GDN Project： ″Some Recent Topics and Controversies in the Theory of Strategic Trade Policy”

Non-Technical abstract

1.) Introduction

The focus of our analysis is on the strategic interactions between the domestic and foreign firm and the domestic firm and the domestic government. Thus our analysis encompasses both positive and the normative analysis whereby the latter concentrates on the examining and comparing the various variants of the optimal strategic trade policy.

The distinctive characteristic of the firms in our set-up is their asymmetry. As for the used analytical apparatus, we rely on non-cooperative game theory under both symmetric and asymmetric information. The benchmark concept is n-stage competition model from dynamic non-cooperative game theory. Within that broad concept, we exploit two rather different classes of models.

The first class of models deal with the notion of horizontal product differentiation (or homogeneous goods). This standard model was adjusted to deal with the asymmetries between the firms. The asymmetries, depending on context, come from a) R&D spillovers that are assumed to be basically unilateral, stemming from developed country firm to the developing country firm and b) a gap in the marginal costs between the developed country firm that uses advanced technology and the developing country firm that initially produces with old, less efficient technology.

The second class of the model that we exploit in the project is based on the notion of the vertical product differentiation. The motivation for the introducing this kind of model lies in an empirical observation that the typical pattern of the trade between the developing (or transition) countries and the developed world is such that a higher quality good is produced by the developed country’s firm whereas a lower quality good is produced by the developing country firm. The asymmetry here stems from the difference in the marginal cost of quality enhancement between the developing and developed country firm. The generation of high quality commodities is tightly connected with the R&D investment, learning by doing and the level of human capital and therefore it seems

natural that at the margin an increase in quality would require a higher effort and higher costs on the part of the developing country firm.

2.) Findings and results

The common theme in all there papers is the optimal tariff policy in the regime in which the domestic government cannot pre-commit to the level of tariff ("non-commitment" regime) and there is duopoly competition between the domestic and foreign firm.

1) Thus, in the first paper: "Does "Non-Committed" Government always generate lower social welfare than its "committed" counterpart? " the domestic firm is assumed to be from developed country and the foreign firm is from developing country and there are unilateral R&D spillovers stemming from developed country firm to the developing country firm. We show that in this set-up social welfare in the non-committed regime is higher than social welfare in the corresponding commitment regime1 and, consequently, higher than the corresponding welfare under a free trade regime. The reason for this result is that the optimal tariff in the non-committed regime is lower than the optimal tariff in the committed regime, creating a smaller distortional effect on consumer surplus and tariff revenue. The benefits of the latter exceed the forgone benefits in the domestic firm's profit due to the higher tariff as soon as a small critical level of spillovers is surpassed. A sufficient condition for social welfare in the non–commitment regime to dominate is that the domestic firm's strategic variable— marginal cost reduction — is higher than in the commitment regime. The domestic firm in the non-committed regime has an additional motive to over-invest in order to induce a higher tariff from the domestic government and this additional motive makes it less sensitive to R&D spillovers. Its R&D investment and marginal cost reduction therefore decrease more slowly as spillovers rise, exceeding the R&D investment from the commitment regime as soon as a certain low spillovers threshold level is exceeded.

The second important result of this paper is that the optimal subsidy is also robust instrument in this set-up since it is positive both in combination with the optimal tariff

1 The regime in which the government can pre-commit to the level of tariff.

and alone, as the only policy instrument irrespective of the level of spillovers. The reason for this is the socially inefficient level of private R&D due to the appropriability problem that subsidy aims to correct and due to the scale economies that larger R&D investment brings about.

2) In the second paper "Strategic Tariff Protection, Market Conduct, and Government Commitment Levels in a Developing Economies" -Symmetric versus Asymmetric Information Analysis –the role of the domestic and the foreign firm is exchanged so that the domestic firm now comes from the developing country and the foreign firm from developed country. The domestic firm invests in technological upgrading since it lags behind foreign firm that has mature technology and so it does not invest in technological improvement. In this setup we analyze different policy options that occur due to the reasons like the mode of the oligopoly conduct, (in)ability of the domestic government to commit to its policy and the information asymmetry.

In the first part of the paper we assumed the perfect, symmetric information set-up and explored the role of oligopoly conduct and the ability of the domestic government to commit to the level of its policy instrument. We considered three policy options; government commitment regime(GCR), government non-commitment regime(GNCR), and free trade(FT). We found out that regardless the market conduct and the ability of the domestic government to commit in advance to the level of its policy, the optimal tariff protection enhances not only the domestic social welfare but also the innovative effort of the domestic firm. However, free trade, as a policy option *per se,* has also its virtue since the information requirement for its implementation is virtually zero. Thus we had to introduce other policy criteria beyond generated social welfare (like information requirement, time consistency, and threat of manipulative behavior) in order to evaluate the policy options under considerations. It turned out that the most robust policy choice is the government "non-commitment" regime that has low information requirement, the optimal tariff is time consistent and there is no fear from the manipulation of the domestic firm (see Table 1). In addition, the social welfare loss vis-à-vis the government commitment regime is negligible.

Table 1. Rank
(Characteristics)

Policy\ criterion	social welfare	inform.requirement	Time consistency	manipulation
GCR	1 (largest)	3 (high)	3 (cred.problem)	3 (prone to manip.)
GNCR	2 (second - largest)	2 (low)	1 (time consist.)	1 (no manip.)
FT	3 (lowest)	1 (zero)	3(cred.problem	1 (no manip.)

As an independent and interesting result of the first part of the analysis that is worth to be stressed is the comparison between the corresponding equilibrium values of the innovative efforts and tariffs. Thus in the government "non-commitment" regime the optimal Cournot tariff is higher than the analogous Bertrand tariff and consequently, the innovative effort of the Cournot type of firm exceeds that of Bertrand type.

In the second part of the paper, we introduced two kinds of information asymmetry and briefly explored how did the most desirable policy under perfect information - a non-commitment regime- fare in the presence of the government's uncertainty about the market conduct. Although asymmetric information setup in general worsens the social welfare compared to the analogous symmetric information (but are on the other hand less information intensive), we identified the situations when the expected social welfare can be increased compared to the full information counterpart.

3) In the third paper "Strategic Trade Policy and Vertical Product Differentiation: Intra-industry trade between the developed and developing countries" we investigate the two situations; the first one is when the developed country firm is the domestic firm and the second one is when the developing country firm is the domestic firm. In both cases the domestic government cannot pre-commit to the tariff level ("non –commitment "regime).

In our modelling, we unlike majority of authors, opt for so called natural duopoly concept (see Shaked and Sutton, 1982) with price competition in the last stage and the competition in qualities in the first stage of the game. The natural duopoly is an

appropriate setup if, roughly speaking, the taste for quality is predominant in the market in a sense that even the consumer with the lowest valuation for the quality prefers to buy quality good compared to buying nothing or to buying zero quality good. Moreover, the natural duopoly as a market structure is endogenously determined. That is, the number of firms is not arbitrarily set to two but it is the outcome of the given size of the market (determined in turn by the distribution of the consumers' taste for quality) and nature of the competition that enable only two firms to survive in equilibrium. Last but not the least, the issue of the long run equilibrium seems to be best addressed in a natural duopoly set-up since a "non-natural duopoly" where the market is not fully covered2 may not be sustainable in the long run due to the possibility of entry of other firms to serve this uncovered segment of the market.

We assume that the quality cost efficiencies differ among the firms. The reason for postulating the differences in the quality cost efficiency is motivated by different abilities of the firms from the developing world (compared with its developed country counterparts) to elevate the quality level of its products. Namely the generation of high quality commodities is tightly connected with the R&D investment, learning by doing and the level of human capital and therefore it seems natural that at the margin an increase in quality would require a higher effort and higher costs on the part of the developing country firm.

As for our major results, we show that a duopoly in which a domestic, developed country firm produces high quality good and the developing country foreign firm produces low quality good is not sustainable since the social welfare reasoning will require that the domestic firm serves the whole market, depriving the approach of the developing country firm even to the low-end consumer by an optimal tariff. Thus the strategic trade intervention turns the free trade natural duopoly into the policy induced natural monopoly. Furthermore, we qualify the phenomenon of so called **"**quality reversal"3 (see Herguera et al. 2002) and show that its incidence depends on the relative

2 That is, the distribution of consumers with respect to their taste for quality is such that the lowest tail of them is not served in such duopoly equilibrium.

3Synthagm "quality reversal" refers to the situation where, say, in free trade the foreign firm from developed country was initially a high quality provider but due to the implemented trade policy the domestic, developing country firm switches from the low to the high quality producer in the new equilibrium.

cost efficiency in producing quality. If the difference in this efficiencies is "large enough", we do not observe switch in the quality ladder.

References

Herguera, I , P. Kujal,., and E. Petrakis (2002) "Tariffs, Quality Reversal and Exit in Vertically Differentiated Industries, *Journal of International Economics*. Vol.58, pp. 476-492.

Shaked and Sutton (1982): "Natural Oligopolies", *Econometrica*, Vol. 51, pp. 1469-1483.