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Welfare implications of free trade agreements under Bertrand and Cournot competition with product differentiation

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ABSTRACT

This study examines the effects of free trade agreements (FTAs) on the welfare of both member and nonmember countries and the incentives for multilateral free trade in a three-country model of Bertrand and Cournot competition in differentiated oligopolies. First, we demonstrate that an FTA increases the welfare of all member and nonmember countries in both Bertrand and Cournot competition with product differentiation. Second, we show that if products are nearly perfect substitutes, an FTA may hamper the incentive of a nonmember country to support multilateral trade liberalization with Bertrand competition, which sharply contrasts with the case of Cournot competition.

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1. Introduction

In recent years, the number of free trade agreements (FTAs) has rapidly increased. The number of FTAs reported to the World Trade Organization (WTO) reached 583 as of January 31, 2014, rising from

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27 in 1990.[2] Owing to the rapid increase in the number of such agreements, FTAs have become an important issue in international trade theory.

In the existing literature, the welfare effects of FTAs and the relationship between FTAs and multilateral trade liberalization have been examined in a three-country model of Cournot competition with a homogeneous product.[3] In the case where tariffs are exogenously given, Krishna (1998) shows that an FTA may hinder multilateral trade liberalization by adversely affecting the incentive of member countries to support multilateralism. In the case of endogenous tariffs, Ornelas (2005) demonstrates that when countries are asymmetric, an FTA can induce a nonmember country to withdraw its support for multilateral free trade. Using a repeated game framework, Saggi (2006) finds that when countries are symmetric, the formation of an FTA makes a nonmember country less willing to cooperate over multilateral free trade. In a dynamic noncooperative bargaining game with a random proposer, Kiyotaki and Miyakawa (2013) show that global free trade may not be achieved, because a large country chooses to be an outsider in an FTA between small countries.

The feature of these existing studies is that firms are assumed to compete in terms of quantity (i.e., Cournot competition). The question that arises is whether FTAs undermine multilateral trade liberalization under the assumption that firms compete in terms of price (i.e., Bertrand competition). [4]

The purpose of this study is to analyze the effects of an FTA on welfare and the incentive for multilateral trade liberalization of member and nonmember countries in a three-country model of Bertrand and Cournot competition with product differentiation. We clarify how the level of product differentiation and the type of competition influence the effects of an FTA on multilateral trade liberalization.

Two important results of this paper are as follows. First, we find that an FTA increases the welfare of all member and nonmember countries in both Bertrand and Cournot competition with product differentiation. This is because an FTA induces its member countries to bring their external tariffs low enough to increase their imports from a nonmember country regardless of the type of competition, which is similar to the well-known result under Cournot competition with homogeneous products. Particularly, when products are sufficiently close substitutes, a nonmember country gains more from an FTA than a member country under Bertrand competition. The reason is that member countries make higher percentage cuts in external tariffs under Bertrand competition than under Cournot competition, thereby leading to larger gains from the FTA by a nonmember country.

Second, we demonstrate that an FTA hampers the incentive of a nonmember country to support multilateral trade liberalization in the case of Bertrand competition if products are nearly perfect substitutes (i.e., an FTA acts as a *stumbling block* for multilateral free trade).[5] This result sharply contrasts with the result under Cournot competition with product differentiation, where an FTA always serves as a *building block*. Because the FTA causes a larger reduction in the external tariffs under Bertrand competition than under Cournot competition, in the case of Bertrand competition, the additional gains of a nonmember country from multilateral free trade may be insufficient to outweigh the losses. However, in the case of Cournot competition, multilateralism always makes FTA member and nonmember countries better off relative to an FTA because the external tariffs of FTA member countries are not much lower than their pre-FTA tariffs. Thus, a nonmember country seeks to benefit from tariff reduction through multilateralism under Cournot competition.

The remainder of this paper is organized as follows. Section 2 describes the model and derives the pre-FTA equilibrium. Section 3 analyzes the welfare effects of an FTA. Section 4 examines the relationship between an FTA and multilateral free trade. Section 5 presents conclusions.

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[2] See the website of the WTO ⟨http://www.wto.org/index.htm⟩.

[3] Kose and Riezman (2000) and Bond et al. (2004) explore the welfare effects of FTAs in a three-country endowment model. Kawabata et al. (2010) and Yanase et al. (2012) investigate the FTA's welfare effects in a three-country Cournot oligopoly model with a vertical industry structure. Saggi and Yildiz (2010, 2011) examine the relationship between FTAs and multilateral trade liberalization in a model of endogenous formation of FTAs.

[4] Yi (2000) mentions that "the qualitative results of this paper hold even if firms compete in prices rather than in quantities" (p. 347).

[5] The *building blocks/stumbling blocks* phraseology goes back to Bhagwati (1991).