



The Theory of Political Tariff Protection for Agricultural Sector in Developing Countries

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Abstract

This paper aims to analyze tariff protection policies in the agricultural sector of developing countries. The agricultural tariff structure in developing countries is characterized by: i) high average tariffs, ii) the existence of tariff escalation, iii) dispersion of nominal tariffs across tariff lines, and iv) a wide gap between average nominal tariffs and import-weighted average tariffs. Consequently, some features can be extracted that are consistent with the observed patterns of tariff protection in developing countries: i) escalation of nominal tariff rates with the degree of processing, ii) higher average tariffs in the agricultural sector compared to agriculture in developed countries, and iii) higher non-agricultural than agricultural tariff protection. Here the Theory of Political Tariff Protection for Agricultural Sector in developing countries is described. This theory allows us to identify two sets of products. Agricultural products for which tariffs are higher than their political fitted values, therefore, tariff cuts should occur in a long period of time and for which tariffs are higher than their political fitted values therefore tariff reductions would not be politically costly.

INTRODUCTION

Trade protection history in developing countries confirms that the agricultural sector has been usually ignored compared with the industrial sector. This has led to extensive interference of government in economic activities, specifically in the field of trade policies. However, an important question here is: why are trade policies almost always biased against trade, rather than in favor of it? This is why trade negotiations almost always focus on eliminating barriers to trade. There is a clear explanation for this bias in favor of trade restrictions: “revenue-hungry rulers in countries with poor administrative capabilities know that trade is an excellent tax handle. Trade taxes therefore typically contribute a very large share of government revenue in any nation’s early history. Since trade is a convenient tax handle, most governments inherit trade taxes originally put in place for revenue motives. In addition, once protection is awarded,

it is difficult to take it away”. That is why there are strong forces in favor of protection and why reformers who favor lower tariffs have to look carefully for tariffs that they can reduce without provoking strong resistance. Because government trade policies play a considerable role in the formation of the terms of trade of the agricultural sector, agricultural policy analysis seems to have a significant effect on food policy in developing countries. These effects point to the relatively restrictive tariff structure in the agricultural sector. Regarding the issues previously mentioned, three features can be extracted that are consistent with the observed inflexible patterns of tariff protection in developing countries (Cadot, 1997, 2001). (Tables 1 and 2): i) tariff rates escalate with the degree of processing in favor of fully-processed products and wholesalers rather than minimally processed products, farmers, and smallholders; ii) average tariff protection is higher in the agricultural sector compared with

Table 1: Tariff escalation in developing and Industrial countries` Agricultural Sector¹, 2000-2012 (unweight averages in %)

Stage of Production	Developing	Industrial
First Stage Processing	19.0	5.2
Semi-processed	26.3	5.4
Full-processed	29.6	5.8
Ratio of countries without escalation to sample size	4/37	1/7

Source : WTO 2012 Integrated Data Base CD-ROM and WTO Trade Policy Review, Various issues

Table 2: Tariff escalation in Agricultural Sector of developing countries, 2000-20012 (unweighted average in %)

Output	Tariff	Average Nominal Tariff		Average Import-Weighted Tariff	
		Maximum	Minimum	Maximum	Minimum
Raw Materials	Meats	59.91	14.45	149.88	0
	Vegetables	74.1	11.36	53.74	3.7
	Cereals	17.69	2.64	50.74	0.73
	Fruits and Grains	45.57	6.36	51.103	0.5
Processed Products	Processed Meats	212.81	25	172.82	0
	Processed Vegetables	200	0	200	0
	Processed Cereals	146.25	21.25	200	23.15
	Processed Fruits and Grains	61.03	13.47	150.28	0.8

Source: Trade Policy Review.

¹The broad outlines of this argument are taken from Dany Rodrik's paper (1995) entitled: "Political Economy of Trade Policy.". Including 37 Developing countries and 7 Industrial countries (European Union is considered as one country).

the agricultural sectors of all developed countries and even of many developing countries; and finally, iii) tariff protection in the agricultural sector is higher than in non-agricultural sectors, as a result of which the agricultural sector (particularly smallholders) is hurt because of the government's protection of industry.

MATERIALS AND METHODS

High tariffs seem to be consistent with the political and economic structure in developing countries. In this section, the main results reported in the theoretical and empirical literature on endogenous tariff protection are briefly explained. Afterwards, this framework is used to identify agricultural products for which tariffs are higher than their political fitted values therefore tariff reductions would be politically costly, and for which tariffs are lower than their political fitted values therefore tariff reductions would not be politically costly.

Both theoretical and empirical evidence indicate that, *ceteris paribus*, the level of protection given to a tradable agricultural product is directly dependent on the level of industry concentration and the degree of processing of the product and inversely dependent on the import penetration ratio, the share of intra-industry trade, and the equilibrium wage.

Level of industry concentration

Grossman and Helpman (1994) showed that the political equilibrium tariff is equal to:

$$\frac{t_i}{1+t_i} = \frac{\bar{h}_i - \alpha_L \cdot x_i}{\alpha + \alpha_L \cdot m_i \varepsilon_i}$$

where \bar{H} is an exogenous indicator which equals one if a product is represented by a lobby, α_L is the exogenous share of the population that is represented by lobbies, x_i is the domestic output of product i , and ε_i is the import demand or export supply elasticity. The protection received by a product is higher when its producers are politically organized (Rodrik, 1995). There is also a general presumption that industry concentration results in higher levels of protection,

which is confirmed by empirical studies (Trefler, 1993, Marvel and Ray 1983).

Import penetration ratio

When $m/x = (c-y)/y = c/y - 1$ (m is import, c is consumption, and x is the level of production), it is obvious from the Grossman and Helpman formula described above that there is an inverse relation between political tariff protection and the import penetration ratio (Grossman and Helpman, 1994; Anderson, 1980; Finger and Harrison, 1994).

Degree of processing

Producers of processed products are more likely to act in an organized fashion than producers of raw materials or semi-processed goods. Therefore, they will probably be able to receive a higher level of tariff protection (Marvel and Ray, 1983).

Share of intra-industry trade

Theoretically, a higher share of intra-industry trade leads to an increase in the import demand elasticity of products. Therefore, according to the Grossman and Helpman formula (the inverse relation between ε_i and t_i), the politically optimum tariff decreases. Empirically, Marvel and Ray (1987) confirm this theory (Levy, 1997; Marvel and Ray, 1987).

Equilibrium wage

Cadot *et al.* (1997) showed that the optimal tariff is higher when the share of capital remuneration in value added increases. In a two-factor sector, the share of capital remuneration in value added is equal to $\beta = rk / [wl + rk] = 1 / [wl / rk + 1]$, where r is the capital wage, k is the amount of capital, w is the labor wage, and l is the amount of labor. It is obvious that the larger wage causes a decrease in the share of capital remuneration in value added and a decrease in the incentive to lobby in the political game, leading to a reduction in the tariff protection level received (Cadot, 1997; Ray, 1987).

The Grossman-Helpman (GH) model has been widely accepted in the literature on the political economy of trade policy, as Swinnen (2009)

explains: "Surveys of the political economy of trade literature indicate useful characteristics of the GH model. According to Gawande and Krishna (2003), another major advantage of the GH model is for empirical applications: it allows one to go beyond structural econometric models and to relate empirical specifications more closely with theoretical models". Although this model has many advantages, there are problems with empirical analyses using the GH model: "To estimate the GH model empirically requires data on lobbying. This makes estimating the model interesting for the US where data on lobbying through political action committees (PAC) are available (Bombardini, 2005). However, this is typically not the case in other countries, which makes such estimations more problematic. There are a few studies which have tried to estimate the GH model for other countries. They include Gawande *et al.* (2001) on Mercosur, Mitra *et al.* (2006) on Turkey, and Belloc and Guerrieri (2008) on the EU. However, where data on actual lobbying are not available, lobby activities are proxied by other indicators in these studies. Typically these proxies are quite ad hoc". Note that the G-M model will not be estimated in this study. Here the G-H model is involved as a proof of the proposed methodology only to show the relationship between political tariff protection on the one hand and the level of industry concentration and the import penetration ratio on the other. Neither is the lobbying problem directly dealt with in this study. Products for which the concentration index is significantly higher than the sample mean are assumed to be actively lobbying for protection (this assumption was also made by Madani and Olarreaga (2002). However, as Swinnen implies (2009), this problem also disappears, according to Cadot *et al.* (2004): "Cadot *et al.* (2004) adjust the GH model to make it more consistent with empirical observations by introducing factor-market rivalry and input-output linkages. These extensions of the model give rise to counter-lobbying, which yields results that protection escalates with the degree of processing and that rich countries

protect agriculture more than industry whereas poor countries do the reverse"². This finding is clearly supported in this study also.

Theory

The tariff equation for the agricultural sector of developing countries is:

$$\text{Log } T_i = \alpha_0 + \sum \alpha_k \log pv_{i,k} + \mu_i$$

Madani, and Olarreaga, (2002)

Where the subscript i indicates an aggregation of agricultural products in the HS eight-digit classification, T_i is the tariff on product i , the α_k are parameters, $pv_{i,k}$ is the political-economic variable k for product i , and μ is an error term. Political-economic analysis enables researchers to distinguish two sets of products: overprotected and under-protected products. The political protection index (I_i) is defined by the ratio of the actual tariff level (t_i) to the fitted value (\hat{t}_i) from the above tariff equation:

$$I_i = \frac{t_i}{\hat{t}_i}$$

When I_i is greater than one, the product has a higher tariff level than what would have been predicted from the tariff equation. Therefore, overprotected products are those for which the value of the actual tariff is higher than the fitted value predicted by the political-economic variables in the tariff equation. This is the case for agricultural products, for which the political protection indices are greater than one.

CONCLUSION

Trade protection history in developing countries has been influenced by governmental interference in favor of industrial and fully processed products rather than agricultural crops. This paper provides a political protection analysis of tariff reduction trends in the agricultural sector of developing countries. Theoretical and empirical models were presented, and results were discussed. After a brief overview of tariff policy in developing countries, the theoretical basis for the current analysis was presented, empirical models

²The broad outline of this argument is taken from Johan F.M. Swinnen's paper (2009): "Political Economy of Agricultural Distortions: The Literature to Date," Empirical analyses: testing the Grossman-Helpman Model.

and results were discussed, and finally the tariff equation, overprotected products, and underprotected products were described.

This theory suggested devising a long-term optimum tariff structure towards which trade reforms and rational tariff reductions should be aimed. To this end, at first the tariff equation for the agricultural sector should be estimated. Political variables functioning as independent variables in the tariff equation include the concentration index, the import/export ratio, intra-industry trade, degree of processing, and wages. Afterwards, the political fitted tariff and the political protection index should be estimated for agricultural sector. This political tariff analysis identified two groups of highly protected products: those for which tariff reductions would be politically costly and those for which tariff cuts would not be politically difficult. The first group would require a longer adjustment period, while tariff reductions for the second group could be faster. Both groups may include semi-processed or fully processed products in the agricultural sector of developing countries. Tariff cuts in both cases would improve resource allocation within the agricultural sector. Lastly, a special effort should be made to reduce external tariffs on semi-processed and fully processed goods in favor of agricultural crops. Therefore, authorities of agricultural sector in developing countries should consider speeding up tariff cuts to provide effective levels of protection.

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