CONTESTABLE MARKETS IN INTERNATIONAL TRADE

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I. Introduction

Economists have been looking for a model with which they can analyse increasing returns to scale (IRS) and imperfect competition. After a string of unsuccessful attempts by a number of individuals, E. Helpman and P.R. Krugman, in their brilliant book *Market Structure and Foreign Trade,* finally developed a new model that stressed both of these concepts. And "today the border country between the theory of international trade and industrial structure is one of the most active areas in international economics" (p. 1).

According to Helpman and Krugman, the traditional general equlibrium (GE) approach needs extensions in four major areas. It has failed to explain (1) volume of trade, (2) composition of trade, (3) volume and role of intrafirm trade and direct foreign investment, and (4) welfare effects of trade liberalization.

The volume of trade has traditionally been explained by differences in factor endowments, yet, "in practice, nearly half of the world's trade consists of trade between industrial countries that are relatively similar in their relative factor endowments" (p. 2). Reflecting this fact the composition of trade should be explained in terms of net exports, due to the substantial two-way trade in goods of similar factor intensity, i.e., the "interindustry" trade.

Intrafirm trade and direct foreign investment were also based on an inappropriate framework in conventional trade theory, the convenient but unrealistic assumptions of perfect competition and constant returns to scale, a situation that exists nowhere in visible firms. "Again, in

reality much international trade consists of intrafirm transactions rather than arm's length dealings between unrelated parties-multinational firms" (p. 3).

With regard to the welfare effects of trade liberalization, studies in the past have been based upon the concept of resource reallocation. However, evidence such as that from the EEC and the U.S.-Canada auto pact shows that "little resource reallocation took place; instead, trade seems to have permitted an increased productivity of existing resources, which left everyone better off" (p. 3).

The above four points can become understandable once economies of scale are introduced into the analysis. "In reality, many industries do not seem to be characterized either by constant returns or perfect competition" (p. 3). The role of increasing returns is to give the idea that "economies of scale seem to allow a straightforward explanation of our empirical puzzles" (p. 3).

The puzzle of trade between similar countries can be solved if there are country-specific economies of scale. This provides a simple explanation of intraindustry trade as "specialization which takes place to realize economies of scale rather than because of differences in factor rewards can easily involve two-way trade in goods with similar factor content" (p. 4).

The relationship between increasing returns, intrafirm trade, and direct foreign investment is more indirect. Inputs, such as headquarters' services and intermediate goods, give increasing returns specific to particular users. In such cases, "there will be strong incentives to avoid the problems of bilateral monopoly by integrating upstream and downstream activities in a single firm" (p. 4). This invites us to the world of the multi-national corporation corporation (MNC) and the transnational corporation (TNC). "Trade liberalization that produces all-round gains without significant resource reallocation is not all paradoxical in a world characterized by increasing returns, and where intraindustry specialization and trade produce gains in efficiency through increased scale of production" (p. 4).

Increasing returns to scale are, of course, inconsistent with perfect

competition. The fact that there exists no generally accepted theory of imperfect competition prevents the development of trade theory with increasing returns.

Helpman and Krugman start with two classic questions: (1) What determines the pattern of international trade? and (2) Is international trade beneficial? Both questions are valuable as a way of structuring discussion around a general model. They construct as a reference point the concept of "Integrated economy or equilibrium" (IE), defined as a situation where the factors of production are perfectly mobile. They then proceed to "carve up" the world into separate countries asking the following questions: "Under what conditions will the integrated economy be reproduced through trade? What transactions are needed to offset the fact that the world is divided into countries? and What is needed to reproduce the integrated economy as a way of revealing the essential role of an international economic linkage?" (p. 5).

II. Factor Proportions Theory and Market Structure

The core of modern international trade theory is the Heckscher-Ohlin model (HOM) and its extensions—the factor proportion theory. The major purpose of Helpman and Krugman is "to show that many of the insights gained from traditional theory continues to be useful even in a world where increasing returns and imperfect competition are important" (p. 11).

Building a model of IE, following that of Dixit and Norman (1980, chapter 4), they ask "whether it is possible to achieve the same resource allocation if factors of production are instead divided up among countries and there is no international factor mobility" (p. 11). Their conclusion is "there is a set of allocations of factors to countries for which this is possible. If factor endowments lie within this set, the factor prices will be equalized through trade" (p. 11). Let us call this set the factor price equalization (FPE) set. If factor prices are equalized and the countries have identical homothetic preferences, we can deduce a relationship between factor endowments and trade, similar to that of Vanek (1968). "If we look at the factor services embodied in a country's trade, we will

find a country is a net exporter of the services of which it has a relatively large share of the world's supply" (pp. 11-12).

Like most of the traditional theories, HOM and its extensions rest on the simplifying assumption of constant returns to scale. Relaxing the assumption of constant-returns (CRS) technology, does, according to Ohlin (1933), "provide an incentive for international specialization and trade that can supplement the incentives created by cross-country differences in factor endowments" (p. 31).

However, as soon as the assumption of CRS is relaxed, we must face the problems of market structures other than the familiar perfectly competitive economy.

"Since there is no generally accepted theory of imperfect competition, it has seemed impossible to say anything general about trade in a world whose technology allows for increasing returns". The only possible way allowed for us is to "analyze international trade under several alternative assumptions about the nature of competition" (p. 31).

In their book, Helpman and Krugman consider the following: (1) economies of scale at the level of the firm, (2) external economies, (3) 'contestable markets' (Baumol, et al., 1982), (4) Cournot oligopoly, and (5) monopolisitc competition. The first three are of interest in this paper.

III. Economies of Scale

The easiest form of scale economies is increasing returns at the firm level. The larger the firm, other things being equal, the better it can overcome indivisibilities. Certain overhead costs, which are independent of scale, will decline as production expands.

How important are these type of economies of scale in actual economies? In the US, evidence indicates they were exhausted in the 1950s and 1960s. However, recent studies by Scherer (1980) shows the uprising evaluations, due to factors such as; (1) "industries" often produce many products, so that many products may be produced at less than optimal scale, (2) economies of multiplant operation not captured by plant-based estimates of scale economies, and (3) dynamic scale

economies internal to firms. Of course, we have to pay attention to the "very recent managerial literature that stresses the problems of incentive, control, and morale which arise as organizations grow large and which can outweigh purely technical factors" (p. 33).

Economies of scale at the firm level implies that price-taking behavior of the firm is inconsistent with non-negative profits, and markets tend to be imperfectly competitive. Here one should be specific about how price-setting firms behave. In particular:

(1) Whether firms with market power act in a cooperative or non-cooperative fashion? Leaving aside the situation where firms seem to work in somewhat cooperative way, we confine the model to the cases of noncooperation.

(2) The use of strategic factors or variables in terms of which the noncooperative game is played and conditions of entry and exit from the industry. Strategic variables used in the Cournot model are the outputs, and in the Bertrand model, the variables are the prices. In the first model, firms choose the profit-maximizing output taking other firms' outputs as given. In the second, forms choose the profit-maximizing price, taking other firms' prices as given. And "there has always been a tension between these two approaches" (p. 35).

In the discussions about entry and exit, two important questions asked are: (a) Whether entry will eliminate economic profits, and (b) What are the measures that firms in an industry take to discourage potential competitors. Helpman and Krugman concentrate on the first question.

IV. External Economies

One case where increasing returns are consistent with perfect competition is when returns to scale are constant at the level of the firm and the social increasing returns take the form of external economies.

External effects can arise from any economic activity. Let us show this by the generalized production function $x = F(v, e)$, where x is the output under consideration, v is the input vector, and e is the vector of all 'external' influences.

Traditional treatment of 'e' regards it as the output of the domestic industry. However, a more general arrangement can be found by the introduction of not only industry-specific or country-specific variables but also international and interindustry effects.

Now, consider a production function which is homogeneous of degree one in v, i.e., $x = f(av, X) = af(v, X)$, where a is a positive constant and X is the industry's output, and having increasing returns from the point of view of the industry as a whole. Then, we can write $X = g(X)\tilde{f}(v)$, assuming that scale effects enter multiplicatively, where $\tilde{f}(\cdot)$ exhibits constant returns. More generally, we can have an industry production function in the form $X = F(v)$ which exhibits increasing returns.

But how can we explain the way industry output enters into the firm's production function? The following arguments are made:

(1) Beginning with Marshall (1920) and continuing to Ethier (1979), economists have argued that a larger industry is able to support production of a wider variety of intermediate inputs at lower cost. "If this is the reason for industy economies of scale, however, the problem of handling the effects of scale economies on market structure has not really been solved. Rather, it has been concealed through an incomplete specification of the model..., certain special assumptions about the market structure of the intermediate goods industry can cause the economy to behave 'as if' there are true technological external economies, but this is by no means a general result" (p. 37).

(2) The second argument insists that "it is really an internal economy story in which something is constraining firms to price at average cost" (p. 37). Threat of entry by the potential competitors can serve toward this objective, as Baumol and others insist in their arguments for the "contestable market". But as they say, "average cost pricing imposed by the threat of entry is not always the same in its implications for international trade as average cost pricing resulting from perfect competition and constant private returns to scale" (p. 37).

(3) Finally, one can argue that the external effects are the results of the inability of firms to appropriate knowledge completely. Information can be gained by the firm from either research and development (R&D)

or through experience, which is often given by word of mouth or deliberate "reverse engineering". Therefore, it is unlikely that the first innovative industries will ordinarily be perfectly competitive. Further, the "generation of knowledge points one in the direction of a dynamic rather than a purely static model" (p. 37).

The conclusion of Helpman and Krugman is that the static external economies models are at best a rough proxy for more complex models. But the question they raise about the unit to which external economies apply is worth examining. Traditionally, the nation-state has been assumed to be the object of externalities, but as Ethier (1979) points out, if external economies arise from economies of scale in the production of intermediate goods, and if these goods are tradable, then it is natural to consider the international rather than national externalities.

Another point we have to pay attention to is the case of externalities resulting from incomplete appropriability of knowledge. In this case which unit is relevant for externalities depends on the details of how innovations diffuse. Here again if the firms gain from the international channels, their external benefits are international rather than intranational.

V. Contestable Markets

The idea of the 'contestable market', first discussed by Baumol, et al., in the outstanding book *Contestable Markets and The Theory of Industry Structure*, is a synthesis of the contributions in value theory and the theory of industrial organization.

With regard to value theory, they attempt to explain the following:

(1) Standard analysis of output and prices assumes that the structure of particular industries is determined outside the domain. However, the structure of industry in the real economy is primarily determined by economic forces. "Thus a central task of our work is the integration of the process of structure determination into our model and the extraction of theoretical and policy implications from the resulting expanded construct" (p. 2)

(2) J.S. Bain's potential competition, that is the mere threat of entry,

can have enormous consequences for the general welfare and can affect the behavior of firms. Freedom of entry and exit is a matter of comparable importance.

(3) Identifying a segment of oligopoly analysis in which one is not troubled by the usual problems of indeterminancy and conjectural variations. The behavior of potential entrants provides this determinancy.

For the theory of industrial organization, they introduce analysis of industries comprised of multiproduct firms. For all of these cases the received theory of demand is well developed, but the theory of production, as it relates to industry structure, is not. They develop and analyse several characteristics of multiproduct cost functions, underlying features of productive techniques, and dependence on relative factor prices.

Connections between the nature of the set of available productive techniques and the character of the industry structure that is efficient for the production of the output vectors consistent with market demands are the beginnings of a theory of the determination of industry structure. The special form of behavior by potential entrants may be a rational response to idealized, reversible, and frictionless entry and exit. "This degree of freedom of entry forces industry in equilibrium to adopt the structure that is efficient, and imposes a number of other surprising and desirable properties on any industry equilibrium" (p. 3).

With these in mind, Baumol and others defined the "perfectly contestable" markets under which free entry involving the absence of barriers forces socially optimal behavior upon the incumbent firms in an industry (p. 5).

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国際貿易と競争市場

〈要　約〉

木　村　憲　二

　規模にかんする収穫逓増(IRS)と不完全競争を分析できる国際貿易の模型にたいする接近は，ヘルプマンとクルグマンの近著『市場構造と外国貿易』(1985)の登場によって大きく前進した。

　伝統的な一般均衡(GE)分析は，(1)貿易量，(2)貿易の構成，(3)企業内交易の大きさと果すべき役割，対外直接投資，および(4)貿易自由化の厚生上の効果，の分析を可能とするように拡充される必要があったのであるが，規模にかんする収穫逓増の導入によって容易に理解されるものとなった。貿易量の大きさにかんする在来型の説明は，要素賦存量のちがいによるヘクシャー・ウリーン(H−O)型のものが主流であるが，世界貿易の半分近くが要素賦存量の類似した構成をもつ国々のあいだの貿易で占められているという事実を考えるとき，著しく不充分であるといわなければならない。貿易の構成についても，往復貿易の存在を考えれば，純輸出のタームでの分析を必要としている。

　企業内交易と対外直接投資の分析も，完全競争と規模にかんして収穫不変の前提にもとづく在来型の分析では解明できないものであった。貿易自由化のもつ厚生効果の分析は，在来型では資源の配分の編成がえを考えてなされているのであるが，今日のECやUS−カナダ自動車協定のように，資源の再配分を行わない仕方での厚生増大策がみられている時代にはそぐわないものとなっている。

　国際貿易理論へのニュー・アプローチは，このような野心的な試みであるだけに，多くの示唆と共に不充分な点をのこしている。小論はこの

点についてのサーヴェイをあたえることを目標としたものであり，構成
としては，Ⅰ.序論，Ⅱ.要素比率理論と市場構造，Ⅲ.規模の経済，Ⅳ.
外部経済，コンテスタブル・マーケット，参考文献となっている。英文
の原題は「国際貿易におけるコンテスタブル・マーケット」であるが，
すこし長いので日本語の題は「国際貿易と競争市場」とした。