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THE OPTIMAL PROCESSOR TARIFF UNDER THE BYRD AMENDMENT

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INTERNATIONAL AGRICULTURAL TRADE AND POLICY CENTER

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The Optimal Processor Tariff Under the Byrd Amendment

Andrew Schmitz, Troy Schmitz, and James Seale*

I. Introduction

The *Continued Dumping and Subsidy Offset Act* (CDSOA) of 2000 allows producers and processors who successfully petition the U.S. government to impose antidumping (AD) or countervailing (CV) tariffs on competing imports to keep the proceeds of those tariffs. This is referred to as the Byrd Amendment. This paper develops the theory of the optimal processor tariff where processors gain as a result of keeping the revenue generated from tariffs, which is permissible under the Byrd Amendment.

In this paper we draw on trade theory to develop an optimal AD tariff that maximizes profit from a processor's point of view.[1] This optimal AD tariff represents the first-best situation for processors who successfully lobby for AD and CV tariffs against competing products from other countries under the CDSOA. In this paper we show that a processor tariff not only enhances processor welfare, but also improves the welfare of the import competing producers.

II. Model

The processor tariff is discussed with reference to Figure 1. The excess supply curve for the exporter is given by *ES*. The importer domestic supply schedule is S_d and demand is D_d. The free trade price (absent of transport costs) is P_f. Exports are given by

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[1] The optimal revenue tariff and optimal welfare tariff are well-known results from trade theory. A detailed discussion of each tariff instrument can be found in Just, Hueth, and Schmitz (1982) and Schmitz and Schmitz (1994).

Q_1. (These are exports of the raw products since D_d is the derived demand schedule facing producers.)

Now we impose processors who are involved in processing the raw product. Under free trade, they buy product Q_1 from abroad at price P_f and, in addition, buy an amount q_1 domestically at price P_f. The total outlay for the raw product thus becomes

$$\left(P_f \bullet Q_1\right) + \left(P_f \bullet q_1\right)$$

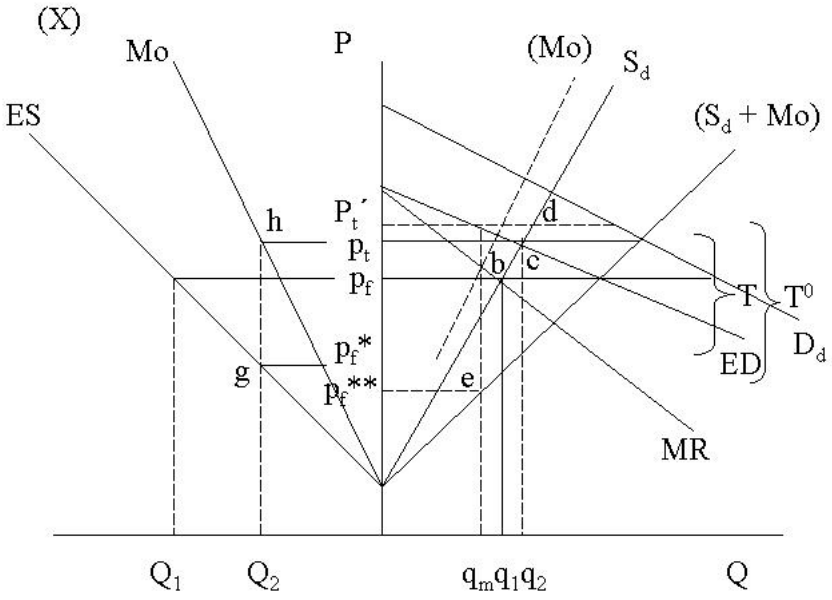

Figure 1. Processor Tariffs

Now, suppose processors are effective in lobbying for a tariff on the raw product of size T. The processor now only imports Q_2 at a price of p_t. The amount of tariff revenue collected by the government is p^thgp_f*. If the processor collects the tariff revenues under the Byrd Amendment, then the effective outlay on imports is $\left(P_f^* \bullet Q_2\right)$. But note that due to the tariff, expenditures on the raw product by processors actually go up from $\left(P_f \bullet q_1\right)$ to $\left(P_t \bullet q_2\right)$. However, total expenditures by processors for both

imports and domestic production actually decrease due to the tariff after the tariff revenue is rebated to the processors.

Note that rent seeking, on the part of processors to have tariffs imposed, also benefits domestic producers; hence they will not oppose tariffs. Domestic producers receive the benefits of both high prices and expanded output. From the processor tariff, producers of the raw product receive added rents of $p^t p_f bc$.

In the above discussion, we assume that processors are able to lobby the government to impose the optimal welfare tariff T. This tariff is determined where S_d plus the marginal outlay curve *Mo* to *ES* crosses D_d. But unlike standard analyses, the processors, rather than the government, collect the tariff revenue. However, this is not the profit maximizing solution for the processor where the processing sector can exert both monopsony and monopoly power. To incorporate monopoly power into the model, we construct the excess demand schedule *ED* and the corresponding marginal revenue schedule *MR*. For a tariff of T^0, the processing sector reduces imports below Q_2. The tariff revenue rebated processors becomes $\left(P_t^{'} \; p_f^{**} \bullet q_m\right)$. Domestic producers become better off than under the optimal welfare tariff by an amount $\left(P_t^{'} \; p_t \, cd\right)$. The optimal tariff for processors leads to a welfare improvement for domestic producers of the raw product over free trade. As a result, lobbying efforts by processors for tariffs is strengthened by support from domestic producers of the raw product.

With international trade and the imposition of tariffs, the profit maximizing solution discussed above for the processor is different than in the case where tariffs do not exist. In the extreme case, the processor would behave as a monopsonist in buying

both from abroad and from the internal market. Thus in equilibrium, the profit maximizing solution for the processor results in a single price being paid for the input (excluding transportation and handling costs), regardless of whether it is imported or produced domestically. Note that this profit maximizing solution leads to greater profits and, in the case above, that tariffs are imposed on the importation of inputs.

Interestingly, in the optimal processor tariff case, the market power by the processor comes about through lobbying for tariffs. With the Byrd Amendment, where the processor received the tariff revenue, the mechanism is put into place whereby the processor can behave noncompetitively through government tariff policy.

What is the optimal processor tariff? The optimal processor tariff is given in Figure 2. The exporter's excess supply is E_s and the importer's demand and supply are D_d and S_d. The free trade price is P_f.

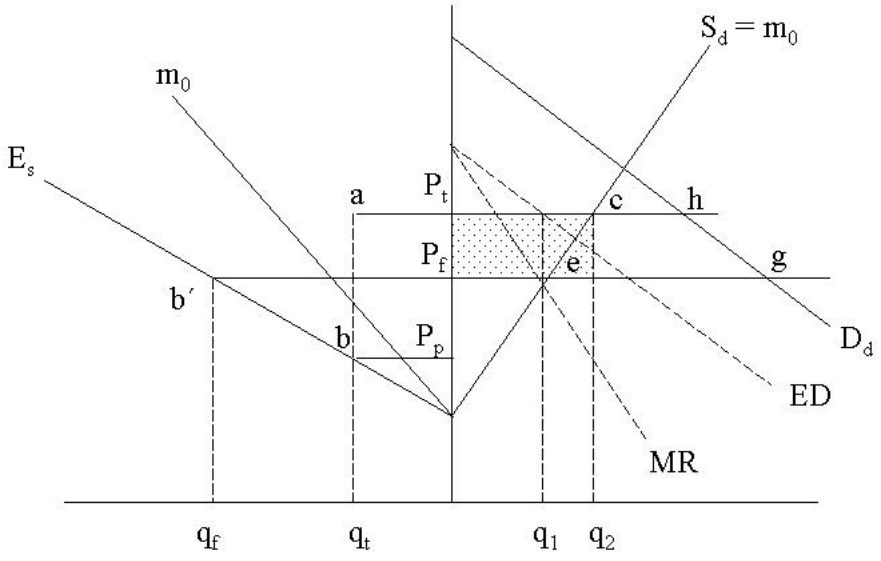

Figure 2. Optimal Processor Tariff

Under imperfect competition, a "pure" multinational processor would behave as both a monopsonist and a monopolist in order to maximize profits. The profit maximizing imports for the processor is q_t for which the processor pays producers in the exporting country price P_p. Producers in the importing country now receive a higher price of P_t, but consumers are also charged this higher price. Export producers lose $P_pP_fb´b$, import consumers lose P_tP_fgh, domestic producers gain P_tP_fec, and processors gain abP_pP_t.

In terms of the welfare of producers in the importing country, as the analysis shows, they clearly gain from a processor tariff. However, their gains are less than the case where the producers negotiate an optimal Byrd Amendment tariff. Using the analysis by Schmitz and Seale (2004), one can show that the optimal antidumping duty where producers receive the tariff revenue is higher than the optimal processor tariff derived in this paper. As a result, producer prices are lower with the processor tariff, resulting in a smaller gain in producer surplus than under a producer tariff. In addition, with the processor tariff, the producers do not get to keep the tariff revenue.

III. Processor Costs

Under standard tariff analysis where the government collects the tariff revenue, processors lose from tariffs. In this case, the total value of imports purchased by the processor decreases under the tariff while the total value of the input purchased from domestic sources increases. However, in aggregate, the per-unit cost of the input increases for the processor. This is very different than in the case where the tariff revenue resides with the processor. In this case, even though the total expenditures on

imports decrease and expenditures on purchases from domestic producers increase, the per-unit cost for the processor falls. The implications are discussed below.

The cost structure assumed for the processing sector is given in Figure 3. The demand for the processed product is given by *D**. Under free trade, the raw product price is p_0 , and $(Q_1 + q_1)$ of the product is processed, given the cost curves *ATC* and *MC*. Under the processor tariff, the cost structure becomes ATC' and MC' because the price of its major input has fallen due to the tariff. The amount processed now becomes $(Q_2 + q_2)$. The processors earn profits of the amount $(p_1\, c_0\, ab)$. Consumers lose *abe*.

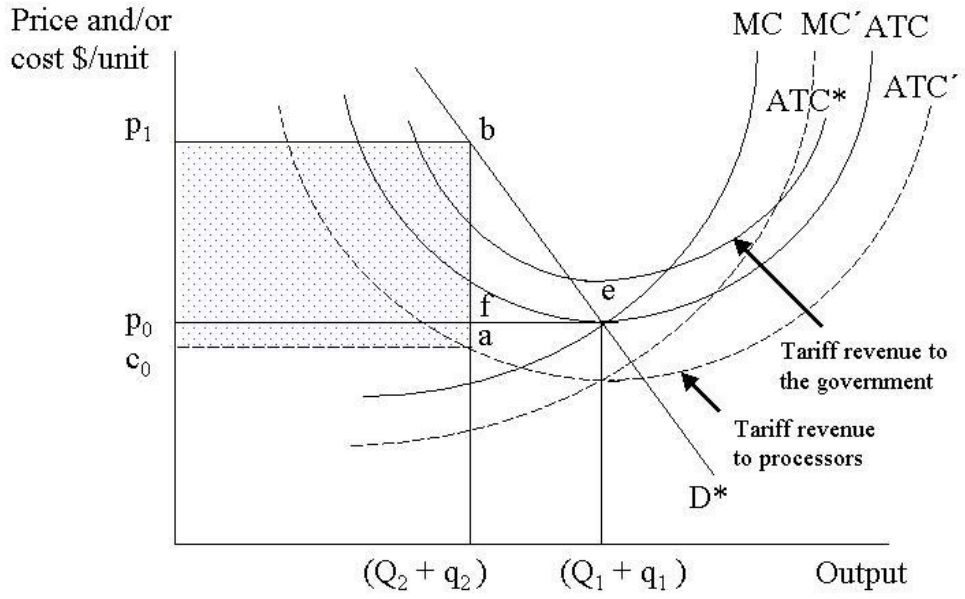

Figure 3. Processor Costs

The net gain or loss is $(bfe) - (p_0\, c_0\, af)$. There would be a net gain if the processors lobbied for tariffs that were of the optimal welfare tariff nature.

From the previous analysis, processors and domestic import competing producers benefit from tariffs under the Byrd Amendment when the tariff revenue remains in the hands of the processors. This is not the case, however, when tariff revenue is collected

and becomes part of government revenue. In this case, domestic producers prefer tariffs to free trade, but processors prefer free trade to tariffs. With reference to Figure 3, if the tariff revenue remains in the hands of the government, the processor's average total cost curve becomes ATC*, which above the free trade average total cost curve ATC. When the tariff remains with the processor, the average total cost curve ATC´ lies below the free trade cost curve ATC.

Under the Byrd Amendment, there are incentives for processors and producers in the import competing country to form coalitions in favor of tariffs. Even though in the case where the tariff revenue goes to processors, producers in the importing country are made better off than under free trade. However, the incentive for coalitions would not exist where tariff proceeds go to governments, since processors lose from tariffs and primary producers win. This is clearly illustrated in Figure 4. Producer gains increase as the level of tariff increases regardless of whether or not the Byrd Amendment applies to processors. Note that if the Byrd Amendment does apply, processors, after some tariff level, lose from heightening the tariff. In the case where the tariff revenue goes to the government, processors prefer free trade, but producers do not.

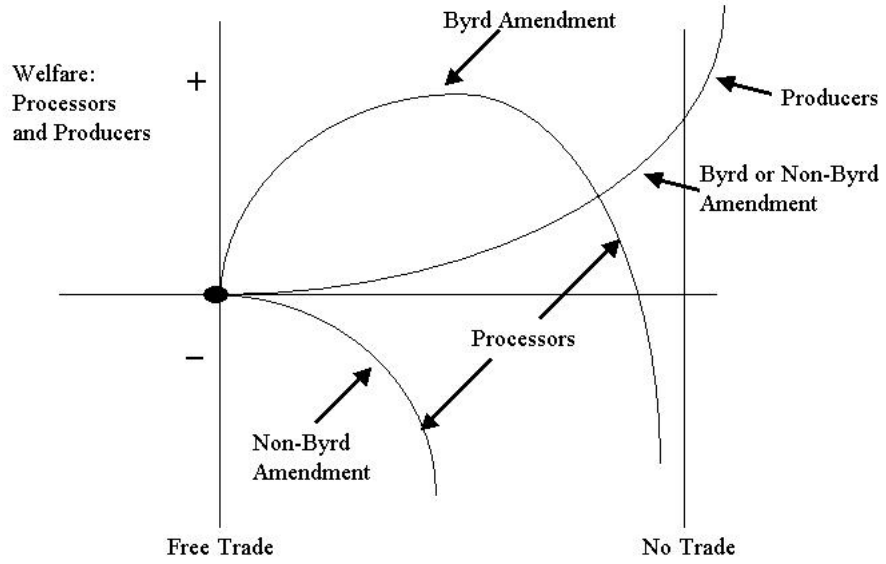

Figure 4. Processor and Producer Welfare from Tariff Protection

IV. Conclusion

The above analysis assumes that processors and producers are separate entities. However, there are many real world cases where producers also own their own processing facilities. In this case, not only do producers become better off from tariffs under the Byrd Amendment, but they also gain from the processing part of their businesses. In this case, joint rent seeking for tariffs would be done by the industry where processors and producers are vertically and horizontally integrated. Even if producers are separate from processors, our paper shows that rent-seeking, by processors for tariffs, would be supported by the import-competing producers of the raw product.

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