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Protection and the Byrd Amendment**

by

Kara M. Olson

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Subsidizing Rent-Seeking: Antidumping Protection and the Byrd Amendment

Kara M. Olson**

Abstract

Theoretical comparisons of the welfare consequences of tariffs, subsidies and import licenses have relied on the assumption that firms reap no private benefits from the imposition of a tariff. This paper conducts an empirical analysis of whether a recent change in U.S. antidumping law known as the Byrd Amendment bestows private benefits to firms lobbying for tariff protection and, thus, increases the level of rent-seeking in the United States. The results provide strong evidence that industries have chosen to lobby for more tariff protection, or filed more antidumping petitions, since passage of the Byrd Amendment. However, there is less evidence that the number of firms filing these petitions increased under the law. This suggests that the Byrd Amendment only partially alleviates the incentive to free-ride.

Key words: antidumping, Byrd Amendment, rent-seeking, free riding, trade protection

JEL classification: F13

** American University. Contact: Kara M. Olson], Department of Economics, American University, 4400 Massachusetts Avenue, NW, Washington, DC 20016-8029. Email olson@american.edu

1 Introduction

Comparisons of the welfare consequences of tariffs, import licenses and subsidies are based on the assumption that while firms reap private benefits from the award of an import license or production subsidy, all firms within an industry benefit from the imposition of a tariff. Tariffs are, in a sense, a public good. Because of the free rider problem associated with public goods, the level of rent-seeking in a society will be higher when the government uses production subsidies or import licenses than when it uses tariffs as a policy tool.¹ Although the theoretical underpinnings of this analysis is sound, the results may prove to be irrelevant if firms can reap private benefits from the imposition of a tariff. This paper conducts an empirical analysis of whether a new law provides private benefits to firms seeking the imposition of tariffs and, thus, increases the level of rent-seeking and trade protection in the United States.

In the fall of 2000 Congress passed the “Continued Dumping and Subsidy Offset Act,” more commonly known as the Byrd Amendment. Under this law, firms that actively support successful antidumping petitions can be awarded with a portion of the tariff revenue that results from the petition.² I argue that the Byrd Amendment essentially provides private benefits to firms filing antidumping petitions. Therefore, more firms will engage in rent-seeking under the law and the number of firms filing petitions will increase.

Previous studies have found that increasing the private benefits of participating in antidumping petitions will theoretically increase the level of trade protection in an economy. For example, using simulations of a model of firm participation in antidumping petitions, Olson [2004] concludes that increasing the private benefits to firms participating in successful

¹For example, Rodrik [1986] finds that the welfare lost due to the imposition of tariffs may be less than that lost due to the accordance of subsidies because firms will expend fewer resources lobbying for tariffs due to the public goods problem.

²If an antidumping petition is successful, tariffs are imposed upon products from specific countries that are found to be selling products in the United States at prices below the average cost of production or the domestic price in the targeted country. Baldwin and Moore [1991], among others, provides a more thorough description of U.S. Antidumping Law.

antidumping petitions by 10 percent will increase the proportion of firms filing antidumping petitions nearly 4 percent and the number of petitions filed by 9.3 percent. This research expands upon Olson [2004] by specifically testing whether the Byrd Amendment has significantly increased the number of firms filing antidumping petitions in the first three years of the law's existence.

I decompose this general query into two separate but important issues: (1) has the Byrd Amendment increased the number of petitions filed by industries and (2) conditional on filing a petition, has the Byrd Amendment increased the number of firms actively participating in these petitions. Using an econometric model that corrects for the inherent selection bias problem, I find strong evidence that industries have chosen to lobby for more tariff protection, or filed more antidumping petitions, under the Byrd Amendment. However, there is less evidence that the number of firms filing these petitions increased under the law. This suggests that the Byrd Amendment only partially alleviates the incentive to free-ride.

The paper is organized as follows. In the next section I provide a brief description of how the Byrd Amendment provides private benefits to firms lobbying for tariff protection. Sections 3 and 4 discuss the data and econometric specification respectively. Section 5 presents the results and Section 6 concludes.

2 Private Benefits Under the Byrd Amendment

Intuitively, the Byrd Amendment induces firms to file antidumping petitions in two important ways. First, by distributing the tariff revenue from successful petitions to firms within the industry, the law increases the total, industry-wide expected benefits of filing a petition. It thereby increases the entire industry's incentive to file a petition. Second, and perhaps more importantly, because the Byrd Amendment only awards funds to firms that actively support petitions, it provides private benefits to firms that choose to file the petition. Thus, the Byrd Amendment reduces the incentive of firms to free-ride off others in the industry and diminishes this traditional barrier to lobbying for the imposition of tariffs.

Specifically, the Byrd Amendment requires the Customs Service to dispense all tariff revenue collected due to a successful antidumping petition to only those firms that actively supported the original petition.³ Anecdotes published in the popular press confirm that the law has given industries and individual firms more incentive to participate in antidumping petitions. For example, the Chief Financial Officer of a Californian mushroom processor noted that before the Byrd Amendment the company had not bothered to complain officially about foreign competition. However, the cash incentive under the Byrd Amendment “absolutely” made the company more likely to file a claim.⁴

It should be noted that firms do not necessarily have to actually file a petition in order to be eligible for Byrd Funds. Any firm that indicated its support for the original petition in the course of the government’s investigation is eligible. However, there is evidence that firms may want to be included amongst those firms actually filing the petition in order to ensure their eligibility for these monetary benefits. For example, the government recently rejected a company’s request for Byrd Amendment funds, asserting that the company only offered conditional support for the tariffs in the original petition. Rulings such as this likely encourage firms to more actively support antidumping petitions. In another example, the Seafood Trade Action Committee recruited firms to participate in an antidumping petition filed in 2003, distributing fliers which noted that “you must register to participate in any monetary benefits that may accrue through duties levied on imported shrimp if the domestic shrimp industry prevails.” This active recruitment process led to a lawsuit when the Committee opposed efforts to expand the scope of the petition to include fresh shrimp, despite contributions by Louisiana shrimpers of nearly \$50,000 to fund the petition. In the suit, shrimpers demanded a portion of any monetary distribution received as a result of the antidumping

³Tariff revenue is not divided equally among qualified firms. Firms instead apply for Byrd funds to pay for “qualified” expenditures, which include such things as manufacturing facilities, equipment, research and development, and personnel training. Customs reviews applications on an annual basis and distributes available funds proportionately according to the amount of each firm’s qualified expenditures.

⁴Jeffrey Sparshott, “Firms get \$329 million to offset foreign goods: 1,200 recipients of subsidy plan.” *The Washington Times*. December 20, 2002.

petition.

Not surprisingly, the law has proven to be extremely popular amongst U.S. producers. Customs distributed \$561.1 million to over 1,200 firms between 2001 and 2002. The value of individual awards ranged from hundreds of dollars to more than \$60 million. The law has been strongly criticized by U.S. importers and exporters, as well as its leading trading partners. For example, a group of U.S. importers claimed in February 2001 that the law “creates a financial incentive to support petitions [in order to collect] duties later, and could work to increase the number of ...cases filed.”⁵ European Union officials have stated that the system “creates a perverse incentive system” to reward companies for bringing complaints.⁶ The World Trade Organization ruled in September 2002 that the Byrd Amendment violates the international agreement on subsidies and directed the United States to abolish the law. There are currently two bills pending before Congress that would repeal the Byrd Amendment, although it is unclear when action on these bills will be taken.

3 Data

I compiled data on 447 four-digit SIC87 manufacturing industries for the years 1979 through 1997 and 365 six-digit NAICS97 manufacturing industries for the years 1997 through 2002.⁷ The U.S. Bureau of the Census’ Annual Survey of Manufacturers, Survey of Plant Capacity, and Economic Census provides data such as the capacity utilization rate and the

⁵“Importer Group Urges U.S. Congress to Repeal Byrd Amendment,” Dow Jones International News, February 13, 2001.

⁶Elizabeth Olson, “U.S. Law on Trade Fines is Challenged Overseas,” The New York Times, July 14, 2001.

⁷In 1997, the U.S. Bureau of the Census drastically changed its industrial classification system from the Standard Industrial Classification (SIC) system to the North American Industrial Classification System (NAICS). Although concordances exist to convert NAICS97 data to SIC87 data, because I am not utilizing the panel nature of this dataset changing industrial classification schemes will not effect these results.

four-firm concentration ratio.⁸ I collected import and export data from the NBER's U.S. Import and Export Database and the International Trade Commission's dataweb. Finally, macroeconomic variables such as the annual unemployment and GNP growth rate were gathered from the Bureau of Labor Statistics and Bureau of Economic Analysis.

I merged the resulting panel with antidumping petition information.⁹ The U.S. Antidumping Database includes information such as the date of initiation and the outcome of petitions filed between 1980 and 1994. I supplemented this database with the information from Federal Register Notices associated with petitions filed between 1995 and 2003. I collected data on the proportion of firms filing the antidumping petitions for the entire sample period from Federal Register notices and International Trade Commission reports.

Between 1980 and 2003, U.S. manufacturing industries filed a total of 1,033 antidumping petitions. As can be seen from Figure [1], the number of petitions filed in a single year ranged from a low of 14 in 1995 to a high of 93 in 1992. Studies such as Takacs [1981] have found clear evidence that the number of import-relief petitions filed each year is negatively-correlated with important macroeconomic variables such as GNP growth rate. The total number of petitions filed by a single industry in a single year ranged from 0 to 56 during this time period.

The raw data provides no clear evidence that the Byrd Amendment has positively affected the number of petitions filed during the sample period. In fact, the parameter estimates from a Poisson regression of the total number of petitions filed each year indicate that the Byrd Amendment has actually reduced the number of petitions filed, although this parameter estimate is insignificant. The results from this regression are presented in Table [1].

⁸The Economic Census is released every five years (in 1982, 1987, 1992, and 1997). Therefore, the four-firm concentration ratio and total number of firms in the industry were imputed for non-Census years.

⁹The International Trade Commission and Department of Commerce use data from the "period of investigation" to determine the amount of protection to award to the firm. Because this period is typically defined as the six months prior to the initiation of the case, I merged petition information with economic variables from the prior year. For example, the number of firms participating in a petition filed in 1993 is assumed to be a function of the value of imports in 1992.

Table [2] shows the distribution of firms choosing to actively participate in antidumping petitions over the sample period. The average proportion of firms participating in a single antidumping petition increased from 40.4 percent between 1980 and 2000 to 46.3 percent following passage of the Byrd Amendment, suggesting that the law does encourage more firms within the industry to support an antidumping action.

4 Econometric Specification

As noted in the Introduction, the goal of this research is to determine whether the Byrd Amendment has significantly increased the number of firms filing antidumping petitions. I decompose this general query into two separate but important issues: (1) has the Byrd Amendment increased the number of petitions filed by industries and (2) conditional on filing a petition, has the Byrd Amendment increased the number of firms actively participating in these petitions.

In order to accurately estimate the effect of the Byrd Amendment, one must correct for the sample selection problem which plagues studies of this nature. Specifically, a positive number of petitions is observed only if at least one firm in the industry chooses to actively participate in the petition process. Firms within industries that choose to file antidumping petitions may have common, unobserved characteristics which impact both the number of petitions filed as well as the proportion of firms filing those petitions. Econometric specifications that do not account for this sample selection bias result in inconsistent estimates. The econometric model detailed below is similar to one developed in Terza [1998], who found that a maximum likelihood approach is the most efficient estimator for count data models with sample selection.¹⁰

The number of petitions filed by industry i in period t , y_{it} , is a Poisson random variable with parameter λ_{it} . Here, λ_{it} denotes the expected number of petitions filed by industry

¹⁰See Greene [2000] for a description of the sample selection problem, and various methods to correct for this problem in count data models.

i in period t , which is a function of both observed industry characteristics represented by x_{it} and unobserved characteristics represented by the error ϵ_{it} . Based on this specification, the distribution of the number of petitions filed by industry i conditional on unobserved characteristics is defined as:

$$\begin{aligned} y_{it} | \epsilon_{it} &\sim \text{Poisson}(\lambda_{it}) \\ \ln \lambda_{it} | \epsilon_{it} &= \beta' x_{it} + \epsilon_{it} \end{aligned} \quad (1)$$

where β includes parameters to be estimated. Observed industry characteristics include variables that previous studies have found to be important determinants in the success of antidumping petitions, including the value of imports and the growth in capacity utilization. I also include macroeconomic variables in x_{it} to capture the impact of business cycles on the number of petitions filed.

For each petition filed, the proportion of firms in the industry choosing to participate in petition p , P_{itp} is defined as

$$P_{itp} = \delta' k_{it} + \nu_{itp} \quad (2)$$

where k_{it} includes observed industry characteristics such as the four-firm concentration ratio, the error ν_{itp} captures unobserved factors which influence the proportion of firms participating in petition p , and δ includes parameters to be estimated.

I assume that the distribution of ϵ and ν is a bivariate normal, such that

$$\begin{pmatrix} \epsilon_{it} \\ \nu_{itp} \end{pmatrix} \sim N \left(\begin{pmatrix} \mu_\epsilon \\ \mu_\nu \end{pmatrix}, \begin{bmatrix} \sigma_\epsilon^2 & \sigma_{\epsilon\nu} \\ \sigma_{\epsilon\nu} & \sigma_\nu^2 \end{bmatrix} \right) \quad (3)$$

The same unobserved characteristics that induce an industry to file one or more petitions, as captured in ϵ , will also effect the proportion of firms participating in those petitions. The covariance between ν and ϵ captures this relationship.

Define y_{it}^* as a dummy variable that equals one if firms within the industry choose to file at least one petition. Under a maximum likelihood approach, the likelihood contribution for a single observation can take one of two forms. If no petitions are filed, then the likelihood

contribution is the probability that firms within the industry choose to file 0 petitions, or y_{it} equals zero.

If one or more petitions are filed, then the likelihood contribution is the joint probability of observing the number of petitions filed and the proportion of firms participating in each of those petitions. The probability of observing y_{it} petitions filed by industry i in period t conditional on the unobserved factors captured in ϵ_{it} is defined as

$$Prob[y_{it}|x_{it}, \epsilon_{it}] = \frac{\exp[-\lambda_{it}(\epsilon_{it})]\lambda_{it}(\epsilon_{it})^{y_{it}}}{y_{it}!} \quad (4)$$

Using the bivariate normal distribution, the probability of observing P_{itp} firms participating in each petition, conditional on the number of petitions filed, is defined as

$$Prob[P_{itp}|k_{it}, \epsilon_{it}] = \frac{1}{\sqrt{2\pi\sigma_\nu^2(1-\rho_{\nu\epsilon}^2)}} \phi\left(\frac{\delta'k_{it} - \mu_\nu - \frac{\sigma_{\nu\epsilon}}{\sigma_\epsilon^2}(\epsilon_{it} - \mu_\epsilon)}{\sqrt{\sigma_\nu^2(1-\rho_{\nu\epsilon}^2)}}\right) \quad (5)$$

where $\rho_{\nu\epsilon}$ is the coefficient of correlation between ϵ and ν and ϕ is the standard normal distribution. Based on this specification, the log likelihood contribution of industry i in period t is

$$Q_{it} = (1 - y_{it}^*) \log Prob[y_{it} = 0|x_{it}, \epsilon_{it}] + y_{it}^* \log Prob[y_{it}|x_{it}, \epsilon_{it}] \prod_{p=1}^{y_{it}} Prob[P_{itp}|k_{it}, \epsilon_{it}]. \quad (6)$$

To complete the specification, I integrate out the error ϵ from the log-likelihood function. The final log-likelihood function is, therefore,

$$LogL = \sum_{t=1}^T \sum_{i=1}^N \int_{-\infty}^{\infty} Q_{it}(y_{it}, P_{it}|x_{it}, k_{it}, \epsilon_{it}) f(\epsilon_{it}) d\epsilon_{it}. \quad (7)$$

There is no closed form solution to the integral in equation [7]. Therefore, I use the Hermite quadrature method to maximize the log-likelihood function using an approximation.

5 Results

The parameters estimates from the maximum likelihood procedure are presented in Table [3], where the standard errors are given in parentheses. As expected, I find strong

evidence that the Byrd Amendment increased the number of antidumping petitions filed by industries between 2001 and 2003. On average, the Byrd Amendment resulted in a 34.9 percent increase in the average number of petitions filed by industries in a given year.

The evidence is not as strong that more firms within industries are choosing to actively participate in those antidumping petitions actually filed. The parameter estimate is positive, suggesting that there has been an increase in the proportion of firms choosing to file petitions under the Byrd Amendment, but it is insignificant. Recall that firms do not necessarily have to file the petition in order to be eligible for Byrd funds, as long as they indicated their strong support for the petition during the course of the investigation. As a result, it may be the case that the Byrd Amendment does not totally eliminate the free-rider effect, and firms are continuing to rely on others in the industry to bear the financial cost of filing a petition even though they can now enjoy the Byrd Amendment revenue associate with a successful petition. This result suggests that the Byrd Amendment increases the number of petitions filed by increasing the entire industry's expected benefits from the petition, with the alleviation of the free-rider problem associated with lobbying for tariff protection only a secondary effect.

Most of the other parameter estimates are significant and of the expected sign. For example, like Takacs [1981] I find that the number of antidumping petitions filed by industries is counter-cyclical; more petitions are filed during periods characterized by high unemployment rates.

The results indicate that the number of petitions filed and the proportion of firms choosing to file petitions increases as the capacity utilization growth rate falls. Capacity utilization is one factor that the government uses to determine whether the domestic industry has been injured by imports; industries with negative capacity utilization growth rates are more likely to be awarded protection, thus more firms choose to engage in costly antidumping actions. For similar reasons, both the expected number of petitions and the proportion of firms filing the petitions increases with the value of industry imports.

The conventional wisdom since Olson's [1965] seminal work on collective actions has

been that the free-rider problem becomes more severe as the number of the firms in the industry rises. The parameter estimates are consistent with this theory, as I find that more concentrated industries are more easily able to overcome the free-rider problem to file more petitions.

6 Conclusion

This paper argues that a recent change in U.S. antidumping law known as the Byrd Amendment essentially provides private benefits to firms that successfully lobby for tariff protection, thus alleviating the free-rider problem that has traditionally been thought to hamper such rent-seeking. Empirical results confirm that more petitions have been filed by industries since the implementation of the Byrd Amendment; the average number of petitions filed by industries in a given year increased 34.9 percent after passage of the law.

However, there is less evidence that the proportion of firms choosing to file these petitions increased under the law. This suggests that the Byrd Amendment increases the number of petitions filed by increasing the entire industry's expected benefits from antidumping petitions, with the alleviation of the free-rider problem associated with lobbying for tariff protection only a secondary effect. This is no doubt due to the law's stipulation that firms do not have to actually file the petition in order to be awarded revenue under the Byrd Amendment as long as they indicate strong support for the petition during the course of the investigation. Therefore, the incentive to free-ride is only partially alleviated under the law.

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Figure 1: Number of Antidumping Petitions Filed by Manufacturing Industries, 1980-2003

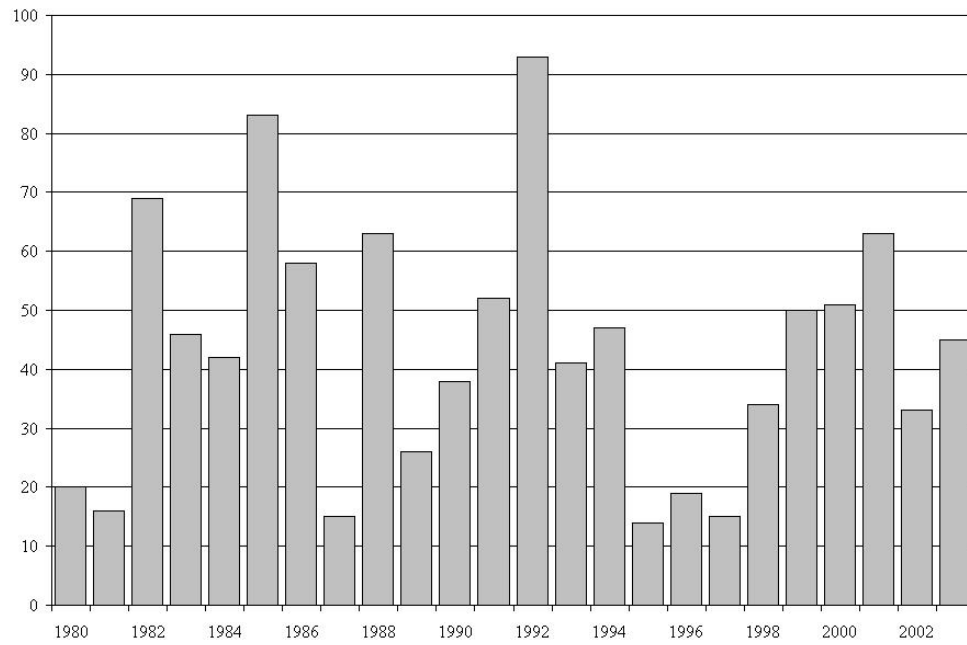


TABLE 1

Poisson Regression Estimates: Number of Antidumping Petitions Filed Per Year

Intercept	1.858
	(2.323)
Capacity Utilization Rate	-0.005
	(0.023)
Real GDP (billions of dollars)	0.100*
	(0.005)
Unemployment Rate	0.191*
	(0.064)
Byrd Amendment	-0.181
	(0.194)

Standard errors are in parentheses. Asterisks indicate those parameters significant at the 5 percent significance level.

TABLE 2

Proportion of Firms Filing Antidumping Petitions

	Share of Petitions Filed Between 1980-2000	Share of Petitions Filed Between 2001-2003
$0.00 < Proportion \leq 0.25$	36.7	17.0
$0.25 < Proportion \leq 0.50$	35.7	51.9
$0.50 < Proportion \leq 0.75$	12.3	18.5
$0.75 < Proportion \leq 1.00$	15.6	12.6

TABLE 3

Maximum Likelihood Estimates: The Effect of the Byrd Amendment

	On Number of Petitions Filed (y_{it})	On Proportion of Firms Filing Petitions (P_{itp})
Mean of Error	-9.468*	0.587*
	(0.218)	(0.049)
Imports (billions of dollars)	0.128*	0.002*
	(0.005)	(0.001)
Growth in imports	-0.305*	0.002
	(0.069)	(0.016)
Unemployment rate	23.472*	-0.912*
	(1.672)	(0.399)
Growth in capacity utilization	-1.436*	-0.061
	(0.191)	(0.045)
Four-firm concentration ratio	10.839*	-0.326*
	(0.732)	(0.033)
Concentration Ratio Squared	-13.936*	
	(0.857)	
Byrd Amendment	0.353*	0.035
	(0.103)	(0.025)
Standard Deviation of ϵ (σ_ϵ)	1.145*	
	(0.019)	
Standard Deviation of ν (σ_ν)		-1.253*
		(0.018)
Correlation between ϵ and ν ($\rho_{\epsilon\nu}$)	-0.036	
	(0.050)	

Standard errors are in parentheses. Asterisks indicate those parameters significant at the 5 percent significance level.