

Free trade networks

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Received 4 June 2004; received in revised form 2 April 2006; accepted 30 August 2006

Abstract

The paper examines the formation of free trade agreements (FTAs) as a network formation game. We consider an n -country model in which (possibly asymmetric) countries trade differentiated industrial commodities. We show that if all countries are symmetric, the complete FTA network is pairwise stable and it is the unique stable network if industrial commodities are not highly substitutable. We also compare FTAs and customs unions (CUs) as to which of these two regimes facilitates global trade liberalization, noticing that unlike CUs, each signatory of an FTA can have another FTA without consent of other member countries.

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Keywords: Free trade agreements; Customs unions; Network formation game; Pairwise stability; Complete FTA network

JEL classification: F15

1. Introduction

The network of preferential trade agreements (PTAs) covers most countries in a complex way. The tendency towards “regionalism,” a movement to form regional trade agreements, has been steadily growing especially since 1980s (Bhagwati, 1993). Since the Treaty of Rome established the European Economic Community (EEC) in 1957, the European Union (EU) has been growing with the accession of new members. The North American Free Trade Agreement (NAFTA) has started negotiations with Latin American countries to form the Free Trade Area of the Americas. Japan has recently signed free trade agreements (FTAs) with Singapore and Mexico. The website

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of the World Trade Organization (WTO) on regionalism provides us with an excellent introduction to this topic.

The vast majority of WTO members are party to one or more regional trade agreements. The surge in RTAs has continued unabated since the early 1990s. Some 250 RTAs have been notified to the GATT/WTO up to December 2002, of which 130 were notified after January 1995. Over 170 RTAs are currently in force; an additional 70 are estimated to be operational although not yet notified. By the end of 2005, if RTAs reportedly planned or already under negotiation are concluded, the total number of RTAs in force might well approach 300. (http://www.wto.org/english/tratop/_e/region_e/region_e.htm, August 23, 2005)

One of the most frequently asked questions is whether these regional groups help or hinder the WTO's multilateral trading system. A committee is keeping an eye on developments. (http://www.wto.org/english/thewto_e/whatis_e/tif_e/beyl_e.htm, August 23, 2005)

Whether PTAs serve as “building blocks” or “stumbling blocks” is a central question in this topic (Bhagwati, 1993). Of course, multilateral trade liberalization efforts and PTA formation interact with each other.¹ However, putting this feature aside for a while, another important question remains. Will successive PTA formation alone effectively achieve global free trade, or will the process stop prematurely so that the world is divided into several, mutually exclusive trading blocs? If PTA formation continues until the complete FTA network is achieved, we may conclude that PTAs are “building blocks.” But otherwise, PTAs can be “stumbling blocks.”²

Ohyama (1972) and Kemp and Wan (1976) demonstrate a positive result for this “dynamic” path problem. The so-called Kemp–Wan theorem states that member countries can appropriately adjust external tariffs and make internal transfers so that a newly formed customs union (CU) is Pareto-improving, not only to members themselves but also to all countries in the world.³ Successive application of this Kemp–Wan process implies that the CU expansion continues until all countries in the world are covered.⁴ Although the theorem looks promising, it should be taken as an existence theorem (of a Pareto-improving CU expansion). In reality, it is extraordinarily difficult to adjust external tariffs such that each nonmember country's welfare is not reduced by the CU formation. Indeed, as Viner (1950) taught us, adverse trade-diversion effects often prevent PTAs from being Pareto-improving.⁵ It is far from obvious that in reality,

¹ Levy (1997), Krishna (1998), and Ormelas (2005c) show in their political economy models that PTA formation can hinder multilateral trade liberalization. Freund (2000b) demonstrates that countries have more incentive to form PTAs as multilateral trade negotiations lower tariffs imposed by every country. See also Bagwell and Staiger (1997a,b), Bond, Syropoulos, and Winters (2001), and Ethier (1998).

² Bhagwati and Panagariya (1996) raise this “PTA time-path” question. The complete FTA network may still be different from global free trade attained through multilateral trade negotiations, as Freund (2000a) demonstrates in a model where firms incur distribution network costs, for example. The complete FTA network may be more complex and inefficient (“spaghetti bowl” phenomenon) than global free trade attained through multilateral trade negotiations, as Bhagwati and Panagariya (1996) claim.

³ See Panagariya and Krishna (2002) for an FTA version of the Kemp–Wan theorem.

⁴ Baldwin (1995) demonstrates that as a regional trading bloc expands, outside countries have more incentive to join the bloc.

⁵ Krugman (1991) claims that if a “natural” trading bloc, within which a large share of trade takes place even in the absence of a PTA, is formed, the gains from trade creation are likely to outweigh the losses from trade diversion.

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