

Foundations of One World Market

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ABSTRACT: In an international trading economy where countries behave strategically, this paper provides sufficient conditions under which all countries choose to trade on one ‘world’ market. The paper shows that the economic structure underlying a standard strategic trade model corresponds to a Shapley-Shubik market game. Using new results from monotone comparative statics in a Shapley-Shubik market game, replication of such an international trading economy is studied. Sufficient conditions are established under which all countries in the replica economy would choose to trade with the countries in the original economy.

KEYWORDS. Free trade, Nash tariffs, Shapley-Shubik market game, tariff war, world market.

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1. Extended Abstract

It used to be said that international trade theory was a showcase for the theory of general competitive equilibrium. Central to that theory was the assumption that countries are price takers on world markets. However, in recent years, the idea that countries have power on world markets and hence that governments interact strategically has become central to the economic theory of the world trading system. In turn, the theory of the world trading system draws extensively on the tools of game theory to explain trade policy making. Here are some prominent examples. To understand trade liberalization, a trade agreement may be viewed as a Nash bargain which enables countries to liberalize trade, thus moving towards the efficiency frontier. In the absence of an external enforcement device at the international level, issues of the (self) enforceability are understood by viewing trade agreements in the context of a repeated Prisoners' Dilemma. The fact that trade liberalization has proceeded gradually in the post-war period is understood in the context of a dynamic 'voluntary contributions' game in which a 'stock of cooperation' in the form of trade liberalization is built up over time. The existence and implications of trade blocks is understood using game theoretic models of coalition formation.²

A cornerstone of trade theory is the principle that there is one world market. This principle is easy to justify in the context of general competitive equilibrium, but not so easy to defend when interaction between governments is strategic. The purpose of this present paper is to ask whether countries would choose to trade on a single 'world' market under the standard assumptions of strategic trade. To do this, a standard strategic international trade policy model is introduced to a Shapley-Shubik market game framework. The market game framework that I use was originally developed to ask whether, in a strategic market game setting, all agents would necessarily choose to trade at a single trading post. By showing that a standard tariff game may be viewed as a type of Shapley-Shubik market game, the present paper then uses new tools of monotone comparative statics in market games (Amir and Block 2004) to ask whether all countries would choose to trade on a single 'world' market. To my knowledge, this is the first paper to show that

²Bagwell and Staiger's (2002) monograph presents a comprehensive theory of the world trading system. Elements of the analytical framework that they construct in their monograph can be traced to their earlier papers; Bagwell and Staiger (1990, 1996, 1997 and 1999).

international trade policy interactions may be viewed as a strategic market game, and that the insights from the literature on market games can be used to study strategic trade policy interactions.

The idea that there must be one world market is easy to justify if we invoke the assumptions underpinning general competitive equilibrium theory. If all countries are assumed to be price takers, then the international trading equilibrium is essentially a competitive equilibrium. Since any competitive equilibrium belongs to the core, no coalition of countries can gain by trading on a smaller submarket. However, in an economy where countries have market power, the presence of a single world market in which countries trade cannot be so easily defended. As Bloch and Ghosal (1997) point out (in a strategic market games setting, not an international trade setting) the classical model of Cournot oligopoly suggests that agents (here country governments) have an incentive to set up distinct, separate markets on which they behave as monopolists. Hence, when countries behave strategically, coalitions of countries may benefit by forming smaller submarkets. And indeed we do not have to go too far back in time to discover instances in which countries actually did organize themselves into separate markets.

While this present paper's primary focus is on international trade, it does aim to make a contribution to the literature on strategic market games as well. In particular, the market-games-literature on bilateral oligopolies tends to focus on situations where there are an equal number of players on either side of the market. In this type of symmetric environment, Bloch and Ghosal (1997) establish that a single market is the unique (strongly) stable market. The present paper moves to a setting in which there may be a different number of countries on either side of the market. In the international trade setting of this present paper, I assume that some countries export primary products and some export manufactures and the number of countries exporting each of the two goods is not necessarily equal. Preliminary results indicate that in such an asymmetric setting there may be stable market structures other than a single market. Thus, the present paper points the way towards analysis of asymmetric bilateral oligopolies as well.

This paper blends Johnson's original (1953) model of optimal tariff setting with a model of bilateral oligopolies (Bloch and Ghosal 1997). A feature of Bloch and Ghosal's model is used to extend Johnson's original tariff war model in a new direction. Johnson

investigates a tariff war between two countries trading two goods. While Johnson models just two countries trading two goods, Bloch and Ghosal model a large number of traders trading two goods. The model of this present paper brings together these two features; a number of countries each have a comparative advantage in the production of one of the two goods. Thus, a number of countries compete in the export of a single good in equilibrium. Another way to put this is that an international market is characterized as having two ‘sides’. If all countries trade on a single ‘world’ market then there is more than one country on each side of the market. In Johnson’s original model there is only one country on each side of the market.

The present paper uses new tools from monotone comparative statics (Amir and Lambson (2000), Amir (2002), Amir and Bloch (2004) to study the effects of entry in a two sided market of international trade. The paper follows the analysis of Amir and Bloch. First, I establish conditions under which an increase in the number of countries on one side of the market affects equilibrium terms of trade and trade flows in a predictable manner. I am then able to examine the effects of simultaneous entry on both sides of the market. It is then possible to perform the following experiment. Assume an economy in which the ratio of countries on one side of the market to the other is fixed at k . Then ask, as the economy is replicated, would all the countries in the replica economy choose to open trade with all the countries in the original economy. The preliminary main result is that a critical ratio k' can be identified, such that all countries in the original economy and in the replica economy choose to trade with one another if and only if both goods are normal and are gross substitutes and $k < k'$. Thus, the main conclusion of the paper is that in structure of the model presented the conditions for the existence and uniqueness of one world market are surprisingly stringent.

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