.

Our sample includes all firms in the U.S. steel industry between 1976 and 1984 as compiled by the American Iron and Steel Institute and published yearly in *Iron Age* as well as steel firms listed in the *Value Line Investment Survey.* All the firms in the sample have daily return data available from the University of Chicago's Center for Research in Security Prices (CRSP). Our sample size decreases from twenty-two firms in 1977 to eighteen firms in 1984 because of mergers and bankruptcies.

3.5 The Dependent Variables

3.5.1 Dependent Variable I: An Estimate of Firm Political Involvement

To estimate the level of resources that firms devote to the provision of a public good, we develop measures reflecting the level of a firm's political involvement in influencing specific policy initiatives taken by the U.S. government to protect the steel industry. Our objective is not to determine a precise dollar estimate of the cost of a firm's political activities (firms do not report many of the expenses involved). Instead, using publicly available information, we have constructed a measure of political involvement that reflects the differences in the relative magnitude of the political involvement of the firms in our sample.

This measure of political involvement has three components, two of which involve firm political activity toward the Congress. Although the Congress does not typically play a direct role in the resolution of trade disputes, in the case of steel trade, Congress's threat to restrict imports unilaterally puts pressure on the president to adopt restrictive measures. Implicit in our construction of this variable is the assumption that firms which are the most politically

active in ways we can observe will also be the most active in ways we cannot observe.[1]

The first component of this measure is political action committee (PAC) campaign contributions. We assume that PAC contributions to congressional candidates are dispersed to increase the ability of firms to influence congressional actions. In defining this variable, we adopt the model of the Congress (Shepsle and Weingast 1987) in which oversight committees, because of their agenda-setting power, are the most influential in determining the actions that Congress might take on a specific issue. Thus, in measuring the level of political involvement of firms, we include only contributions to members of the House Ways and Means Committee and the Senate Finance Committee, the two major oversight committees on trade policy.

The second measure that we use to capture the intensity of a firm's political involvement is the number of appearances by members of a firm's top management team before congressional committees on issues involving trade policy. We assume that these appearances are costly to the firm in terms of top management time, the resources involved in the preparation of testimony, and the reputation of the firm that results from taking a public position on a political issue. To confirm that the testimony of the firm's representative was in support of trade restrictions, we reviewed the text of each testimony. The only CEO to testify in opposition to trade restraints during the period analyzed was Kenneth Iverson of the Nucor Steel Company, who testified at the 1984 hearing of the House Ways and Means Subcommittee on Trade:

> We fall in an unusual category, we are a profitable steel company and we are opposed to trade restrictions on steel products. We believe that tariff or nontariff trade barriers will delay modernization of our steel industry, will cost the consumer billions of dollars, and could seriously injure both our economy and smaller steel producers. (U.S. Congress, House Ways and Means Committee Subcommittee on Trade 1984, 286).

The third measure of the level of a firm's political involvement in efforts to obtain trade protection is the number of escape-clause, antidumping, or countervailing-duty petitions filed by the firm individually or together with other firms. We include this measure because steel companies devoted considerable resources to obtaining trade protection through affirmative findings by the Treasury Department, the International Trade Administration of the Commerce Department, and the International Trade Commission. Although the majority of import restraints on steel were not the direct result of these peti-

1. We realize that unobservable political activity may also play an important role in determining public policy and may not be consistent with what can be observed. In this analysis, however, since the intent of firms to gain financially through import protection is considered legitimate by the majority of the public, there seems to be no reason to expect that firms would support import protection in public but oppose it in private.

tions, the sheer number of the petitions filed put pressure on the executive branch to devise a more efficient mechanism to limit steel imports.

To determine the level of a firm's political investment in each of these separate trade actions, we include the activities undertaken by the firms prior to the announcement of a trade restraint program. Thus, for the 1977 TPM, we include the political activities of firms from 1976 to October 1977. The political investments that led to the 1980 reimposition of the TPM include those made in 1978, 1979, and 1980. We consider that the political investments made by firms in 1981 and 1982 resulted in the 1982 VRA, while the payoff for those made in 1983 and 1984 was the announcement of the program to negotiate more VRAs in 1984.

Political involvement encompasses several activities: PAC contributions, congressional testimony, and administrative petitions, each capturing one aspect of political involvement. Simply choosing one as the dependent variable and analyzing it separately would lead to biased estimators due to measurement error.

One way to relate these three observed activities to the understanding of political involvement is through factor analysis. In this case, we would expect that the three observed variables would be defined by single latent factor, political involvement. In this analysis, the three political activities were factor analyzed, and the results for the factor analysis were used to estimate a factor score for each firm's political activity. The factor scores were then used in a regression analysis to establish the relationship between the independent variables and political involvement. Estimating factor scores can help to reduce measurement error (Bollen 1989). Therefore, use of factor scores is useful in improving the consistency of estimates.

Factor analysis was conducted for each of the time periods, 1977, 1980, 1982, and 1984. The results are in appendix B. These results were then used to calculate the factors scores. The factor scores were created using the "regression" option in SPSS's factor analysis program. The factor loadings are generally quite high (above .70), indicating that the observed variables are highly related to the latent variable, political involvement. The communalities indicate how much of the variance in the observed variables is explained by the latent factor. The variances are all generally quite high. The Cronbach's alpha for the factor scores varies between .63 and .87, indicating that the observed variables are reliable measures of political involvement.

3.5.2 Dependent Variable II: An Estimate of the Change in Firm Market Value

The dependent variable used in the second regression equation is based on the impact of the announcement of trade protection on the stock price of individual steel firms. As Schwert (1981, 121–22) suggests, given the efficient-markets/rational expectations hypothesis which "posits that security prices reflect all available information," the change in a security price that results from

the announcement of an unanticipated government policy is "an unbiased estimate of the value of the change in future cash flows to the firm." These "event returns" can vary among firms because of differences in the product mix and the competitiveness of each firm.

We use the estimates of these event returns to calculate the investors' expectations of the change in the value of individual steel firms in response to government announcements of trade restrictions. Schwert (1981) argues that stock price data could be used to measure the effects of economic regulation. While several studies have investigated the impact of regulatory announcements on stock prices,[2] two previous studies have used event study methodology to estimate the value to shareholders of an increase in trade protection. Using a seemingly unrelated regression analysis, Lenway, Rehbein, and Starks (1990) find that the steel industry as a whole gains significantly from trade protection in 1977 and 1982. In a cross-sectional analysis, the results indicated that the primary beneficiaries for these two events were the smaller integrated steel firms. Hartigan, Perry, and Kamma (1986) analyzed the returns to firms in industries for which escape clause petitions were filed from 1975 to 1980. Using weekly returns for a period extending from two weeks before the petition was filed through four weeks after the ITC decision, they found that the cumulative average return was significantly positive for only two of the nineteen industries. One of the industries received trade protection, and the other did not.

Grossman and Levinsohn (1989, 1065), in a different application of this methodology, measured the responsiveness of the returns to capital investment in several U.S. industries to changes in the import prices. They found in five of six industries that an unanticipated change in the import price of a good resulted in substantial gains or losses for shareholders in the industry.

We use the following equation to estimate the change in the market value for each firm in the sample in response to the government's announcement of the trade restraint programs:

$$(1) \qquad r_{it} = a_i + a_i d_j + b_i r_{mt} + b_i r_{mt} d_j + \sum_{t=-10}^{t=+1} w_{ijt} e_{jt} + u_t,$$

where

r_{it} = the return on the stock price of firm i at time t ($t = -250$ to $+250$, where $t = 0$ is the announcement date);

d_j = a dummy variable, equal to one for every day after the announcement period until the last observation in the sample and zero otherwise;

b_i = the covariance ($r_i r_m$) divided by the variance (r_m);

2. See Shipper and Thompson (1983), Binder (1985), Rose (1985), Smith, Bradley, and Farrell (1986), Hughes, Magat, and Ricks (1986), and Prager (1989).

r_{mt} = the return on a market proxy portfolio, in this case the return on the CRSP value-weighted index, at time t;

e_{jt} = a dummy variable for each date during a given event period, equal to 1 if event j occurs during t and equal to 0 otherwise;

t = day relative to the announcement;

and

u_t = a random error term with expected value of zero,

where

$E(u_{it})$ =

$E(u^2_{it})$ = δ_i^2

$E(u_{it}u_{is})$ = 0 (for a specific firm, no serial correlation).

Here time t runs from -250 to $+250$ ($t = 0$ is the announcement date of the trade restraints). See appendix A for the exact announcement date used for each event. The window that we use to estimate the event period returns is $t = -10$ to $t = +1$. We chose this window because information about the trade programs may have been leaked prior to the official announcement. In searching the *Wall Street Journal* around the event dates, we found that the discussion of the specific measures taken in a new trade program was within ten days prior to the announcement date.

The inclusion of the CAPM beta allows us to isolate the change in the stock price of a steel firm that is associated with the changes in the overall market from those that result from the announcement of trade protection. The dummy variables, the d_j, allow the intercept and slope terms to shift when the market's expectation of the effects of trade protection changes. Seemingly unrelated regression analysis is used to allow for across-equation correlation of error terms to generate more efficient estimates, since our event time equals calendar time for all firms in the industry.

The coefficients on the e_{jt} (the w_{ijt}) lend themselves to a natural interpretation. They are equivalent to the event return to firm i for each date. Thus, they allow us to interpret the sign, magnitude, and significance of the return to a specific firm in response to the announcement of a new restrictive trade policy. The sign reflects the market's evaluation of whether the firm will gain or lose from increased trade protection. The magnitude of the coefficient indicates the percentage change in the firm's stock price that results from the introduction of the new trade policy. These coefficients are not consistently significant because our tests may not be strong enough to detect the impact of the trade policy upon the firm's stock price. In some cases the trade policy announcement may not significantly affect the stock price of the firm.

Table 3.2 reports the average event period returns, the t-statistics, and the change in the firm's market value for each of the individual steel firms included in our analysis by announcement date. In appendix C, we report the coefficients for each of the variables in equation (1). To calculate the change

Table 3.2 **Event Period Results**

$$(1) \qquad r_{it} = a_t + a_t d_j + b_t r_{mt} + b_t r_{mt} d_j + \sum_{t=-10}^{t=+1} w_{ijt} e_{jt} + u_t$$

Firm	1977 Change in Market Value ($)	W_{ijt}	t-statistic	1980 Change in Market Value ($)	W_{ijt}	t-statistic
ARMCO	77,113,416	0.005	1.539	−47,437,215	−0.002	−0.489
ATHLONE	2,387,412	0.004	0.890	−2,679,395	−0.004	−0.797
BETHLEHEM	10,464,036	0.001	0.206	−47,062,822	−0.004	−0.751
CARPENTER TECHNOLOGY	1,951,800	0.001	0.186	43,055,472	0.010	1.783*
COPPERWELD	−1,531,752	−0.001	−0.222	−18,392,495	−0.009	−1.589
CYCLOPS	7,107,180	0.008	1.563	−6,009,132	−0.006	−0.957
FLORIDA STEEL	−8,638,284	−0.007	−1.361	−15,758,859	−0.006	−0.957
INLAND STEEL	17,937,840	0.002	0.713	−8,812,368	−0.001	−0.341
INTERLAKE	7,726,332	0.003	0.945	−12,364,459	−0.006	−1.064
KAISER	N.A.	N.A.	N.A.	−14,756,202	−0.004	−0.399
KEYSTONE	1,307,004	0.005	0.942	−264,045	−0.001	−0.153
LTV	6,029,964	0.005	0.614	4,260,054	0.001	0.073
LUKENS	−343,872	0.000	−0.044	−340,229	0.000	−0.063
McLOUTH	2,660,244	0.004	0.588	−1,991,010	−0.004	−0.471
NATIONAL	20,034,732	0.003	0.903	−16,733,668	−0.003	−0.650
NORTHWESTERN	5,596,272	0.002	0.617	2,983,697	0.001	0.302
NUCOR	−2,921,276	−0.003	−0.582	21,054,549	0.002	0.401
PHOENIX	371,076	0.002	0.147	N.A.	N.A.	N.A.
REPUBLIC	7,836,096	0.002	0.504	−2,308,894	−0.001	−0.115
SHARON STEEL	24,480	0.002	0.343	141	0.000	0.002
TIMKEN	−58,764	−0.004	−1.140	67,461	0.004	0.991
U.S. STEEL	102,379,308	0.003	0.867	−135,315,729	−0.006	−1.058
WASHINGTON	−475,080	−0.001	−0.213	N.A.	N.A.	N.A.
WHEELING-PITTSBURGH	2,946,840	0.006	1.047	6,139,528	0.007	0.874
	1982			1984		
ARMCO	45,617,652	0.004	0.634	−33,020,676	−0.002	−0.307
ATHLONE	86,568	0.000	0.030	4,084,536	0.007	1.292
BETHLEHEM	77,610,120	0.008	1.552	−73,378,212	−0.007	−1.441
CARPENTER TECHNOLOGY	49,312,788	0.014	2.676**	1,171,644	0.000	0.063
COPPERWELD	2,459,424	0.001	.216	−23,448,264	−0.013	−1.987*
CYCLOPS	7,516,296	0.009	1.662*	4,215,984	0.003	0.664
FLORIDA STEEL	26,634,348	0.023	3.002**	−4,653,060	−0.005	−0.805
INLAND STEEL	86,097,984	0.013	2.503*	46,983,456	0.006	1.343
INTERLAKE	−200,064	0.000	−0.023	613,656	0.000	0.055
KAISER	−28,261,800	−0.017	−1.691*	N.A.	N.A.	N.A.
LTV	47,558,700	0.007	1.005	−31,880,136	−0.003	−0.532
LUKENS	7,528,680	0.011	1.596	1,224,480	0.001	0.253

(continued)

Table 3.2 (continued)

Firm	1982			1984		
	Change in Market Value ($)	W_{ijt}	t-statistic	Change in Market Value ($)	W_{ijt}	t-statistic
NATIONAL	147,816,288	0.009	1.425	−45,628,740	−0.006	−1.078
NORTHWESTERN	19,042,572	0.008	1.828*	−3,756,432	−0.003	−0.400
NUCOR	−5,365,320	−0.006	−1.069	−22,062,384	−0.004	−0.709
TIMKEN	224,652	0.012	2.717**	−29,112	−0.002	−0.516
U.S. STEEL	313,756,056	0.010	1.703*	−46,925,760	−0.001	−0.387
WHEELING-PITTSBURGH	49,671,876	0.015	1.645	313,008	.000	0.028

*Significant at the .1 level.

**Significant at the .01 level.

in firm market value, the event return is multiplied by the value of the firm's common stock at $t = 0$. This is an estimate of the dollar gain (or loss) to an individual firm that results from the increase in trade protection.

3.6 The Independent Variables

3.6.1 Factors Underlying Cross-sectional Differences Among Steel Firms

Our choice of independent variables reflects two distinct explanations for the positive relationship between the level of a firm's political investment and event return from the announcement of trade protection. In the first explanation, based on Olson's (1971) model of collective action, high expectations of gain evoke a high level of political involvement. The second based on Yoffie's extension (1987) of Olson includes factors that reflect resource constraints and strategic choices made by firms.[3]

We use the firm's market share to measure the benefits that the firm expects to receive from the imposition of increased trade restraints. Olson argues that a firms' return from the provision of a public good is positively related to its market share because its expected benefits exceed the amount of its political investment. Thus, we expect that firms with high market share will be more politically involved and also benefit more from trade restraints than will firms with low market share.

To test Yoffie's rational model of corporate political behavior, we measure whether a firm has adequate resources by taking its average return on equity in the years leading up to the introduction of a new trade program. We measure the strategic salience of increased trade restrictions on steel imports to

3. We had originally planned to include a measure of firm-level labor costs but dropped it when we found it to be highly correlated with the other independent variables, especially market share.

the individual firms by the percentage of steel sales to their total sales. Because of the assumption in this model that firm political behavior is based on economic self-interest, we expect a high average return on equity and a high dependence of a firm on its steel sales will lead to high political involvement and high returns from trade protection.

To obtain an adequate sample size, we have included firms that are "minimills" as well as integrated steel producers. These firms tend to have very different competitive strategies than integrated steel firms. Minimills have been more competitive with imports because of their cost structure. Barnett and Crandall (1986, 27) find that "minimills pay less than integrated firms for labor, metallic inputs, and energy, but they are also more efficient in the use of these inputs." Because minimills are more competitive, we expect them to be less involved in the politics of trade protection. With respect to event returns, we have no prediction on the sign for this variable because although trade restraints allow minimills to charge higher prices, they also may have resulted in the delaying the retirement of USX and Bethlehem's relatively inefficient plants which produce products similar to those produced by the minimills (Barnett and Crandall 1986, 111). To allow for the possibility that minimills may have distinct political strategies or benefit differently from the imposition of trade restraints, we include a dummy variable to indicate whether a firm is a minimill.

We use OLS regression to test the following hypotheses:

$$(2)\quad \text{PINV} = a + b_1\text{SHARE} + b_2\text{ROE} + b_3\text{STSALES} + b_4\text{MINMILL} + u$$

and

$$(3)\quad \text{CHAV} = a + b_1\text{SHARE} + b_2\text{ROE} + b_3\text{STSALES} + b_4\text{MINMILL} + u,$$

where PINV is level of political investment, CHAV is change in firm market value, SHARE is market share, ROE is average return on equity, STSALES is steel sales as percentage of total sales, MINMILL is whether a firm is a minimill (1 = minimill), and u is an error term. The hypotheses relating these factors to both political investment and the change in firm market value are summarized below.

	Political Investment	Change in Firm Market Value
1. SHARE	Positive	Positive
2. ROE	Positive	Positive
3. STSALES	Positive	Positive
4. MINMILL	Negative	?

By comparing the results of the two regression equations, we test the hypothesis that the level of firm political involvement accounts for the change in the firm's market value resulting from the announcement of trade protection.

3.7 Results

The cross-sectional results for political investment are reported in table 3.3. For each of the events, the *F*-statistics indicate that the model fits the data very well. In all four periods, however, market share is the only significant variable that explains corporate political investment in trade protection. These results suggest that firms with the highest market share and thus the highest expectations of financial benefits from trade restraints expend the most effort in attempting to influence U.S. trade policy.

The average return on equity for the years leading up to the introduction of the four restrictive programs has the expected sign for 1977, 1982, and 1984, and the coefficient for each event approaches significance at the .1 level. For 1980, however, average ROE is negative and insignificant in explaining corporate political investment. These results offer only tentative support that relatively profitable firms are likely to involve themselves in politics because of their access to resources.

The sign for the variable reflecting the extent to which firms have diversified out of steel is negative but not significant for all four periods. The high level of political activity on the part of major integrated firms diversifying out of steel might account for the unexpected negative signs for this variable.

Finally, we find that the sign for the dummy variable indicating whether a firm is a minimill is positive in for all four events, although again the coefficient is not significant. Our lack of results could be attributed to multicollinearity between minimills and market share because minimills tend to be con-

Table 3.3 **Determinants of Firm Political Involvement**

Variable	1977	1980	1982	1984
SHARE	18.40422	.16464	.21702	.20920
	(5.517)***	(4.347)**	(6.957)***	(5.646)***
ROE	4.28242	−.62597	.90593	1.90807
	(1.631)	(−.215)	(1.588)	(1.493)
STSALES	−.19686	−1.20935	−.36009	−.67443
	(−.252)	(−1.379)	(−.703)	(−1.075)
MINMIL	.05915	.35805	.46764	.38361
	(.149)	(.801)	(1.472)	(1.128)
Constant	−.81298	.31246	−.62376	−.23131
	(−1.181)	(.469)	(−1.522)	(−.439)
F-statistic	8.46822	6.60455	13.47536	10.73158
Signif *F*	.0009	.0025	.0001	.0005
Adjusted R^2	.61124	.52850	.71388	.69603
No. of observations	20	21	21	18

Note: *t*-statistic in parentheses.

**Significant at the .01 level.

***Significant at the .001 level.

sistently smaller than integrated steel firms. An analysis of the raw data indicates that none of the minimills were politically active in 1977, 1980, and 1984. Only Keystone, a relatively old minimill, whose stock price declined by more than 80 percent between 1976 and 1985 (Barnett and Crandall 1986, 15) was involved in two countervailing-duty and one dumping petition that led to the 1982 VRA with the EC.

To determine whether there is a relationship between the level of political involvement and the capital market's assessment of the change in the market value of the firm that results from the announcement of a restrictive trade program, we used the same set of independent variables as in the political investment equation. Table 3.4 reports these results.

In contrast to the previous results, market share is only positive and significant in 1982. Market share is positive and insignificant in 1977 and negative and significant in 1982 and 1984. This variable, which most consistently explains why firms are politically involved, does not appear to be as useful in explaining the distribution of benefits from trade protection. The negative relationship between market share and the change in the market value of the firm indicates that for two of the four events, firms expecting to gain the most from trade protection may actually have been hurt.

Average return on equity is positive for each of the four events but only significant in 1982 at the .05 level. These results suggest that relatively profitable steel firms gain more from trade restraints than the less profitable firms. The positive sign for three of the four events in the previous analysis of political involvement taken together with these results offers tentative evidence

Table 3.4 **Determinants of Change in Firm Market Value**

Variable	1977	1980	1982	1984
SHARE	.26133	−.9041	1.09045	−.58159
	(.8040)	(−7.4260)***	(6.5660)***	(−2.0830)*
ROE	.12875	.08649	.39775	.08476
	.4210	(.7450)	(2.5230)*	(.2740)
STSALES	−.04233	.38153	.08157	.25846
	(−.1520)	(3.1340)**	(.6210)	(.9660)
MINMIL	−.25001	−.31789	−.02519	−.02987
	(−.0840)	(−2.3990)*	(−.1890)	(−.9040)
Constant	.5390	−1.880	−.8010	−.7850
F-statistic	.57735	15.50718	13.63553	1.61185
Signif *F*	.6846	.0000	.0001	.2346
R^2	.16139	.79495	.80753	.34950
No. of observations	23	20	18	17

Note: *t*-statistic in parentheses.

*Significant at the .1 level.

**Significant at the .01 level.

***Significant at the .001 level.

that for the more profitable firms, there may be a relationship between political involvement and the gains to the firm from the imposition of trade protection.

The sign for steel sales as a percentage of total sales is positive in 1980, 1982, and 1984 but only significant in 1980. The coefficient is negative but not significant in 1977. These results, together with those from the previous equation (in which the sign for this variable was consistently negative), suggest that the highest returns need not go to the most politically active firms.

The variable indicating whether a firm is a minimill is consistently negative for all four events although only significant in 1980 at the .05 level. These relationships suggest that minimills may not have gained from the restrictions on steel imports.

In general, these results do not provide consistent support for the hypothesis that the most politically active firms gain the most from trade protection. For two of the four variables analyzed, we find that the most politically active firms may have been made worse off from the imposition of trade restraints. While we find that the announcement of trade protection may have made the minimills worse off, we cannot draw any inferences about the relationship between the political activity of these firms and gains (or losses) from trade protection.

3.8 Discussion and Conclusion

Our finding that market share helps to explain the level of a firm's political involvement supports Olson's (1971) hypothesis that the firms expecting to gain the most are the most politically active. Yet we do not find that market share helps to explain the distribution of the benefits once a new program to restrict steel imports is announced.

We find mixed support for the alternative hypothesis suggested by Yoffie (1987). Except in 1980, the relationship between a firm's average ROE and level of political involvement was positive, although the coefficients are not significant. The relationship between ROE and the wealth increase to the steel firms is also consistently positive. At best, this offers extremely tentative support for the hypotheses derived from Yoffie's model that the more profitable firms will engage in politics and that firm profitability helps explain which firms will benefit from trade protection.

The negative, but statistically insignificant, relationship between firm diversification and political involvement does not support Yoffie's proposition that political activity is related to the perceived impact of a specific policy on a firm. It is possible that even though certain firms have diversified, top management remains more committed to steel than to their other businesses. Yet the positive and significant relationship between steel sales as a percentage of total sales and the change in the market value of the firm in 1980 and the positive but insignificant relationship in 1982 and 1984 indicate that diversi-

fied firms, although the most politically active, did not gain from trade protection. The consistently negative sign for minimills in the analysis of the change in firm value suggests that the stock market did not react as if trade restraints were expected to help these firms.

These results suggest that there is no consistent relationship between the level of a firm's political involvement in attempts to obtain trade protection and the benefits that they receive as reflected in the market's reevaluation of their future earning potential.[4] In other words, the primary beneficiaries from trade protection do not appear to be the firms that devote the most resources to congressional lobbying and the preparation of petitions filed at the International Trade Commission and the Commerce Department. This finding challenges one of the basic assumptions of rational models of corporate political behavior, namely, that there is a positive relationship between expected and actual returns to the provision of a public good. In fact, this relationship may be much more complex than originally assumed.[5]

One possible alternative explanation is that managers face an extremely high degree of uncertainty in assessing the degree to which their firm will benefit from trade protection relative to others in the industry. Unlike the estate owner in Olson's world, who has considerable certainty that if taxes are reduced, she will benefit more than will the owners of a modest cottage, the management of a politically active steel firm may not know how the reduction of imports will benefit their firm relative to their domestic competitors. Journalistic accounts indicate that steel firms typically respond to the imposition of trade restraints by raising prices, but this does not reveal much about the competitive dynamics among U.S. steel producers, which ultimately affects the distribution of benefits from trade protection. Another possible explanation is that the firms with the largest market share are absorbing some of the costs of political activity as part of their responsibilities as the industry's political leaders, even though they do not expect to benefit in the short run.

4. We also ran a simple regression analyzing the change in the market value of the firm in terms of a firm's political involvement. Given the high correlation between market share and political involvement, it was not possible to include market share as an independent variable in this analysis. We found that political involvement explained the increase in the value of the firm at almost the .05 level of significance in 1977 and at the .01 level in 1982. In 1980 and 1984 the results were negative and significant at the .05 level. One inference that could be drawn from these results is that there is no consistent relationship between the gains (or losses) that a firm experiences as a result of increased import protection and its level of political investment. The negative relationship in 1980 and 1984 could also indicate that the stock market had anticipated more stringent restraints than were implemented by the government.

5. Because we are performing these tests on individual securities, the changes that result from the announcement of the imposition of trade restraints are very small. In addition, because many uncertain factors affect stock returns, it is possible that the impact of the announcement of trade protection will be insignificant. Since we may not capture fully the complete wealth effect of the change in the level of trade protection, we also ran eq. (2) using as the dependent variable the firm's standardized abnormal return to weigh more heavily the event returns of the firms whose returns are significant as well as to correct for heteroscedasticity (Schwert 1981, 138). The results, both in term of signs and significance levels, lend themselves to the same interpretation as above.

Further research is needed to determine what factors explain the distribution of benefits resulting from trade protection to individual steel firms. This would involve using measures that reflect both the product mix of the companies and the product coverage of the steel trade programs as well as macroeconomic variables to control for the level of aggregate economic demand. Comparing the factors that affect the distribution of benefits from trade protection with those that affect the level of a firm's political involvement may lead to a better understanding of why managers do not appear to act in their shareholders' interests in their pursuit of trade protection.

Our investigation may have an impact on trade policy if it is possible to develop a systematic explanation of why the most important proponents of trade protection are not the biggest beneficiaries. Legislators and policymakers have determined that trade restraints help the industry and assume that they will help those firms that claim import competition is unfair. This study provides tentative evidence that these policies may not be helping the firms making the claims and may put the most efficient of U.S. steel firms, the minimills, at a competitive disadvantage.

Appendix A
Summary of the Event Dates

5 December 1977	The trigger price mechanism was imposed by the Carter administration.
1 October 1980	The trigger price mechanism was strengthened and reinstated.
21 October 1982	The United States announced a program to negotiate a series of voluntary restraint agreements with members of the European Community.
14 September 1984	The United States announced a program to negotiate voluntary restraint agreements with countries not covered by the previous arrangement, including Korea, Spain, Brazil, Mexico, South Africa, and Australia. Japanese imports were also limited to 5.8 percent of the U.S. market.

Appendix B
Factor Analysis of Political Involvement Variables

PAC = Firm political action committee contributions
CONG = Congressional testimony by corporate executives
TOTADM = Number of escape-clause, countervailing-duty, and antidumping petitions filed by firms

1977

Factor matrix:

	Political Involvement
PAC	.87853
TOTADM	.70752
CONG	.88749

Final statistics:

Variable	*Communality*	*Factor*	*Eigenvalue*	*% of Var*	*Cum %*
PAC	.77181	1	2.06004	68.7	68.7
TOTADM	.50059				
CONG	.78765				

Cronbach's alpha for factor scores = .77

1980

Factor matrix:

	Political Involvement
PAC	.64855
CONG	.83672
TOTADM	.76422

Final statistics:

Variable	*Communality*	*Factor*	*Eigenvalue*	*% of Var*	*Cum %*
PAC	.42062	1	1.70474	56.8	56.8
CONG	.70010				
TOTADM	.58403				

Cronbach's alpha for factor scores = .63

1982

Factor matrix:

	Political Involvement
PAC	.87843
CONG	.79926
TOTADM	.85110

Final statistics:

Variable	*Communality*	*Factor*	*Eigenvalue*	*% of Var*	*Cum %*
PAC	.77164	1	2.13483	71.2	71.2
CONG	.63881				
TOTADM	.72437				

Cronbach's alpha for factor scores = .77

1984

Factor matrix:

	Political Involvement
PAC	.93974
CONG	.83559
TOTADM	.93620

Final statistics:

Variable	*Communality*	*Factor*	*Eigenvalue*	*% of Var*	*Cum %*
PAC	.88311	1	2.45779	81.9	81.9
CONG	.69820				
TOTADM	.87648				

Cronbach's alpha for factor scores = .87

Appendix C
Event Period Results

(1) $$r_{it} = a_i + a_i d_j + b_i r_{mt} + b_i r_{mt} d_j + \sum_{t=-10}^{t=+1} w_{ijt} e_{jt} + u_t$$

Firm	Parameter				
	a_i	$a_i d_j$	b_i	$b_i d_j$	w_{ijt}
	All Variables for the Period Ending 1977				
ARMCO	−0.0002	0.00002	0.93976	0.07532	0.00537
	(.265)	(.018)	(6.722)***	(.437)	(1.539)
ATHLONE	0.00054	0.00025	0.79911	0.04813	0.00387
	(.563)	(.185)	(4.589)***	(.224)	(.890)
BETHLEHEM	−0.00203	0.00132	1.78841	−0.18968	0.00095
	(−2.007)*	(.926)	(9.684)***	(−.833)	(.206)
CARPENTER TECHNOLOGY	0.00111	0.00005	1.11283	−0.29178	0.00092
	(1.026)	(.036)	(5.633)***	(−1.198)	(.186)
COPPERWELD	−0.00044	0.00047	0.31184	−0.05414	−0.00084
	(−.538)	(.406)	(2.064)*	(−.291)	(−.222)
CYCLOPS	0.00009	0.00027	0.86756	0.35519	0.00822
	(.080)	(.177)	(4.121)***	(1.368)	(1.563)
FLORIDA STEEL	0.00033	0.00037	0.23805	0.16486	−0.00651
	(.313)	(.253)	(1.244)	(.699)	(−1.361)
INLAND	−0.00078	0.00047	0.72333	0.11432	0.00202
	(−1.259)	(.538)	(6.372)***	(.817)	(.713)
INTERLAKE	−0.00067	0.00029	0.91974	−0.5621	0.00329
	(−.878)	(.267)	(6.579)***	(−3.261)**	(.945)
KEYSTONE	−0.00208	0.00213	0.39711	0.24356	0.0052
	(−1.725)*	(1.250)	(1.796)*	(.984)	(.942)

(*continued*)

Appendix C (*continued*)

Firm	Parameter				
	a_i	$a_i d_j$	b_i	$b_i d_j$	w_{ijt}
LTV	−0.00237	0.00265	1.65455	0.28109	0.00524
	(−1.269)	(1.006)	(4.845)***	(.668)	(.614)
LUKENS	0.00071	−0.00029	1.0442	−0.59216	−0.0002
	(.715)	(−.206)	(5.726)***	(−2.634)**	(−.044)
MCLOUTH	−0.00226	0.00141	0.55077	0.49219	0.00374
	(−1.627)	(.720)	(2.165)*	(1.569)	(.588)
NATIONAL	−0.00095	0.00031	0.79996	−0.17546	0.00268
	(−1.468)	(.334)	(6.743)***	(−1.200)	(.903)
NORTHWESTERN	−0.00042	0.00065	0.28959	0.08368	0.00239
	(−.500)	(.547)	(1.867)*	(.438)	(.617)
NUCOR	0.00161	0.00012	0.95272	−0.04802	−0.00315
	(1.359)	(.073)	(4.401)***	(−.180)	(−.582)
PHOENIX	0.00013	0.00252	−0.32448	1.427	0.00203
	(.043)	(.592)	(−.589)	(2.099)*	(.147)
REPUBLIC	−0.00085	0.00077	1.14477	−0.24751	0.00174
	(−1.125)	(.719)	(8.267)***	(−1.450)	(.504)
SHARON STEEL	0.00006	0.00166	0.23515	0.14377	0.00201
	(.047)	(.918)	(1.004)	(.498)	(.343)
TIMKEN	0.00033	−0.00026	0.66119	−0.18522	−0.00366
	(.468)	(−.261)	(5.151)***	(−1.170)	(−1.140)
U.S. STEEL	−0.00168	0.00025	1.42047	−0.15497	0.00336
	(−1.977)*	(.209)	(9.151)***	(−.810)	(.867)

WASHINGTON	0.00151	−0.00083	0.39035	−0.29454	−0.00115
	(1.282)	(−.498)	(1.812)*	(−1.109)	(−.213)
WHEELING-PITTSBURGH	−0.00233	0.00159	0.77023	0.57338	0.00639
	(−1.748)*	(.844)	(3.153)**	(1.904)*	(1.047)
		All Variables for the Period Ending 1980			
ARMCO	−0.00039	−0.00028	0.97334	−0.09929	−0.00225
	(.381)	(−.201)	(9.656)***	(−.670)	(−.489)
ATHLONE	0.00032	0.00046	0.8592	−0.51493	−0.00376
	(.307)	(.318)	(8.329)***	(−3.398)**	(−.797)
BETHLEHEM	−0.00007	0.00006	0.93619	−0.05243	−0.00372
	(−.067)	(.036)	(8.631)***	(−.329)	(−.751)
CARPENTER TECHNOLOGY	−0.0007	0.00158	0.74865	−0.38343	0.01018
	(−.554)	(.899)	(5.989)***	(−2.088)	(1.783)*
COPPERWELD	0.00019	0.0029	0.48189	0.17243	−0.00918
	(.148)	(1.632)	(3.810)**	(.928)	(−1.589)
CYCLOPS	−0.00029	0.00137	1.26067	−0.40571	−0.006
	(−.215)	(.707)	(9.181)***	(−2.011)*	(−.957)
FLORIDA STEEL	0.002214	−0.00014	0.56273	0.29829	−0.00678
	(1.410)	(−.066)	(3.820)**	(1.308)	(−.957)
INLAND	−0.00087	0.00079	0.54689	−0.06501	−0.00123
	(−1.090)	(.704)	(6.897)***	(−.558)	(−.341)
INTERLAKE	−0.00012	0.00176	0.76879	−0.1636	−0.00564
	(−.104)	(1.083)	(6.635)***	(−.961)	(−1.064)
KAISER	0.00075	−0.00048	1.09386	−0.09506	−0.00405
	(.332)	(−.155)	(4.923)***	(−.291)	(−.399)

(*continued*)

Appendix C (*continued*)

Firm	Parameter				
	a_i	$a_i d_j$	b_i	$b_i d_j$	w_{ijt}
KEYSTONE	−0.00161	0.0043	0.44899	0.51708	−0.00125
	(−.894)	(1.717)*	(2.520)**	(1.975)*	(−.153)
LTV	0.00051	0.0009	1.97311	−0.10412	0.00061
	(.276)	(.349)	(10.707)***	(−.385)	(.073)
LUKENS	−0.00002	0.00007	0.38659	0.14968	−0.00039
	(−.014)	(.038)	(2.841)**	(.749)	(−.063)
MCLOUTH	−0.00125	0.00067	0.81859	0.10235	−0.00406
	(−.654)	(.251)	(4.345)***	(.370)	(−.471)
NATIONAL	−0.00075	0.00046	0.53292	−0.13611	−0.00272
	(−.812)	(.354)	(5.811)***	(−1.010)	(−.650)
NORTHWESTERN	−0.00058	0.0012	0.29499	−0.23263	0.00139
	(−.570)	(.846)	(2.916)**	(−1.565)	(.302)
NUCOR	0.00121	−0.00123	1.35078	−0.04689	0.00212
	(1.032)	(−.756)	(11.653)***	(−2.753)**	(.401)
REPUBLIC	−0.00089	0.00159	0.7202	−0.06318	−0.0005
	(−.926)	(1.180)	(7.502)***	(−.448)	(−.115)
SHARON STEEL	0.002889	−0.00416	1.24344	−0.2816	0.00002
	(1.029)	(−1.067)	(4.484)***	(−.691)	(.002)
TIMKEN	−0.00045	0.00034	0.58325	−0.25669	0.00361
	(−.562)	(.305)	(7.319)***	(−2.192)*	(.991)
U.S. STEEL	−0.00026	0.00165	0.95721	−0.05251	−0.00591
	(−.213)	(.958)	(7.824)***	(−.292)	(−1.058)
WHEELING-PITTSBURGH	−0.00091	0.00231	1.24554	−0.13171	0.00669
	(−.535)	(.980)	(7.430)***	(−.535)	(.874)

All Variables for the Period Ending 1982

ARMCO	−0.001923	0.00171	0.75748	0.18646	0.00362
	(−1.558)	(.983)	(6.005)***	(1.030)	(.634)
ATHLONE	−0.0013	0.00225	0.31803	0.02892	0.00017
	(−1.042)	(1.279)	(2.492)*	(.158)	(.030)
BETHLEHEM	−0.00126	0.00172	1.12747	−.06286	0.00811
	−(1.119)	(1.084)	(9.786)***	(−.380)	(1.552)
CARPENTER TECHNOLOGY	−0.00161	0.002378	0.37379	0.26218	0.01369
	(−1.461)	(1.529)	(3.315)**	(1.620)	(2.676)**
COPPRWELD	−0.00159	0.00183	0.3001	0.27824	0.00139
	(−1.158)	(.939)	(2.126)*	(1.374)	(.216)
CYCLOPS	−0.00197	0.00367	0.58492	−0.25087	0.00927
	(−1.634)	(2.159)*	(4.756)***	(−1.421)	(1.662)*
FLORIDA STEEL	−0.00185	0.00286	0.77114	0.022775	0.02294
	(−1.121)	(1.231)	(4.577)***	(.094)	(3.002)**
INLAND	−0.00031	0.00023	0.51574	0.63475	0.01345
	(−.270)	(.141)	(4.354)***	(3.734)**	(2.503)*
INTERLAKE	−0.00088	0.00276	0.25671	−0.03504	−0.00009
	(−1.099)	(2.448)*	(3.138)**	(−.298)	(−.023)
KAISER	−0.00206	0.00493	0.78754	−0.041359	−0.01662
	(−.972)	(1.648)	(3.634)**	(−1.330)	(−1.691)*
LTV	−0.00272	0.00291	1.58289	0.16294	0.00747
	(−1.698)*	(1.287)	(9.658)***	(.693)	(1.005)
LUKENS	−0.00183	0.00238	0.65548	0.26829	−0.01137
	(−1.192)	(1.096)	(4.172)***	(1.190)	(1.596)
NATIONAL	−0.00179	0.00246	0.87714	0.81681	0.00879
	(−1.348)	(1.311)	(6.447)***	(4.131)***	(1.425)
NORTHWESTERN	−0.0094	0.00099	0.18846	0.18498	0.008456
	(−.944)	(.704)	(1.848)*	(1.264)	(1.828)*

(*continued*)

Appendix C (*continued*)

Firm	Parameter				
	a_i	$a_i d_j$	b_i	$b_i d_j$	w_{ijt}
NUCOR	−0.00077	0.00223	1.10819	−0.58302	−0.00639
	(−.597)	(1.230)	(8.410)***	(−3.083)**	(−1.069)
TIMKEN	−0.00088	0.00088	0.44024	0.13877	0.01192
	(−.934)	(.662)	(4.550)***	(.999)	(2.717)**
U.S. STEEL	−0.00193	0.00267	0.97134	0.00405	0.01024
	(−1.488)	(1.457)	(7.324)***	(.021)	(1.703)*
WHEELING-PITTSBURGH	−0.00281	0.00382	0.67238	0.13814	0.01383
	(−1.547)	(1.493)	(3.627)**	(.519)	(1.645)
	All Variables for the Period Ending 1984				
ARMCO	−0.00213	0.00069	1.35427	0.17361	−0.00174
	(−1.529)	(.356)	(7.148)***	(.576)	(−.307)
ATHLONE	−0.00026	−0.000212	0.34617	0.28539	0.0066
	(−.228)	(−.134)	(2.264)*	(1.173)	(1.292)
BETHLEHEM	−0.00088	0.00004	1.7705	−0.26936	−0.00711
	(−.807)	(.028)	(11.973)***	(−1.145)	(−1.441)
CARPENTER TECHNOLOGY	−0.00011	−0.00045	0.56889	0.06193	0.00025
	(−.124)	(−.362)	(4.694)***	(.321)	(.063)
COPPRWELD	0.00015	−0.00245	0.69291	−0.11139	−0.01327
	(.100)	(−1.190)	(3.466)**	(−.350)	(−1.987)
CYCLOPS	0.00047	0.00034	0.51834	−0.25264	0.00253
	(.565)	(.293)	(4.538)***	(−1.390)	(.664)

FLORIDA STEEL	−0.00197	0.00249	0.97232	−0.1953	−0.00473
	(−1.529)	(1.381)	(5.530)***	(−.0698)	(−.805)
INLAND	−0.00128	0.00031	1.2249	−0.18134	0.00638
	(−1.227)	(.707)	(8.612)***	(−.801)	(1.343)
INTERLAKE	0.00044	−0.00048	0.32398	0.18171	0.00016
	(.702)	(−.546)	(3.788)**	(1.335)	(.055)
LTV	−0.00143	−0.00079	1.55517	0.12886	−0.00333
	(1.039)	(−.410)	(8.297)***	(.432)	(−.532)
LUKENS	−0.00051	0.00099	0.93481	−0.25399	0.00166
	(−.354)	(.488)	(4.743)***	(−.810)	(.253)
NATIONAL	0.00007	−0.00039	1.5034	−1.04645	−0.00586
	(.059)	(−.238)	(9.227)***	(−4.035)***	(−1.078)
NORTHWESTERN	−0.00159	−0.00035	0.19919	0.35722	−0.00276
	(−1.046)	(−.165)	(.965)	(1.087)	(−.400)
NUCOR	−0.00055	0.00144	0.89299	0.04713	−0.00386
	(−.455)	(.861)	(5.480)***	(.182)	(−.709)
TIMKEN	−0.00025	−0.00005	0.43959	−0.09224	−0.00159
	(−.367)	(−.051)	(4.759)***	(−.627)	(−.516)
U.S. STEEL	−0.00048	0.00095	1.19715	−0.14619	−0.00146
	(−.585)	(.820)	(10.616)***	(−.814)	(−.387)
WHEELING-PITTSBURGH	−0.0004	−0.00364	1.05016	0.06664	0.00023
	(−.223)	(−1.450)	(4.295)***	(.171)	(.028)

*Significant at the .10 level.

**Significant at the .01 level.

***Significant at the .001 level.

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Comment

Timothy J. McKeown

Stimulated in large measure by federal campaign finance legislation in the mid-1970s and the wealth of newly available data generated as a result of that legislation's reporting requirements, a number of political scientists, sociologists, and economists recently have developed models of corporate political effort. The paper by Lenway and Schuler is broadly similar to existing work but offers a number of potentially fruitful innovations. First, this is one of the first attempts to relate above-normal returns to prior political activity. Second, it acknowledges that corporate political activity is a multidimensional phenomenon, and it displays some awareness of the possibility that the determi-

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nants of visible activity may not be the same as the determinants of unobservable activity. Third, it offers a detailed examination of individual firms within a sector rather than of a sample drawn from all manufacturing (the more common procedure). Because the work is exploratory both theoretically and empirically, I will focus on three broad areas: the proposed model and alternative specifications, the interpretation of findings, and possibilities for additional research.

The Proposed Model

The Yoffie model by way of Lenway and Schuler argues that political activity is an increasing function of rate of return. Zardkoohi has also suggested such a relationship, based not on the necessity of relying on internal resources but instead simply on a conventional assumption about the income elasticity of political activity.[1] There are, however, other arguments. Salamon and Siegfried argue that firms which visibly pursue political objectives while earning high profits invite unfriendly attention and counter-mobilization.[2] A behavioral theory of the firm[3] suggests that when financial performance falls below aspirations, then search and innovation and presumably political effort will be intensified. A variant of this theory argues that performance that significantly exceeds aspirations will also lead to more search and innovation, as various organizational subunits seize slack resources and use them for their own pet projects.[4] These hypotheses imply an nonlinear relationship between financial performance and political activity; thus the specification offered in this paper hardly exhausts the theoretical possibilities.

The unusual feature of the paper is the way in which return on equity is conceptualized. Rather than being treated as a factor affecting the motivation to act politically, it is used to indicate the capability to act. Of course, the rate of return indicates this only when one already knows the size of the capital stock on which the returns are being reaped. It would seem more direct to use corporate income in dollars to model this capability. If one were interested in modeling the level of corporate PAC expenditures, it would be appropriate to use the number of white-collar employees and their average salary, since these are the people who decide to contribute, at least in a juridical sense.

The authors argue that diversification tends to undercut the motivation to engage in political action in any sector. This is based on the notion that top

1. Asghar Zardkoohi, "On the Political Participation of the Firm in the Electoral Process," *Economic Journal* 51(1985): 804–17.

2. Lester M. Salamon and John J. Siegfried, "Economic Power and Political Influence: The Impact of Industry Structure on Public Policy," *American Political Science Review* 71 (3) (1977): 1026–43.

3. Richard M. Cyert and James G. March, *A Behavioral Theory of the Firm* (Englewood Cliffs, N.J.: Prentice-Hall, 1963).

4. James G. March, "Footnotes to Organizational Change," *Administrative Science Quarterly* 26 (4) (1981): 563–77.

managers are only boundedly rational, that their attention is limited, and that only the most salient political opportunities and threats are perceived by these managers. However, political action can to some extent be decentralized in multidivisional firms, as, for example, when a steel firm like USX establishes different political action committees for different divisions of the firm. In addition, management of the firm's political environment may be a heavy responsibility for top management, so that they shed other responsibilities before they give up supervision of the firm's political strategy. One simple reason why multidivisional firms may be less politically active on a given issue than single-product counterparts is that different divisions may have conflicting interests in protection of steel. This would follow if the multidivision enterprise is both a producer and a consumer of steel.

Interpreting the Empirical Results

The findings on political involvement show that market share is consistently positively related to level of activity. This is not inconsistent with Olson's standard argument, but a curvilinear rather than a linear relationship would seem to be implied by a free-riding argument. The main puzzle that the authors set for themselves is the disparity between the results on political involvement and those on abnormal returns. Why are the results dissimilar? One reason is the very explanation that the authors reject. If small firms derive the same advantages from protection as large firms, but free ride, or at least make proportionately no greater political efforts than the large firms, then market share would have no relationship to abnormal returns, but it would be positively related to level of political effort. That is exactly what their findings show.

The minimills, other things being equal, are as (in)active as the integrated producers. This is so in the face of results on the abnormal returns equations that suggest a weak tendency for minimills to lose wealth from the trade restraints secured by the integrated producers. One way to make sense of these results is to consider the possibility of strategic interaction between the integrated producers and the minimills. The minimills may have refrained from political action not because they were free riding on the integrated producers but rather because of a rational calculation that enhanced political activity could easily be matched by greater efforts by the integrated producers, thus producing no change in political outcomes but a greater expenditure of resources for all concerned.

Extensions of the Research

Lenway and Schuler suggest that considering the specific product mix of firms compared to the products covered by protective measures would likely improve the performance of the abnormal returns equation. I agree, and also

suggest that they consider the geographic region where the firm's sales take place and relate that to the countries that are the target of the protective measures. For example, West Coast producers will benefit more from protection imposed on East Asian producers, East Coast producers will be relatively more concerned about protection levied against European producers.

A number of alternative strategies for modeling political activity are implicit in my previous comments. In addition, the following measures could be taken:

1. Model the individual elements of a vector of political activities rather than using factor analysis to create a single summary statistic. This would be particularly helpful if one were attempting to evaluate the ways in which different mixes of political activity are chosen by different firms, or if one were interested in the degree of substitutability of different political activities.

2. Explicitly model the level of political activity by firms opposed to proposed policy changes. This is another possible source of a disparity between protectionist political effort and protectionist political results.

3. Model the nature of the political situation in which political activity is occurring. The degree of success may be affected by the thinness of the governing coalition's majority, the time left until the next election, and the level of demands being placed on the government by other groups, including foreigners.

Comment

Wendy E. Takacs

I found the Lenway and Schuler paper very interesting. The results of the hypothesis testing were enlightening, but in addition I found some of the intermediate results to be equally intriguing, perhaps because they provide evidence for some hypotheses of my own about what determines attempts to obtain protection and the importance of the form of protection granted.

My comments begin with some observations on the results and conjectures as to why those results were obtained, add some miscellaneous observations, and end with some suggestions for extensions.

The main thrust of the paper is to provide empirical evidence on a number of questions pertaining to the involvement of individual firms in attempts to gain protection:

1. What factors determine a firm's degree of political involvement in attempts to obtain protection where the political activity is measured by political contributions, testimony before Congress, and the number of cases launched in the three established procedures for petitioning for protection: antidump-

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ing-duty investigations, countervailing-duty investigations, and escape-clause actions?

2. Do these *same* factors determine the benefits of protection, measured by abnormally high stock prices during a period of time surrounding the announcement of the protection?

3. Are the more politically involved firms the ones that receive the greatest benefits from protection?

The clearest result is that market share is the most significant determinant of the amount of resources firms devote to the activity of attempting to get protection. The authors conclude, "firms with higher expectations of financial benefits from trade restraints expend the most effort in attempting to influence U.S. trade policy." It is useful to note that the expectation of financial benefits from trade restraints has two components: (1) the expectation of a positive result, that is, the expectation of being able to influence policymaking in the desired direction, and (2) the size of the gain if protection is obtained.

Larger firms probably have a higher expectation of being able to influence policy by their individual actions than do smaller firms *and* probably have more to gain than smaller firms. Larger firms have more employees and therefore more votes; larger firms are more likely to be multiple plant operations and therefore be constituents to more politicians. Particularly in an industry like steel, they are probably accustomed to being able to influence their product market, so why not the political market for protection as well? They may perceive themselves as having a higher probability of influencing the political process. On the second point, firms with larger market share have more output, and so if prices increase due to protection, they stand to receive larger rent transfers.

I also found it noteworthy that firms with a higher return on equity in years leading up to the protectionist episode appeared to devote more resources to attempts to obtain protection. This relationship did not quite reach a level of statistical significance at conventional levels. But it still contradicts the image of hard-pressed import competing firms with their backs to the wall seeking protection as a last resort out of desperation. The results indicate that firms devote resources to further improving their profitability when they are relatively better off. This result, albeit tentative because of the lack of statistical significance, has important implications for the duration of protection. Obtaining protection will encourage firms to devote yet more resources to the campaign to maintain the protection because it increases their expectations of being able to influence the political process and increases their profitability, giving them more resources to devote to the campaign to maintain the protectionist measures.

At first it struck me as perplexing that the factors that explain firms' degree of political involvement did not appear to explain the benefits they receive from the protection, and that there was no apparent direct relationship between the magnitude of firms' political activities and the benefits they receive,

at least as measured by increases in share prices. Let me offer some conjectures as to why this result was obtained.

The first has to do with the role of expectations and the method that the authors use to measure the benefits of protection. The authors use two windows of abnormal returns, one starting ten days before and ending ten days after the announcement of protection, and the other starting ten days before and ending one day after the announcement. Both of these periods may be too short, in that share prices may already reflect the expected benefits of the government's expected action well before this. In that case, the windows used would reflect abnormally high returns only if the protection received was greater than had been expected, and abnormally low returns only if the announced protection was *less* restrictive than anticipated.

To make a comparison with some similar work, Hartigan, Perry, and Kamma used a similar methodology to test for the impact of escape clause actions on share prices.[1] Their study used weekly data, and a window starting two weeks before an escape-clause petition was filed and ending four weeks after the final decision, a period that averaged about forty weeks. Lenway and Schuler might be able to better measure the expected benefits of protection by expanding the window backward, but it is not clear that doing so will dramatically alter the results, because even with the longer window Hartigan and his colleagues found that only two of nineteen industries had significantly positive abnormal returns. Their work does provide some support for the notion that protectionist measures more or less restrictive than those anticipated will affect stock prices. They analyzed the behavior of stock prices around the key dates of the USITC and presidential decisions, and found one case with a significantly negative reaction of stock prices to a presidential decision to protect the petitioning industry. In that case, however, the ITC had recommended import quotas, but the president decided to negotiate a VER, which may have been viewed as less restrictive than anticipated, causing stock prices to fall when that decision was announced.

My second conjecture as to the lack of perceived profitability of the announced protection is that the costs of the attempts to obtain protection eat into the increased profits from it, leaving little net gain. The behavior of stock prices may reflect a correct assessment of the benefits of protection, coupled with recognition of the magnitude of the costs involved in lobbying, and the lawyers' and consultants' fees required to initiate and carry through with an antidumping, countervailing-duty, or escape-clause petition. The results in the paper thus could be interpreted as evidence of the wastefulness of rent-seeking behavior, which leaves little net gain even for the firms most actively involved.

1. James C. Hartigan, Philip R. Perry, and Sreenivas Kamma, "The Value of Administered Protection: A Capital Market Approach," *Review of Economics and Statistics* 68 (1986): 610–17.

In addition to commenting on the results, I would like to say something about the data reported by the authors. I found the data on abnormal returns for the four protective episodes examined particularly intriguing because of the positive and highly significant abnormal returns when the OMA was negotiated with the EC in 1982, as compared with the trigger price mechanism in 1977, its reinstitution in 1980, and the extension of the OMA in 1984. This information provides some empirical support for the notion that in relatively concentrated industries, quantitative restrictions provide greater possibilities for increased prices and profits than price-oriented measures. Given my point above about expectations, this would have to be interpreted as unanticipated use of quotas rather than price-oriented measures. This interpretation seems reasonable in that in 1982 the steel companies filed countervailing duty and antidumping duty petitions, which normally would have been expected to result in extra duties, but instead the administration reacted by negotiating the OMA.

With respect to extensions, I agree with the authors that it would be useful to include a variable to capture the effect of the particular firm's product mix. Political involvement might be found to depend on the degree of import penetration in the firm's major products, and abnormal returns might be found to depend on the firms' product mix relative to the restrictiveness of the protective measure for various products.

A variable to capture the effects of geography might also help to capture the relative benefits of protection across firms. It is my understanding that firms near the coasts, particularly the West and Gulf coasts, were under more competitive pressure from imports than firms in the center of the country. Perhaps this dimension could be captured by a variable based on the distance of the firm's plants from the nearest deepwater port or some measure of import penetration by region relative to the location of the firm's plants.

Lastly, it is also interesting to contemplate the extension of this methodology to other industries. What if any modifications or additional variables would be necessary to capture differences among firms in those industries? Two other industries that have campaigned to obtain protection are footwear and automobiles. In those industries a very important factor, which does not appear in the steel case, is the degree to which the firm is involved in importing for domestic sale as well as selling domestically produced output. It is not surprising that the auto escape-clause petition in 1980 was filed by Ford Motor Company and the United Auto Workers, without direct participation by General Motors or Chrysler, who were more deeply engaged in the activity of selling imported small cars and trucks, the so-called captive imports.

When firms in an industry differ in the degree to which they import as well as produce at home, attempts to gain protection may be an attempt by domestic firms to gain an advantage relative not only to foreign firms but also to other domestic firms. This idea is consistent with Lenway and Schuler's report

that at least one domestic steel firm testified against imposing import restrictions and the result that abnormal returns were significantly lower for minimills when protection was announced in 1977. The possible use of protectionist measures as strategic maneuvering vis-à-vis other domestic firms deserves more attention and investigation.