Anti-dumping protection, price undertaking and product innovation

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ABSTRACT

This paper examines how price undertaking policies affect the product investments of firms in an intra-industry trade model. We show that the dumping margin will decline if the products become more differentiated. Under bilateral anti-dumping actions, relative to those under free trade, the aggregate product R&D investment may either increase or decrease, depending on the tolerable dumping margin set by the governments. By contrast, the aggregate product R&D will definitely decline and the products will become less differentiated if only one government implements anti-dumping actions.

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1. Introduction

In the real world, an anti-dumping policy is considered to be a mechanism that advances the interests of domestic producers. Konings and Vandenbussche (2005) use panel data for about 4000 European Union (EU) producers that have been involved in anti-dumping cases to estimate markups both before and after the filing of a case, and find that anti-dumping protection has both positive and significant effects on domestic markups. Anti-dumping policies also have potential impacts on the behaviors or strategies of both domestic and foreign industries. For example, Dinlersoz and Dogan (2009) compare the relative merits of tariffs and antidumping duties. Wu, Chang, and Chen (2014) investigate the welfare effects of anti-dumping duty and price undertaking policies. Anti-dumping policies may also encourage foreign firms to engage in FDI (Belderbos, 1997; Blonigen, 2002; Belderbos, Vandenbussche and Veugelers, 2004), change the cost-reducing R&D intensity of both domestic and foreign firms (Gao and Miyagiwa, 2005), or improve their product quality (Vandenbussche and Wauthy, 2001).

Understanding a firm's R&D behavior has been an important objective of industrial organization. A substantial literature has highlighted the welfare consequences of marginal-cost-reducing (process) R&D investment (see for example, Arrow, 1962; Brander and Spencer, 1983; D'Aspremont and Jacquemin, 1988; Chang, Hwang, and Peng, 2013, among others). More recently, the literature on R&D has started to center on product R&D and its link with process R&D (for example, Cohen and Klepper, 1996; Bonanno and Haworth, 1998; Lin and Saggi, 2002, Symeonidis, 2003). In particular, Miyagiwa and Ohno (1999) find that temporary safeguard protection can increase process R&D if the commitment to dismantle protection by policymakers is credible, but may reduce

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R&D if they believe policymakers will extend protection. Haaland and Kind (2008) examine the industrial process R&D investment and tariff competition between countries in an international setting. They show that trade liberalization generates more R&D and that the policy competition between countries critically depends on the competitiveness of the market.

The empirical evidence has shown that anti-dumping policies often target R&D-intensive industries such as the electronics, primary metals, chemical and mechanical engineering industries (Niels, 2000). Thus it is important to investigate the R&D behavior of such industries under anti-dumping policies. Gao and Miyagiwa (2005) is the first paper to investigate the impact of anti-dumping policies on the cost-reducing R&D incentives of the protected firm and the constrained firm. Given an ad valorem transport cost, they find that a unilateral anti-dumping policy decreases (increases) the cost-reducing R&D of the protected (constrained) firm.

However, approximately three-fourths of the R&D conducted by firms in the US is devoted to product R&D (Scherer and Ross, 1990). The current paper aims to fill this gap in the related literature and provide a theoretical rationale for the effects of price undertaking actions on firms' product R&D. The product R&D setup in this paper is borrowed from Lin and Saggi (2002), who compare the impact of the competition mode on firms' incentives to produce, whereas we investigate the effect of anti-dumping policies on the product R&D incentives of firms. This paper also contributes to the literature on price undertaking policies in that we assume that the governments can set a tolerable dumping margin against foreign firms. While existing studies on anti-dumping policies usually treat the AD policy as a binary variable, in which case, if price undertaking actions are imposed, the dumping margin will be completely eliminated and where the ex-factory prices are all the same. In our paper, we relax this assumption by assuming that governments may not eliminate the dumping completely and may instead implement a more amicable price undertaking action by imposing a tolerable dumping margin against the foreign firm. Thus, the foreign constrained firm can set its prices subject to this tolerable dumping margin. This is a more general setup since it not only can discuss the case where antidumping policy eliminates full dumping margin, but also can investigate the case where government aims to eliminate only the material injury.[1]

Although countries such as the US and Canada usually adopt anti-dumping duties as their instrument when dealing with the dumping country, most EU anti-dumping filings are finalized with the acceptance by the EU of a price undertaking.[2] The study by Zanardi (2004) also shows that countries such as Japan, Finland, Sweden and South Korea make frequent use of price undertakings.[3] Besides, the dumping firm usually chooses to accept the price set by the authority rather than pay duties (Gao and Miyagiwa, 2005). As a result, in this paper we mainly focus on the price undertaking policy.

We show that the dumping margin of each dumping firm declines as the products become more differentiated. Supposing that both governments engage in anti-dumping actions with no tolerable dumping margin, the two firms will increase their product R&D investments. However, this result will be reversed if the tolerable dumping margins are set at the free trade level. In other words, relative to that under free trade, the aggregate product R&D investment may either decrease or increase, depending on the tolerable dumping margins. By contrast, the aggregate product R&D will definitely decline and the products will become less differentiated if only one government implements an anti-dumping action.

The remainder of this paper is organized as follows. Section 2 introduces our basic (free trade) model. Section 3 investigates the effects of bilateral anti-dumping protection on firms' product R&D incentives. Section 4 examines the effects of unilateral anti-dumping protection on the optimal product R&D of firms. Section 5 concludes the paper.

2. The benchmark model

Assume that there are two countries, country H and country F, that host one firm each. The two firms, firm H and firm F, engage in intra-industry trade in the two markets. The utility functions of a representative consumer in each of country H and country F are assumed to be:

$$U = a(q + Q) - \frac{1}{2}\left(bq^2 + 2rqQ + bQ^2\right) + m,$$
$$U* = a(q* + Q*) - \frac{1}{2}\left(bq*^2 + 2rq*Q* + bQ*^2\right) + m,$$

where m is the consumption of numeraire goods, the variables in the lower (upper) case are the actions taken by firm H (F), and those with an asterisk are associated with country F. Moreover, the parameter $r(\equiv b - k - K)$ expresses the degree of product differentiation, ranging from zero when the goods are independent to b when the goods are perfect substitutes. Note that an increase in the degree of product differentiation (a decline in r) shifts the demand curves for both firms outward. We assume that the two firms carry out

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[1] As the EU applies lesser-duty rule (EU regulation 384/96), injury is measured by the smaller of the dumping and injury margins. Therefore, dumping margin may not be fully eliminated if the injury margin is lower than the dumping margin (Vermulst and Waer, 1991; Vandenbussche, 1995). Vermulst and Waer (1991) show that in 44% of EU AD cases, the injury margin was lower than the dumping margin from 1980 to 1990. Finger (1993) also denote that five of the ten price undertakings accepted under Special Import Measure Act were intended to raise prices only enough to eliminate the material injury rather than to eliminate the full dumping margin in Canada during 1985 to 1989.

[2] As agreed at the Essen Summit in 1994, these Agreements grant a preferential role for price undertakings (see, e.g., Annex IV to the Conclusions of the Essen European Council 1994; Chapter IV, Article 34 of the European Agreement with Bulgaria).

[3] Zanardi (2004) shows that, for the period 1881–2001, Japan accepted more undertakings, i.e., in about 60% of the cases, as did Finland and Sweden before their EU membership (82% and 100%, respectively).