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Critical import supply elasticities and the 'imports-as-market-discipline' hypothesis☆

Paul R. Zimmerman*, Julie A. Carlson[1]

US Federal Trade Commission, Bureau of Economics, Antitrust I, 600 Pennsylvania Avenue, NW, M-8059, Washington, DC 20580, USA

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ABSTRACT

This paper formally examines the factors underlying how responsive imports must be to domestic prices (the 'import supply elasticity') in order to thwart an anticompetitive domestic price increase stemming from a merger – an issue that frequently arises in many antitrust reviews. Domestic firms face a fringe comprised of foreign firms who import their products into the domestic market. In the eyes of domestic consumers, these imports are viewed as imperfect substitutes in demand to the output produced by the domestic firms. The model is solved in terms of the 'critical' import supply elasticity that can then be used evaluate the ability of imports to constrain an anticompetitive price increase post-merger. Numerical simulations are conducted to consider the magnitude of perturbations in the model's exogenous parameters. Potential empirical extensions of the model are also considered.

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1. Introduction

The influence that foreign imports may have on constraining the exercise of market power held by domestic firms – referred to as the 'imports-as-market-discipline' hypothesis – has interested industrial economists for some time.[2] In recent years, the high industrial growth rates of several countries in Eastern Europe and the Far East have markedly increased the number of firms exporting into numerous domestic US markets, thereby potentially increasing the competitive pressure exerted by foreign suppliers even further. Accordingly, the presence and potential entry (or expansion) of foreign competitors in the domestic market may play an important role in the investigation by the antitrust authorities of proposed mergers between competing domestic firms.

The question of whether foreign firms should be viewed as constraining price increases by domestic firms has been a central issue in recent, high-profile antitrust cases. For example, the US Department of Justice (DOJ), in its approval of the controversial merger between Whirlpool and Maytag in 2006, found that the transaction was unlikely to reduce competition

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* Corresponding author. Tel.: +1 202 326 3159.
E-mail addresses: pzimmerman@ftc.gov, paul.r.zimmerman@gmail.com (P.R. Zimmerman), jcarlson@ftc.gov (J.A. Carlson).

[1] Tel.: +1 202 326 3675.

[2] Theoretical treatments include Jacquemin et al. (1980), Lyons (1981), Pugel (1980), Huveneers (1981), and (Kwoka, 1998). Studies that (also) empirically test the hypothesis include Jacquemin et al. (1980), Pugel (1980), de Melo and Urata (1986), De Ghellinck et al. (1988), Clark et al. (1990), Levinsohn (1993), Feinberg and Robert (1994), Katics and Petersen (1994), Hanson (1992), Field and Pagoulatos (1998), Min (1999), Thompson (2002), and Ghosal (2002).

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substantially in part because "...newer brands such as LG and Samsung have quickly established themselves in recent years. LG, Samsung, and other foreign manufacturers could increase their imports into the U.S."[3] According to the DOJ, a sufficient quantity of household appliance sales in the US would be diverted to these foreign manufacturers in response to a post-merger price increase such that any incentive of a combined Whirlpool–Maytag to decrease its output would be defeated.[4] This conclusion implies that LG, Samsung, and other foreign manufactures could defeat an anticompetitive price increase imposed post-merger by Whirlpool–Maytag.[5] Some economists, however, have criticized the DOJ's findings. For example, Baker and Shapiro (2008) argue that the limited sales of foreign suppliers (as in the case of LG and Samsung) to date in mature markets where branding is important (such as the appliance industry) does little to quell concerns about the competitive effects of domestic mergers.

From an antitrust analysis perspective, the question of whether the 'imports-as-market-discipline" hypothesis holds hinges on whether the 'import supply elasticity' – which measures the responsiveness of *foreign* imports to changes in *domestic* prices – is sufficiently large to offset any post-merger exercise of market power by merging domestic firms. This is the issue we investigate analytically. The paper proceeds as follows. Section 2 presents the general theoretical model based upon the work of (Huveneers, 1981) in which domestic firms compete non-cooperatively in homogenous products *à la* Cournot and face a fringe of foreign firms who import into the domestic market. Imports are viewed in the eyes of domestic consumers as imperfect substitutes (*i.e.*, to varying degrees) to the output produced by domestic firms. We analytically derive an expression for the equilibrium domestic industry-wide price–cost margin (Lerner index) and show how this mark-up relates to the import supply elasticity. We then consider how the components of this elasticity affect its magnitude.[6]

In Section 3 we examine a hypothetical merger in the context of the above model and an expression for the critical import supply elasticity – *i.e.*, the *minimum* value of the elasticity that would prevent a hypothetical domestic monopolist from unilaterally imposing an anticompetitive price increase post-merger. We explore how the critical import supply elasticity affects the magnitude of a *relative price increase* resulting from a *change* in the domestic market structure toward increased concentration resulting from a merger. The expression for the critical import supply elasticity in turn provides a formal test for determining the impact of foreign competitors that can be applied by the antitrust enforcement agencies. We also discuss the key determinants of the critical import supply elasticity and consider the implications of perturbing these factors. Section 4 offers some numerical simulations of the model in order to further gauge the magnitude of the relationship between the critical import supply elasticity and key model parameters. Finally, Section 5 offers concluding remarks and discusses the application of the formal analysis considered here to future empirical work.

2. Price–cost margins and the import supply elasticity

We consider a model of competition in which domestic firms compete non-cooperatively in homogenous products and play Cournot strategies. The domestic firms also face a fringe comprised of foreign firms who import their products into the domestic market. These imports, from the perspective of domestic consumers, are imperfect substitutes in demand to the output produced by domestic firms.[7]

We assume that there are n domestic firms indexed by i. Let q_i^h denote the output of home firm i. The inverse demand curve for home output is given by

$$P^h = f(q^h, M) \tag{1}$$

where

$$q^h = \sum\nolimits_i q_i^h \tag{2}$$

[3] US Department of Justice, Antitrust Division, Statement on the closing of its investigation of Whirlpool's acquisition of Maytag (March 29, 2006), available at http://www.usdoj.gov/atr/public/press_releases/2006/215326.htm.

[4] See id. ("The investigation revealed that a number of manufacturers, such as LG and Samsung, currently manufacture overseas high-efficiency, front-load washers and dryers and sell them successfully in the U.S.. . . companies such as LG currently manufacture top-load washers in Asia, and Samsung already manufactures top-load washers in Mexico for sale in Latin America. Thus, any attempt by the merged entity to raise prices in the sale of conventional top-load washers likely would be checked by. . . the threat that top-load washers made in Mexico or overseas could be sold into the United States, and the loss of sales to suppliers of front-load washing machines.").

[5] Throughout the paper we assume that there is a maximum 'tolerable' price increase (expressed as a percentage change) arising from the domestic merger. Any conjectured price increase in excess of the tolerable price increase post-merger is regarded as 'anticompetitive' and would lead to the transaction being challenged by the antitrust authorities.

[6] The model developed herein could also be applied in cases that do not explicitly involve issues of international trade and foreign competition. For instance, it might be used to examine cases where a dominant firm facing a competitive fringe of imperfect substitutes has used practices to abuse its dominant position and maintain market power.

[7] The basic model presented herein is derived from Huveneers (1981) and is an extension of the dominant firm-competitive fringe model from (Stigler, 1940).