Why Resisting Globalization Can Be Reasonable

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Abstract

A two–agent model of international trade with oligopoly and increasing returns is proposed to address why there have been persistent anti–trade–liberalization movements. It is shown that all of a country's residents lose from trade under certain conditions on the cross–country cost structure.

1 Introduction

Globalization is a keyword that describes the contemporary world. Focusing on international trade, multilateral trade liberalization has been promoted by the General Agreement on Tariffs and Trade (GATT) and its successor, the World Trade Organization (WTO).

While the developed countries have been advocating the benefits of trade liberalization for developing countries and the rest of the world, some political groups and leaders strongly resist in the tide of globalization. As is well known, big anti-globalization demonstrations were performed at the places of the recent WTO new round talks. Such movements have made Stiglitz (2002, p. 248) conclude that "for millions of people globalization has not worked. Many have actually been worse off $\cdots$".

Why is there such a resistance? The fear of giant firms in developed countries associated with free trade is often emphasized. However, the existing literature has not replied to this question properly by concentrating on deriving the sufficient condition for gainful trade (e.g., Markusen, 1981 and Helpman, 1984) and showing the potential gainfulness of free trade (e.g., Kemp and Shimomura, 2001). While a theory which suggests the losses from trade is needed to improve our understanding of the above concern, there seems to be few theoretical works that address the negative aspect of trade. Considering that the modern standard trade theory, which is sometimes called "new trade theory", successfully takes into account imperfect competition and increasing returns, one may naturally want to know whether the trade theory can handle the negative concern of free trade. That is the main purpose of this paper. Constructing a two-agent model of international trade with imperfect competition and scale economies, we show an extreme possibility that everyone in a country loses from trade.

A few remarks should be mentioned before turning to the analysis. First, in most of the existing literature on new trade theory, a representative consumer has been assumed, which precludes the income distributional effect of the opening of trade among agents. For example, in a seminal paper by Markusen (1981), the monopolist's profit is transferred to the representative consumer in a lump-sum fashion. While this apparatus makes the argument simple, it also makes it impossible to discuss the conflicts of interest between the consumer and the monopolist, which we often observe in reality; the monopolist seeks higher prices for maximizing its profit, which is likely to reduce the consumer surplus. In

this sense, it is an unexplored work to address income distributional effects of free trade in an imperfectly competitive setting.

Second, we must emphasize that the sufficient condition for losses from trade derived in this paper is different from that obtained in Markusen (1981) and Helpman (1984). According to them, a country loses from trade only if its output of the monopolized good decreases by moving from autarky to free trade. However, it may not be necessarily clear under what conditions on *exogenous* parameters the 'production contraction' takes place. It seems that there are no contributions that clearly show under what conditions on parameters Pareto-deteriorating trade takes place in two-country general equilibrium trade models that are subject to imperfect competition and increasing returns. This is what we try in this paper.

Third, this paper is closely related to the literature on losses from trade in non-Arrow-Debreu economies. For example, Newbery and Stiglitz (1984) and Shy (1988) show an extreme situation in which everyone in all countries loses from trade in market incompleteness, while Kemp and Long (1979) and Bihn (1985) do the same task in overlapping generations models. Thus, this strand of literature has shown the negative aspects of free trade and can provide an interesting insight on anti-globalization. However, as we already noted, to our knowledge, there seems no parallel work in a context of imperfect competition and increasing returns. We aim to fulfill this gap.

The plan of the paper is as follows. Section 2 develops a two-agent oligopolistic model and characterizes an autarkic equilibrium. Section 3 extends the model to free trade and explores the welfare consequences of the opening up of trade on income distribution of each agent. Section 4 sums up the conclusion.

2   An Autarkic Equilibrium

A two-country (home and foreign) Ricardian model is constructed. This section is devoted to describing autarky of the home country. There are two goods (X and Y) both of which are produced from labor. Good Y is taken as a numeraire and its price is normalized to unity. On the production technology of good Y, it is assumed that one unit of labor produces one unit of good Y so that the wage rate equals one as long as it is positively supplied. Throughout the paper, good Y is assumed to be produced both in autarky and in free trade.

On the other hand, producing X units of good X requires a variable cost of cX and a fixed cost of f with c and f being a positive constant. Good X is produced by a monopolist.

One notable property of our model is that we separate the welfare of consumers from that of monopolists to address the income distributional effect of the opening of trade. The monopolist owns a 100% ownership of the firm and no labor, whereas the consumer owns no ownership of the firm and earns wage income only by supplying its labor. The

monopolist is assumed to consume only good Y so that maximizing utility is equivalent to maximizing profit by controlling its output. On the other hand, the consumer seeks to maximize a homothetic utility function subject to its budget constraint:

$$\max_{D_X, D_Y} \quad v(u(D_X, D_Y))$$
$$\text{subject to} \quad pD_X + D_Y = L,$$

where $v(\cdot)$ is a monotonically increasing function, $u(\cdot)$ an increasing, strictly quasi-concave, and homothetic function, $D_i, i = X, Y$ the consumption of each good, p the relative price of good X, and L the home labor endowment, which is equal to the labor income because of the unitary wage rate. Both goods are indispensable. Then, the corresponding indirect utility function and demand function of good X respectively become[1]

$$v\left(\frac{L}{e(p)}\right) \quad \text{and} \quad D_X = \frac{e'(p)L}{e(p)}, \tag{1}$$

where $e(\cdot)$ is defined as

$$e(p) \equiv \min_{D_X, D_Y} \{pD_X + D_Y \mid u(D_X, D_Y) \geq 1\}.$$

An autarkic equilibrium is characterized. Since good X is monopolistically supplied, the autarkic market-clearing condition is given by

$$\frac{e'(p)L}{e(p)} = X,$$

from which the inverse demand function becomes $p(X/L)$, $p'(\cdot) < 0$. The monopolist's profit is then defined by

$$\left[p\left(\frac{X}{L}\right) - c\right]X - f.$$

Recall that the assumption of indispensability of both goods must involve incomplete specialization under autarky. Then, the first-order condition for profit maximization is

$$p'\left(\frac{X}{L}\right)\frac{X}{L} + p\left(\frac{X}{L}\right) = c, \tag{2}$$

the solution of X/L to which can be expressed by $X/L = x(c)$, $x'(c) < 0$. Substituting it into the inverse demand function, the autarkic equilibrium price becomes $p(x(c))$ and the monopolist's equilibrium profit is obtained as

$$\pi(c, f) \equiv [p(x(c)) - c]Lx(c) - f, \tag{3}$$

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[1] Any interested reader is referred to Wong (1995).

which is needed to be positive for the interior maximum, i.e., the pair of (c, f) satisfies (3) in an autarkic equilibrium. Finally, the consumer's indirect utility in the autarkic equilibrium is

$$v\left(\frac{L}{e(p(x(c)))}\right). \tag{4}$$

Exactly the same argument holds in the foreign country as well. In what follows, the two countries are assumed to differ in the labor endowment and the monopolist's marginal and fixed costs. Thus, one has only to replace L, c and f with L^*, c^* and f^* to describe the foreign autarkic equilibrium.

3 A Free Trade Equilibrium and Losses from Trade

This section lets the two countries trade freely. Then, the market-clearing condition in the integrated world market is given by

$$\frac{e'(p)}{e(p)}(L + L^*) = X + X^*,$$

which gives the inverse demand function as $p((X + X^*)/(L + L^*))$ and the home monopolist's profit is defined as[2]

$$\left[p\left(\frac{X + X^*}{L + L^*}\right) - c\right]X - f.$$

The two monopolists are assumed to play a Cournot-Nash game, which gives the system of the first-order conditions for interior maximization:

$$p'\left(\frac{X + X^*}{L + L^*}\right)\frac{X}{L + L^*} + p\left(\frac{X + X^*}{L + L^*}\right) = c \tag{5}$$

$$p'\left(\frac{X + X^*}{L + L^*}\right)\frac{X^*}{L + L^*} + p\left(\frac{X + X^*}{L + L^*}\right) = c^*. \tag{6}$$

However, the interior solution is not always chosen due to the presence of fixed costs. Roughly speaking, the home monopolist has an incentive to quit production when f is sufficiently large. To allow for such a possibility, let $R(X^*, c)$ denote the solution of X to (5). Substituting this into the definition of profit, the home firm's maximized profit is obtained as

$$\Pi(X^*, c, f) \equiv \left[p\left(\frac{R(X^*, c) + X^*}{L + L^*}\right) - c\right]R(X^*, c) - f.$$

Then, making use of $\Pi(\cdot)$, the home monopolist's reaction function is derived as

$$X = \begin{cases} R(X^*, c) & \text{if} \quad \Pi(X^*, c, f) \geq 0 \\ 0 & \text{if} \quad \Pi(X^*, c, f) < 0 \end{cases}. \tag{7}$$

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[2]Note the functional form of $p(\cdot)$ is the same between autarky and free trade.

The foreign monopolist's reaction function is analogously given by

$$
X^* = \begin{cases} R(X, c^*) & \text{if} \quad \Pi(X, c^*, f^*) \geq 0 \\ 0 & \text{if} \quad \Pi(X, c^*, f^*) < 0 \end{cases}.
\tag{8}
$$

(7) and (8) imply that each monopolist's reaction curve in the $X - X^*$ space is not globally continuous as Figure 1 depicts.[3] In the figure, the presence of fixed costs makes the home monopolist's reaction curve contains a vertical segment for a sufficiently large value of X^*, which makes its reaction curve consist of BC and DE: there is a jump in the curve. Similarly, the foreign monopolist's reaction curve consists of a horizontal segment and a downward-sloping one.[4]

On the basis of the above argument, we now have:

Lemma. *The free trade equilibrium (X^N, X^{*N}) is characterized by foreign monopoly such that*

$$
X^N = 0, \quad X^{*N} = (L + L^*)x(c^*),
\tag{9}
$$

under the condition that

$$
\Pi\left((L + L^*)x(c^*), c, f\right) < 0, \quad \Pi(0, c^*, f^*) \geq 0.
\tag{10}
$$

Proof. If the home monopolist is driven out from the market, the free trade equilibrium involves

$$
p'\left(\frac{X^*}{L + L^*}\right)\frac{X^*}{L + L^*} + p\left(\frac{X^*}{L + L^*}\right) = c^*.
$$

Recalling the definition of the function $x(\cdot)$, $X^*/(L + L^*)$ to this equation is expressed by $x(c^*)$, which is equivalent to $X^{*N} = (L + L^*)x(c^*)$. Then, applying the foregoing argument yields Lemma. **Q. E. D.**

Roughly speaking, this lemma asserts that the world market is possibly monopolized by the foreign monopolist when f is sufficiently large relative to f^*. Such an equilibrium is given by N in Figure 1. The rest of the paper will address the welfare aspects of the above equilibrium. Since the world market is monopolized by the foreign monopolist, the equilibrium price is equal to $p(x(c^*))$. Thus, we have arrived at the main result of the paper summarized in:

Proposition. *If the cost parameters satisfy $c < c^*$ and (10), both the consumer and*

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[3]The figure is drawn based on a linear demand function for simplicity.

[4]Dixit (1980) and Brander and Spencer (1981) apply a similar geometry to the theory of entry deterrence.

the monopolist in the home country lose from trade.

Proof. Proving the losses from trade for the monopolist is almost trivial because the home monopolist's profit is driven to zero under free trade, whereas that under autarky is positive from assumption.

On the other hand, the world price is now $p(x(c^*))$ which is larger than $p(x(c))$ under the condition of $c < c^*$. Hence, comparing the autarkic and free trade levels of the consumer's welfare, we have

$$v\left(\frac{L}{e(p(x(c^*)))}\right) < v\left(\frac{L}{e(p(x(c)))}\right),$$

where the left-hand side is the indirect utility under free trade, while the right-hand side is that under autarky. The inequality follows from the fact that $v(\cdot)$ is decreasing in the marginal cost and the assumption of $c < c^*$. Accordingly, both the monopolist and the consumer in the home country are worse off under free trade than under autarky. **Q. E. D.**

Remark 2. It is worth mentioning that the losses-from-trade proposition proved above has another important implication. Kemp and Wong (1995a, 1995b) prove that there exists a *lump-sum* compensation scheme which makes nobody worse off in free trade than in autarky even though the everyone in all countries loses from laissez-faire free trade.[5] However, the analogy to their *potential* gainfulness of free trade no longer carries over to imperfect competition and increasing returns as demonstrated in Fujiwara (2005). That is, any *lump-sum* compensation scheme is inefficacious in overcoming the losses from trade arisen above. In other words, whether *lump-sum* compensation suffices to remedy losses from trade heavily depends on the type of market distortion under consideration.

4 A Concluding Remark

This paper has presented a simply analytical framework to help understand why there have been persistent criticisms on globalization and trade liberalization. We have shown that there is a possibility that all of a country's residents become worse off under free trade than under autarky in the presence of oligopoly and increasing returns. When the country's monopolistic firm incurs a higher fixed cost than the other monopolist, the firm is likely to be defeated in the world market. Thus, the world market becomes foreign monopoly and the world price can exceed the autarkic price, which reduces the consumer surplus. As a result, both the consumer and the monopolist lose from trade.

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[5]Kemp and Wong (1995a) prove this result in an incomplete market model, while Kemp and Wong (1995b) do the same task in an overlapping generations model.

However, we would like to emphasize that our losses-from-trade proposition does not support anti-globalization movements. The implicit supposition of no redistribution between the two agents has played a key role in deriving the result of harmful trade. Indeed, our companion paper, Fujiwara (2005), has proved that there exists a *non-lump-sum* scheme of income redistribution between the agents which makes nobody worse off in free trade than in autarky.[6] That is, one can show that trade liberalization is potentially beneficial to all agents in all countries. This finding may give a theoretical rationale for the following argument by Bhagwati (2004, p. 233):[7]

So, we need to put in place those institutions and policies, part of what I call in this book "appropriate governance", if we are to support, and increase support for, global integration of the poor countries, as we should.

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[6]Prior to Fujiwara (2005), Kemp and Shimomura (2001) provide a more general proof of potential gainfulness of trade under oligopoly and increasing returns.

[7]In the book cited in Introduction, Stiglitz (2002) also mentions, "I believe that globalization ⋯ can be a force for good and that it has the *potential* to enrich everyone in the world, particularly the poor".

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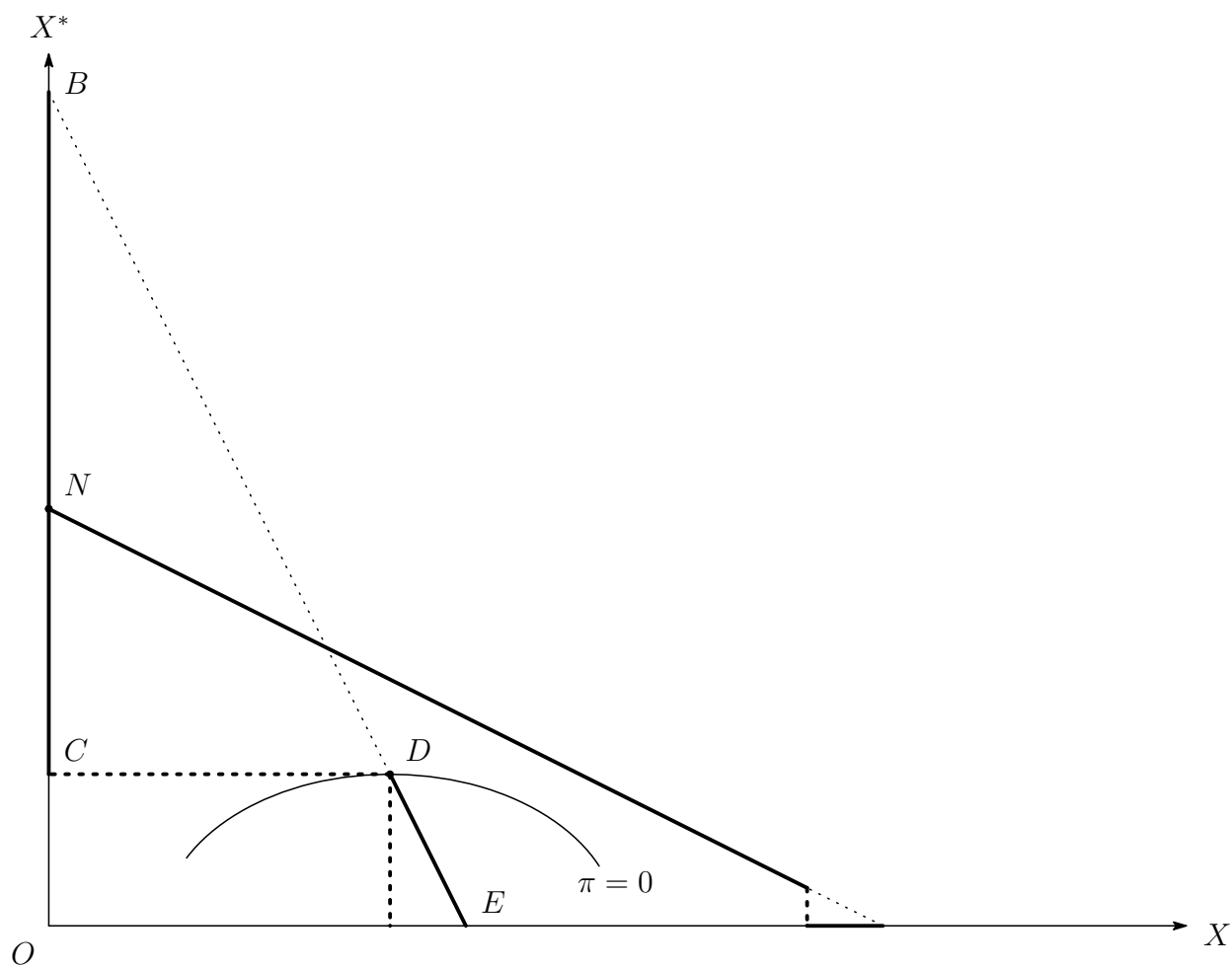[13] Stiglitz, J. E. (2002), *Globalization and Its Discontents*, New York, NY: W. W. Norton & Company.

Figure 1: The Laissez-Faire Free Trade Equilibrium