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An empirical assessment of the welfare effects of reciprocal dumping

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Abstract

Can two-way trade in similar products lead to lower welfare than if such trade was banned? Theory answers yes. To empirically investigate this proposition we examine Swedish imports of bottled water. Assuming one-shot (Bertrand and Cournot) competition, we can use the estimates from a structural model of demand to uncover marginal costs. We simulate the effect on consumer and producer surplus of banning imports. We do not find convincing evidence that banning imports would increase overall welfare. Given our choice of market this suggests we should not be overly concerned with the welfare effects of two-way trade in consumer goods that are close to homogenous.

Keywords: Reciprocal dumping; Intra-industry trade; Nested logit models; Beverage industry

JEL classification: F12; F14; L13; L66

1. Introduction

More than 60% of the non-sparkling mineral water sold in Swedish stores is imported. Sweden also exports mineral water; in an average month in 2001 Sweden exported 791 metric tons of bottled mineral water and imported 1305 metric tons.[2] Does this shipping of water in both directions represent a good use of resources?

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[2] Bottled natural mineral water, sparkling and still, with no minerals or flavours added; KN22011011 and 22011019, source, statistics Sweden.

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The theory of trade under imperfect competition that has developed from the 1980s onward (see for instance Helpman and Krugman, 1985) demonstrates that trade may have adverse consequences on welfare under certain conditions. In particular, we know that when there is two-way trade in a homogenous good ("reciprocal dumping") and important barriers to entry, the waste of transporting identical goods in opposite directions can dominate the positive, pro-competitive effect of trade. This was first shown in Brander (1981), and elaborated on in Brander and Krugman (1983). Is this result, that trade can hurt overall welfare, empirically relevant? Given the current debate about the merits of trade, and that a large share of world trade is generated by countries exporting and importing quite similar goods, this comes high on our "things we would like to know"-list. Particularly so since Feenstra et al. (2001) find that the global trade patterns for homogenous goods are consistent with a reciprocal dumping-type model with barriers to entry.

Theory is clear that trade is typically welfare enhancing—even the staunchest critic of international trade is likely to agree that some trade is good. The question is: do we know of any cases when trade is bad? We can't know unless we look and we therefore wanted to choose an industry so as to stack the cards against the free trade case; bottled water suits that bill well—there is arguably little real product differentiation, low technological economies of scale, transport costs are high relative to the value of the product and Sweden is also an exporter of the same good.[3] A highly concentrated industry structure suggests that there are considerable barriers to entry. Furthermore, a close substitute, tap water, is available at a price close to zero. This should limit the pro-competitive potential for imports. If trade does not reduce welfare even in this setting the pro-trade case should be strengthened. If we find that trade is indeed detrimental to welfare in this market it then becomes important to study less extreme cases.

We use a structural model of competition on the Swedish market for bottled water to examine the welfare effects of bottled water imports. We make use of a detailed data set that includes monthly observations of prices and quantities of all brands of bottled water sold in Swedish stores during 1998–2001. To our knowledge no other paper has attempted a similar exercise—most of the empirical literature that examines trade under imperfect competition has focused on measuring intraindustry trade and examining how well such trade theory can explain actual trade patterns (see Hummels and Levinsohn, 1995) or simply on testing if there is a pro-competitive effect of lower trade barriers (see Levinsohn, 1993 or Tybout, 2003). A somewhat closer precursor is Berry et al. (1999) who examine the welfare impact of voluntary export restrictions (VER) on Japanese car exports to the US.[4] Another paper who applies similar methods to international oligopoly is Irwin and Pavcnik (2004) who examine trade disputes between Airbus and Boeing.

Even though one could argue that mineral water is a homogenous product, different prices of different brands demonstrate that brands are imperfect substitutes. Taking this seriously, we follow seminal work by Berry (1994) and Berry et al. (1995) and estimate a model of demand for

[3] In addition we saw our choice of the bottled water market as an opportunity to pay tribute to Augustin Cournot; his (1838) masterpiece used bottled water as the main example.

[4] Related are also Goldberg (1995), who examines the role of VERs on the US auto market, and Fershtman and Gandal (1998) who find a large positive welfare effect of entry of some Japanese and Korean brands on the Israeli auto market following the lifting of a boycott by a number of Arab countries. A previous attempt to evaluate the reciprocal dumping model is Fung and Lau (1998) who examine price differences for the same goods in the US and Japan. Essentially they find that the deviations from the law of one price are consistent with the predictions from a model of international oligopoly with segmented markets.