

Comments on ‘Ranking alternative trade-restricting policies under duopoly’, by Jota Ishikawa

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This paper discusses a model of duopolistic competition in the context of international trade. There are two countries, a home and a foreign country, but consumption happens only in the home country. There are two differentiated (substitute) products, one produced at home and one abroad. Three policies that influence competition in the home country are considered: tariffs, subsidies and quotas. Assuming that there is a certain target level of imports, the author considers the effects of the various policies listed above on total surplus at home and abroad.

There are two models in this paper, one of quantity-setting, and one of price-setting firms. Both models assume a certain rate of conjectured reaction by the opponent, and calculate the effects of policy changes on market equilibrium for the given conjectures. I feel uncomfortable with the use of conjectural variations. First, note that in an oligopoly game, any outcome can be supported by some pair of conjectural variations. Second, there is a strong game-theoretic argument against the use of conjectural variations because they imply inconsistent use of strategies. Further, attempts in the early 80s to justify them either as short-cuts for more complicated multiperiod games, or by imposing consistency, have failed. Thus, I will discuss only the results of zero conjectural variations, which correspond to the traditional Cournot and Bertrand games (where quantities or prices are used as strategies, respectively).

In the Cournot game, it is shown that home tariffs, foreign export taxes, subsidies on home firms or quotas result in identical production levels and prices. In this setting, total world surplus does not differ across regimes. Surpluses at home and abroad do not change across the regimes of tariffs, home industry subsidies, and quotas. Of course, surplus at home is lower and surplus abroad is higher when the regime switches from tariffs to foreign

export subsidies or equivalently from tariffs to voluntary export restraints. In the Bertrand game, it is shown that tariffs result in lower prices, lower foreign surplus, higher home surplus, and higher world surplus for both goods than quotas. In the 'standard' case of strategic complements (where QQ' is steeper than FF') home subsidies result in lower prices, lower foreign surplus, higher home surplus, and higher world surplus than tariffs. Thus, home welfare rankings are similar to world welfare rankings, but are typically opposite to foreign country rankings.

In general, the choice of the system and level of intervention has potentially three influences. First, it could influence the extent of competition, including prices and quantities. Second, it can influence efficiency, including the degree of divergence between optimality and the second best non-cooperative market equilibrium. Third, it can have distributional considerations.

Ishikawa discusses essentially only *distributional* considerations because it keeps the levels of production q_f and q_h constant. In fact, there is no good justification for keeping imports at any particular level. It may be better to consider the *dual* of this problem, that is, what level of imports would result under the use of different strategic instruments if the objective of a country is to increase welfare by an amount ΔW , or, alternatively, to increase manufacturers profits by $\Delta \Pi$.

Taking this train of thought one step further, one would like to write a maximization problem for the home country's total surplus, subject to certain constraints. Then the home country can use a variety of instruments to maximize W_h , and the interesting results would be that some intervention will always be desirable while certain instruments are not used at all. Alternatively, if instead the strategy space used by a country were restricted to be in a particular dimension (say tariffs), the equilibrium result would be a third best total surplus W , which will differ depending on the strategic dimension used. Thus, relaxing the fixed target imports assumption can lead to interesting comparisons among cases where different strategic instruments (or combinations thereof) are used.

Even when a country is endowed with only conduct-adjusting strategic variables, it has the opportunity to influence the long run equilibrium number of firms at home and abroad by affecting their zero-profit constraint in the long run free entry equilibrium. In fact, both the voluntary export restraints on Japanese automobiles and the tariffs on DRAM chips were argued on the basis of adjustments in the *number of active US competitors* rather than on just the *size of their output*. The opportunity to discuss this aspect of trade policy is not available in this model because the number of firms is fixed here to one in each country, and there are no increasing returns to scale in production.

This model also assumes an asymmetry in trade across countries. The foreign country does not have any consumption of this type of goods. This is

of course possible for some goods, but the absence of discussion of other lines of products which might be exported in the opposite direction precludes the possibility of retaliation or other countermeasures by the 'home' country. Also, this assumption weighs heavily world surplus in favor of home surplus. Thus, it is not surprising that the home welfare rankings were very similar to the world welfare rankings.

In closing, let me propose a model I would like to see as an interesting and relevant application of Industrial Organization to International Trade that could put trade policies in perspective. Competition is modeled as a multi-stage game. In stage 1, each country chooses the levels of its strategies on tariffs, home and export subsidies, and quotas, to maximize total surplus. In stage 2, firms enter in both countries, with some firms possibly entering in both countries. In stage 3, all firms choose prices. In such a setting, countries can use tariffs and other intervention instruments to influence not only prices, but also the number of active firms.

Sometimes, the ability of firms to make irreversible commitments to enter an industry is stronger than the ability of a country to stick with a particular strategy and level of intervention (or non-intervention). We can model such a situation as a multistage game that has entry in the first stage, choice of government policies in the second stage, and choice of production levels and prices in the third stage. In such a setup, since they act and commit themselves first, firms can influence and manipulate governmental policies. A comparison of the outcomes of this game with those where entry comes first, as well as with the empirically observed outcomes may serve as a guide to the usefulness and effectiveness of governmental trade policy.