The Political Economy of Anti-Dumping

— *Preliminary version*[*] —

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Abstract

In this paper we analyze the effect of domestic pressure as well as the relative advantage of producing a good on a government's decision to initiate anti-dumping (AD) investigations. Using a new set of proxies to measure and compare these variables on a global scale, we draw on data from UN Comtrade and the World Bank. Running a probit and a rare events logit regression, we find that domestic pressure and relative advantage of producing a good has a significant effect on a government's decision whether or not to implement an AD tariff.

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1 Introduction

The World Trade Organization (WTO) considers itself as

> "... a place where member governments try to sort out the trade problems they face with each other." (WTO, 2012)

These processes are not only highly political on the inter-governmental level, but also strongly entangled with domestic politics. Powerful lobby groups for instance are well-known to put pressure on governments to have their interests considered in international trade politics (Goldstein and Martin, 2000; Mitra, 1999). In this paper, we theoretically and empirically discuss the effect of domestic pressure on a government's decision to initiate anti-dumping investigations.

Although free trade seems to maximize global welfare, it is not always the "politically optimal" trade policy (e.g. Bagwell and Staiger (2001); Goldstein and Martin (2000)). An intergovernmental regulating body such as the WTO is therefore deemed beneficial to sooth the tensions created by different trade policies. The biggest problem however is, when to begin with disciplining countries for establishing a higher tariff, subsidy or dumping margin. In general, most tariffs are bound to a certain ceiling and a return to a higher tariff shall always be compensated for. Dumping – i.e. selling a product under cost – and subsidies are forbidden, if another country suffers significant damage. Based on the anti-dumping (AD) agreement and the agreement on subsidies and countervailing measures, a direct counteraction can be taken when facing dumping or subsidies. The damaged enterprise(s) or their representatives (as is a lobby) initiate an investigation by proving the dumping/subsidy and a significant damage to themselves. This is a rather complex and tedious task. Subsequently the government decides whether the application is acceptable and the requirements for implementing a countermeasure in form of a higher tariff are satisfied. In return, the accused country (enterprise(s)/lobby) can initiate a WTO dispute settlement process (Narlikar et al., 2012).

These issues raise interesting questions: What determines an enterprise's decision on whether to initiate an AD investigation? What determines a government's decision on whether to approve an application and why would it even risk to face a costly WTO dispute settlement process? The empirical literature provides different reasons for countries to engage in trade disputes, such as the amount of bilateral trade, the growth rate of the bilateral imports before the investigation started, legal capacity and many others (Bown, 2005; Sattler and Bernauer, 2011; Horn et al., 1999). For a comprehensive literature overview over the theory of international trade agreements and contract remedies see Beshkar (2010). One factor though, as we already suggested, plays a role in nearly all of these works, and that is domestic political pressure. Hillman (1982), Sykes (1991, 2006), Baldwin and Robert-Nicoud (2007) and Beshkar (2010) for example discuss safeguards as a response of governments to the political pressure issued by domestic interest groups. We assume the same for anti-dumping actions. However, it is very difficult to empirically validate these models as a valid and reliable index for measuring domestic pressure or lobbying behavior on a global scale over different sectors and regions is still lacking. That is why we use a proxy for domestic pressure. We take the model developed by Beshkar (2010) which depicts the influence of domestic pressure in form of a political objective function as well as the relative advantage of producing a good, on tariffs.

These two variables are operationalized, and the analysis shows, that producers of goods that are central to their country's economy can more often persuade their government to implement an AD tariff.

This paper proceeds as follows: In the second section we will briefly discuss the latest theoretical framework for the analysis of domestic pressure and safeguards by Beshkar (2010). Section three will describe our proxies and estimation strategies. In section four we will depict our results before concluding in section five.

2 Theory

Our approach to analyze the effect of domestic pressure on the raised questions is based on the political economy framework by Beshkar (2010). Assume that two countries H (no $*$) and F ($*$) produce two goods x and y each. Demand is symmetric and given by $D_i(p_i) = 1 - p_i$ and $D_i^*(p_i^*) = 1 - p_i^*$ for $i \in \{x, y\}$. The supply functions[1] reflect the differences in skills, where $Q_x(p_x) = p_x$, $Q_y(p_y) = bp_y$ and $Q_x^*(p_x^*) = bp_x^*$, $Q_y^*(p_y^*) = p_y^*$ and $b > 1$. This implies that H is a natural importer of good x and F is a natural importer of good y. Since demand is symmetric it holds that $Q_x(p) = Q_y^*(p) < Q_x^*(p) = Q_y(p)$. The only available trade policies are specific import tariffs τ and τ^*. These tariffs create a gap between the prices in the domestic and foreign markets $p_x = p_x^* + \tau$ and $p_y = p_y^* - \tau^*$. The market clearing condition brings us prices for x and y which only depend on the home respectively foreign tariff. These are $p_x(\tau)$ and $p_y(\tau^*)$ in the home country.

The government maximizes the sum of consumer surplus, producer surplus and tariff revenues for both goods. Note that the weights reflecting domestic pressure for the specific product, with which these three terms enter the welfare functions, may differ (Baldwin, 1987; Grossman and Helpman, 1994). Following Baldwin (1987) there is a slightly higher weight on the import competing sector. Let $\gamma \geq 1$ ($\gamma^* \geq 1$) be the weight on import competing sector in H. The welfare of H is

$$W(\tau, \tau^*) = W_x(\tau) + W_y(\tau^*) \tag{1}$$

with

$$W_x(\tau) = \int_{p_x(\tau)}^{1} D_x(u)\,du + \gamma \int_0^{p_x(\tau)} Q_x(u)\,du + \tau M_x(p_x(\tau)) \tag{2}$$

and

$$W_y(\tau^*) = \int_{p_y}^{1} D_y(u)\,du + \int_0^{p_y} Q_y(u)\,du \tag{3}$$

and

$$M_x(p_x) = D_x(p_x) - Q_x(p_x) \tag{4}$$

[1] The supply functions can be derived from the following production functions $Q_x = (2L_x)^{\frac{1}{2}}$, $Q_x^* = (2bL_x^*)^{\frac{1}{2}}$, $Q_y = (2bL_y)^{\frac{1}{2}}$ and $Q_y^* = \left(2L_y^*\right)^{\frac{1}{2}}$. L_i (L_i^*) is the labor used in production if good i in H (F) for $i \in \{x, y\}$ and it is assumed that labor is infinitely elastic at unitary wage.

The optimal tariffs can be derived: the Nash-tariff maximizes welfare of the import competing sector without considering the welfare function of this sector in the other country $W_x^*(\tau)$. The politically optimal tariff maximizes the sum of the welfare of both countries $W_x(\tau) + W_x^*(\tau)$.

$$\tau^N = \frac{4 - 2\gamma(1+b)}{\gamma - 11 + 2b(\gamma - 7) + b^2(\gamma - 3)} \tag{5}$$

$$\tau^{PE} = \frac{\frac{1}{(3+b)^2}[4 - 2\gamma(1+b] + 2(b-1)}{[\gamma - 11 + 2b(\gamma - 7) + b^2(\gamma - 3) + 2(1+b)} \tag{6}$$

As demonstrated by Beshkar (2010) $\tau^N > \tau^{PE}$. Further already Bagwell and Staiger (2001) showed that Nash-tariffs are not efficient while politically optimal tariffs are. As we can see, the tariffs depend on the parameters b and γ. Parameter b reflects the relative advantage in production of one country above the other. Parameter γ depicts the weight a government attaches to a specific (in this model: import) sector. Differentiating these tariffs with respect to γ gives a clearly positive sign. This also holds if the weight is not attached to the import competing sector but to the other one. On the other hand, the interdependence between the tariff and b is not clear at all. Our goal now is to examine this result empirically and to test some of our hypotheses concerning the relation between a tariff and b.

3 Empirical measures for b and γ

In order to examine the theoretical results empirically, the two parameters *relative advantage in production (b)* and *political weight (γ)* are implemented as follows:
The first parameter – relative advantage in production (b) – is captured by a country's revealed comparative advantage (RCA) of the particular good. RCA_k^j measures the share of product j's exports on the total exports of country k, normalized by the share of product j's exports of the average country (Balassa, 1986). If e.g. the export share of apples in our country is higher than the worldwide average, we have an RCA of larger than 1:

$$RCA_{k,j} = \frac{\frac{x(k,j)}{\sum\limits_{j} x(k,j)}}{\frac{\sum\limits_{k} x(k,j)}{\sum\limits_{k,j} x(k,j)}} \tag{7}$$

The second parameter – political weight (γ) – is captured by a density measure from network theory. The density of a product measures how good a product is "embedded" in a country's export structure (Hidalgo et al., 2007). As the "embeddedness" of a product j is expressing its centrality for country k's export structure, it serves as a proxy for domestic pressure of lobby groups interested in protection.

To calculate the density of a product in a given country, first the proximity between any two products i, j is estimated as the minimum of the pairwise conditional probabilities of having an RCA of larger than one. Given a country already has an RCA of larger than one for bananas, what is the conditional probability that it also has an

RCA of larger than one for apples and vice versa. If worldwide apples and bananas are often produced together, this probability is quite high.

$$\phi_{ij} = \min\left\{\mathbb{P}\left(RCA_i \geq 1 | RCA_j \geq 1\right), \mathbb{P}\left(RCA_j \geq 1 | RCA_i \geq 1\right)\right\} \in (0,1) \tag{8}$$

Second, assume apples have a high proximity to other fruit products and nothing else. If we have an RCA for nearly all of them, the sum of proximities between apples and our produced products is very close to the possible sum of proximities. In other words: It is a key product in our export sector, the density of apples in our country is very high. In general, the density of product j in country k is measured as product j's proximity to the products country k exports as a percentage of the possible sum of proximities to all existing exported products:

$$\omega_j^k = \frac{\sum_i \eta_{k,i}\phi_{ij}}{\sum_i \phi_{ij}} \tag{9}$$

where $\eta_{k,i} = 1$ if $RCA(k,i) \geq 1$ and zero otherwise. The higher ω_i^k is, the better is product i embedded in country k's export structure and the more a lobby is looking for its interests regarding this product. Although these proxies for domestic pressure are not without flaws as many other factors are crucial for lobbying behaviour, it provides us with a comparable measure for every country and product in our dataset.

4 The data

Bilateral trade data on the 4-digit SITC level is available from UN Comtrade (Comtrade, 2010). As few countries reported in the earlier years and we need every country to report in every year, we restrict our analysis to the years 1997 to 2010. The RCA and densities for every country, product and year are then calculated from these trade flows. The Global Anti Dumping database of the World Bank (Bown, 2012) contains information on AD cases for 3050 bilateral cases, 786 products (again on the 4-digit SITC product level) and 75 countries in this period. The panel we use then consists of 75 home countries (H) * 74 foreign countries (F) * 786 products * 14 years = 61,072,200 observations.

Table 1 - Descriptive statistics

Dependent variable:	Binary	Mean	Std. Dev.
Indicator for a case initiated by home (H) against foreign (F) on the 4-digit SITC product level	yes	0.00005	0.00707
Explanatory variables:			
RCA of product in H (t-1)		1.69700	46.07493
Density of product in H (t-1)	no	0.17136	0.12474
Δ RCA negative in H (t-2 - t-1)	yes	0.41425	0.49259
RCA performed worse in H than in F (t-2 - t-1)	yes	0.46857	0.49901
Average number of cases initiated by H against F or F against H until t-1	no	0.10517	0.52518
H's total exports in bn. US $	no	67.40000	173.00000
Share of H's SITC-4 product exports sent to F (t-1)	no	0.01045	0.07643
F's total exports (t-1) in bn. US $	no	67.40000	173.00000
Share of F's SITC-4 product exports sent to H (t-1)	no	0.01045	0.07643

Number of product-country-sitc4 observations under investigation: 3050
Number of countries: 75
Number of SITC4 products: 786
Number of years: 14 (1997 - 2010)

Table 1 gives a short overview of the variables in use. Our dependent variable is the probability of H initiating an AD investigation against F. The average RCA of H in period t-1 was 1.69 and the average density 0.17. In 41% of the observations between t-2 and t-1 the RCA declined in H and in 47% it performed worse than in F. The average number of cases initiated until t-1 by either H or F against the other is 0.1. The mean total exports per year (all products) were 67.4 bn. US $ and on average 1.05% of total SITC-4 product exports were exported to the Foreign country (and vice versa).

5 Empirical results

5.1 Estimation Strategy

Our variable of interest is the probability of a given home country initiating an AD investigation against a given foreign country. As only in a small part of the observations an event happens (i.e. an AD case is initiated) we follow King and Zeng (2001), who develop a framework for estimating rare events. In the logit model the coefficient vector ($\hat{\beta}$) is estimated using maximum likeihood. In the case of rare events these are biased downwards and the likelihood of an event is underestimated.[2] King and Zheng's *ReLogit* (Rare event logit) package for Stata estimates the following logit model:

$$Pr(Y = 1|\tilde{\beta}) = \frac{1}{1 + e^{-X_0\tilde{\beta}}}$$

where $\tilde{\beta}$ is a bias corrected version of the coefficients $\hat{\beta}$ in the usual logit regression. As a robustness check Table 2 also gives OLS and Probit results.

5.2 Regression Results

Our approach to analyze the effect of domestic pressure concerning the questions raised is based on the following considerations: If the relative advantage in producing a certain product is low or declining in H, a lobby group could be encouraged to pressure its government into action. Subsidies not being allowed under WTO rules, the government might act by implementing a countermeasure such as an AD tariff (even if there was no dumping in the first place). We argue that a product has a strong lobby when it is a key product in the export structure of a country and thus has a high proximity to all other exported products. A strong lobby should be more successful in putting pressure on a government.

Column two of Table 2 gives the results of our ReLogit regressions on the year-product-country-pair level. We find that the probability for H to file an AD investigation in period t against F for a given product j increases if product j was better embedded in H's export structure in $t-1$. The mean density in our dataset is 0.17 with a standard deviation of 0.12. Hence a density one standard deviation higher than the mean leads to a $0.12 * 0.28 = 3.36\%$ higher probability of a case being filed (a 70% increase). If we look at our other control variables, a case was more likely, the higher H's (and F's) total exports were and the larger the share of product j's exports sent from F to H was. A lower RCA for the given product in the

[2]For a further discussion see King and Zeng (2001)

given home country, as well as a worse performance of it than in F also increase the likelihood of an AD case. Finally, a more comprehensive dispute history between the two countries until $t-1$, and a smaller share of the product j's exports sent from H to F in $t-1$ increase the probability of a case as well.

Table 2 - Regression results

	(1) Probit	(2) RE Logit	(3) OLS, robust
Dependent variable:	Indicator for a case initiated by home (H) against foreign (F) on the 4-digit SITC product level		
RCA of product in H (t-1)	-0.0054 ***	-0.0162 ***	-0.00000001 ***
	0.0014	0.0054	0.00000000
Density of product in H (t-1)	0.0582 *	0.2788 ***	-0.00003320 ***
	0.0343	0.1198	0.00000872
Δ RCA negative in H (t-2 - t-1)	0.0380 ***	0.1324 ***	0.00000695 ***
	0.0126	0.0450	0.00000249
RCA performed worse in H than in F (t-2 - t-1)	0.0217 *	0.0757 *	0.00000373
	0.0125	0.0446	0.00000235
Average number of cases initiated by H against F or F against H until t-1	0.1275 ***	0.3812 ***	0.00054280 ***
	0.0020	0.0066	0.00001430
H's total exports in Mn. US $	0.0801 ***	0.3152 ***	-0.00000535 ***
	0.0027	0.0102	0.00000050
Share of H's SITC-4 product exports sent to F (t-1)	-0.2884 ***	-1.0415 ***	-0.00015000 ***
	0.0374	0.1261	0.00002310
F's total exports (t-1) in Mn. US $	0.1530 ***	0.6031 ***	0.00000043
	0.0030	0.0111	0.00000047
Share of F's SITC-4 product exports sent to H (t-1)	0.5536 ***	1.7416 ***	0.00045930 ***
	0.0198	0.0617	0.00003110
Year FE	Yes	Yes	Yes
Nr of observations	61072200	61072200	61072200
(Pseudo) R^2	0.2253		0.0017

***/**/* significant on the 1%/5/10% level, repectively. Figures below coefficients are standard errors.

6 Conclusion

From our empirical results we conjecture, that producers of goods that are central to their country's economy can more often persuade their government to implement an AD tariff. Furthermore, the analysis shows that a decline in a product's RCA as well as a generally low RCA also has a significant effect on a government's decision to implement an AD tariff. We also find effects for the total quantity of exports as well as the product's share on the total exports in both countries. Less surprising is that history matters, as countries that have more to fight about will fight more. Of course one can argue about the validity of the density measure as a proxy for domestic pressure. Does a well "embedded" product really have a strong lobby? Many reasons can be put forward to support this assumption. Most importantly, "embeddedness" implies a high degree of connectedness to other products which in turn means many actors are interested in its protection, hence domestic pressure is high. However we don't want to get lost in speculations here. As we are just at the beginning of our research project, we will be able to further scrutinize the validity of our measurements in the future. What we can say at this point of time is that "embeddedness" has a highly significant effect on such an important and extensive decision like implementing a protectionist measure. Nevertheless, future research is necessary to broaden our understanding about this effect on such complex political processes underlying trade policy decision-making.

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