

Dumping as a signal of innovation

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Abstract

In the R&D-intensive industries, where technologies change rapidly, an innovative foreign firm may need to export greater than normal quantities to signal the level of the new technology it possesses. We find that such actions lead to sales below cost if the foreign firm has a relatively poor reputation for innovation, has a sufficiently high discount factor or possesses a new technology that significantly cuts its cost. We also show that antidumping reduces the costs of signaling, benefits the home firm, and may raise the profit to the foreign firm in the pre-duty period.

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1. Introduction

Over the last 25 years use of antidumping (AD) has spread from a handful of countries to more than 60 nations (Prusa, 2001). Recent evidence shows that AD users often target R&D-intensive sectors such as primary metals, chemicals, consumer electronics and mechanical engineering (Niels, 2000). In R&D-intensive industries, in which innovations occur frequently, firms are often unsure of the levels of technology currently used by the rivals. When the domestic firm cannot verify the foreign firm's production cost due to the innovation, the foreign firm may find it worthwhile to export larger than the normal quantities of output to signal its cost, even to the extent that the export price falls below its unit production cost. In this paper we explore this rationale for dumping.

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More specifically, we develop a model in which a home and a foreign firm compete in the home market over two periods. It is understood that the foreign firm has invested in cost-reducing R&D before the game, and knows the outcome of the investment while the home firm has only imprecise information as to what the rival's new cost is. The game begins with the two firms simultaneously choosing output levels. The home firm then uses the foreign firm's output to update its beliefs about the latter's cost. Given new beliefs, the two firms choose output levels once again, and the game ends.

This game has a unique separating equilibrium outcome that satisfies the Cho-Kreps intuitive criterion (Cho and Kreps, 1987). Focusing on this equilibrium outcome, we find that the foreign firm dumps, i.e., exports below average production cost, if it has a sufficiently poor reputation as an innovator. Such might be the case if the foreign firm is a newcomer in the industry or originates in a developing or newly developed country where innovations rarely occur. Dumping also occurs if the foreign firm's discount factor is sufficiently high, or the new technology leads to a significant cost reduction in the sense to be made clear below.

In the second half of this paper we apply the model to analyze the impact of antidumping (AD). In the theoretical AD literature it is customary to assume that an AD duty is set equal to the dumping margin. However, this tradition has been questioned by recent empirical studies. For example, the recent survey by Blonigen and Prusa (2001) points out that the legal definition of dumping is almost completely divorced from any economic notion of dumping and that AD has become simply a modern form of protection that improves the competitiveness of the petitioning firm against imports.¹

The apparent gap between the theory and the practice of AD stems chiefly from the fact that AD rules have been amended repeatedly over the last quarter century to broaden the applicability of AD laws, especially in the U.S. In particular, the frequent use of "facts available" methods to construct or estimate the prices and costs of exports has made dumping margin determination completely arbitrary. As a result, the U.S. Department of Commerce, which is responsible for dumping margin determination, almost always rules that dumping has occurred, even against firms earning healthy profits from every sale of exports.² From 1980 to 1992, for example, Commerce ruled that dumping had occurred in 93% of all cases (Irwin, 2002, pp. 114–115). Furthermore, the use of "facts available" methods nearly doubles the average US dumping margins, from around 35% to over 65% (Baldwin and Moore, 1991).³

What these empirical findings emphasize is the arbitrariness of AD margin determination in practice. In this paper we capture this fact by assuming that the actual dumping margin is drawn from a probability distribution function. It implies that the firms do not know the actual duty to be imposed. Since dumping margin determination is a probability distribution, the foreign firm will be saddled with an AD duty with a positive probability regardless of its cost, true or perceived.

This assumption enables us to examine the effect of AD with minimal changes in our model. We only add the assumption that between the two periods the home firm files a petition and the home government investigates and announces an AD duty to be imposed in the second period. Then the second-period game is just a one-shot Cournot game under the tariff. More interesting is the possible effect of AD on the first-period or pre-duty game. We show that AD reduces the

¹ Blonigen and Prusa (2001, p. 3); also see Irwin (2002, pp. 111–128).

² Lindsey (2000) reports that the U.S. Department of Commerce uses "fact available" methods in 97% of its margin calculations.

³ Blonigen (2003) finds an uprising trend in the average dumping margin; e.g., 15% in the early 1980's to over 63% by 2000.

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