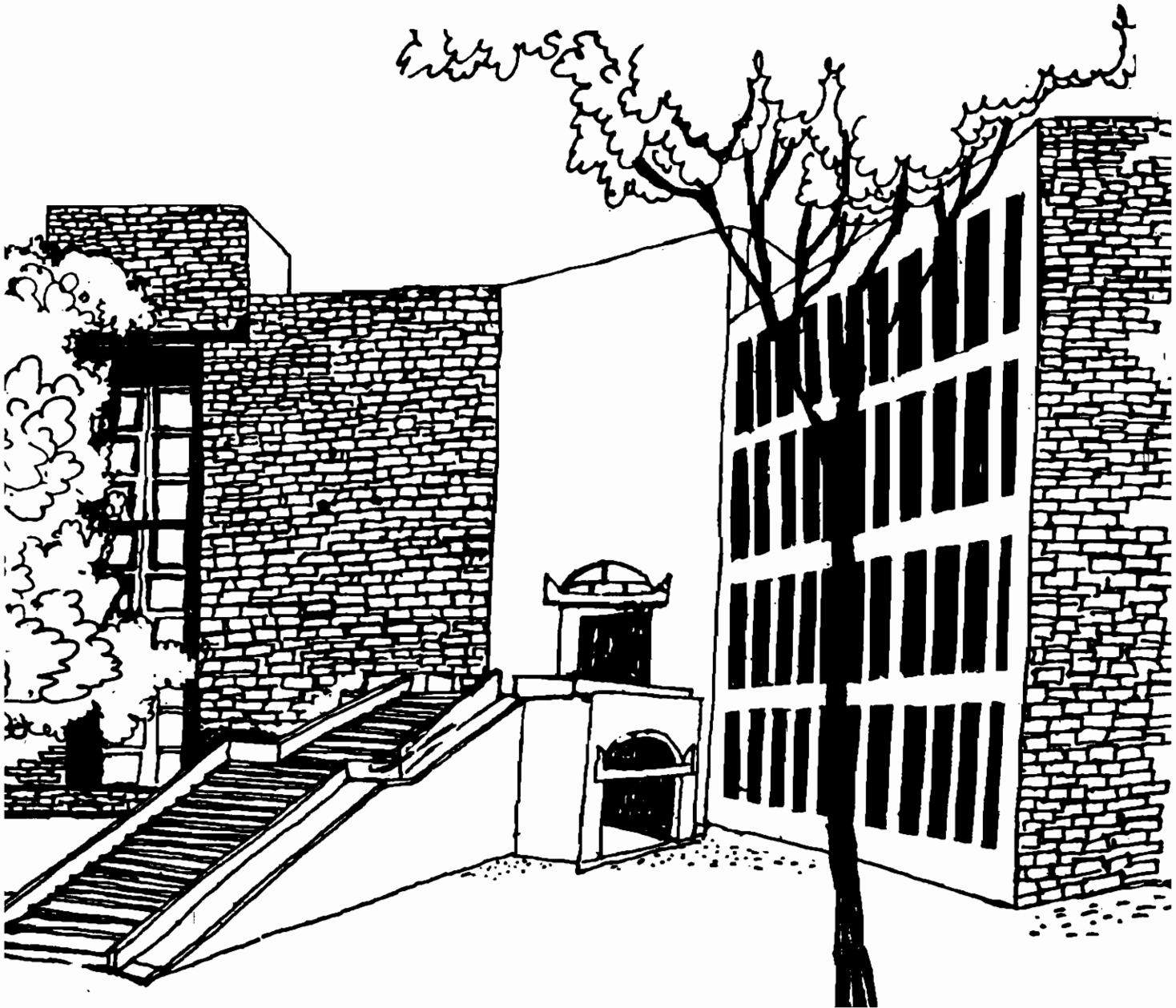




Working Paper



**EXPORTS AND LIBERALIZATION:
A SIMPLE INDUSTRIAL ORGANIZATION APPROACH**

By

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**Exports and Liberalization : A Simple Industrial Organization
Approach. .**

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Abstract:

This paper presents a simple theory towards putting forward two hypotheses that can be empirically verified with regard to the export behaviour of oligopoly firms in the post-liberalization period in selective Indian industries. These hypotheses are - (1) In the presence of import protection, large oligopoly firms export to protect high domestic market price and (2) within the size group of large scale firms, larger firms will have higher export orientation.

Exports and Liberalisation: A Simple Industrial Organisation

Approach

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I. Introduction

A few empirical studies that had examined the export behaviour of large and small scale sectors in Indian industry for the pre-liberalization period observed that exports had been basically a residual activity to the large scale oligopolistic firms and large firms were less export oriented than small firms. [Patibandla (1994b) and (1988)]. One of the reasons provided for this type of corporate behaviour was that the large oligopolistic firms were able to derive long run domestic market power due to industrial policies like licensing, capital market imperfections and also import protection. Since the late eighties some radical liberalization policies like removal of industrial licensing policies and free entry of multinationals, etc, have been undertaken. But in many industries, protection from imports continues. One of the interesting research issues in this scenario could be what would be the export behaviour of large scale oligopoly firms in Indian industry.

Strategic trade policy models, set in partial equilibrium oligopoly framework, show that policy factors like protection of domestic oligopolistic firms from imports could function as an export promoting strategy. [see Patibandla

(1994a)]. Krugman (1984), by taking a multi-market Cournot oligopoly model with firm level internal economies of scale (declining marginal costs), shows import protection could lead to export promotion. In Krugmans' model, protection of home market allows domestic oligopoly producer to slide down on the declining marginal (average) cost curve and foreign producer to move up on her marginal cost curve. As firms compete in Cournot quantity space in all the markets, the lower cost home producer will be able to capture higher market share in the third country markets also. But the effect of import protection on exports need not be through the scale economies factor alone. When a country is a small player in the world market and her domestic market is protected from imports, export activity of the domestic oligopoly producers could be simply a means of protecting high domestic market price. This paper presents a simple theoretical model to put forward this hypothesis that could be empirically verified for Indian industries.

II. The Model.

The home market is taken to be protected from imports. On the basis of the assumption of small country in the world market, all home market producers are taken to be price takers in the world market. The domestic oligopoly producers are taken to compete in Cournot quantity space in the protected domestic market. In order to keep the analysis simple and sharp, we assume that the technology of firms is characterized

by 'U'shaped cost curves.¹ The home market demand curve is taken to be linear.

The profit function of firms facing protected domestic and competitive world market is;

$$\Pi_i = P(X_{-i} + x_i)x_i + P_w x^*_i - (1/2)c_i (x_i + x^*_i)^2 \quad (1)$$

where $i = 1, 2, \dots, N$

$$X_{-i} = \sum_{j \neq i}^N x_j$$

'P' is the home market price and 'P_w' is the world market price. 'x_i' is home market sales and 'x_i^{*}' is exports of firm 'i'. 'c_i' is the parameter of the cost function of producing total output of firm 'i'. The first order conditions of profit maximization are as follows;

$$\partial \Pi / \partial x^*_i = P_w - c_i (x_i + x^*_i) = 0 \quad (2)$$

$$\partial \Pi / \partial x_i = P(\cdot) + P'(\cdot) x_i - c_i (x_i + x^*_i) = 0 \quad (3)$$

Firms maximize profits when marginal revenue of home market sales, world price and marginal cost of production are equal which is shown as follows;

$$P(\cdot) + P'(\cdot)x_i = P_w = c_i(x_i + x^*_i)$$

from equation (2), we get;

$$x^*_i = (P_w / c_i) - x_i \quad (5)$$

from equation (4), we obtain;

$$x_i = [P_w - P(\cdot)] / P'(\cdot) \quad (6)$$

$P'(\cdot) < 0$, $P(\cdot) > P_w$, so 'x_i' is positive.

Firm level exports in equilibrium;

$$x^*_i = [P_w / c_i] - [(P_w - P(\cdot)) / P'(\cdot)] \quad (7)$$

Firm level export orientation;

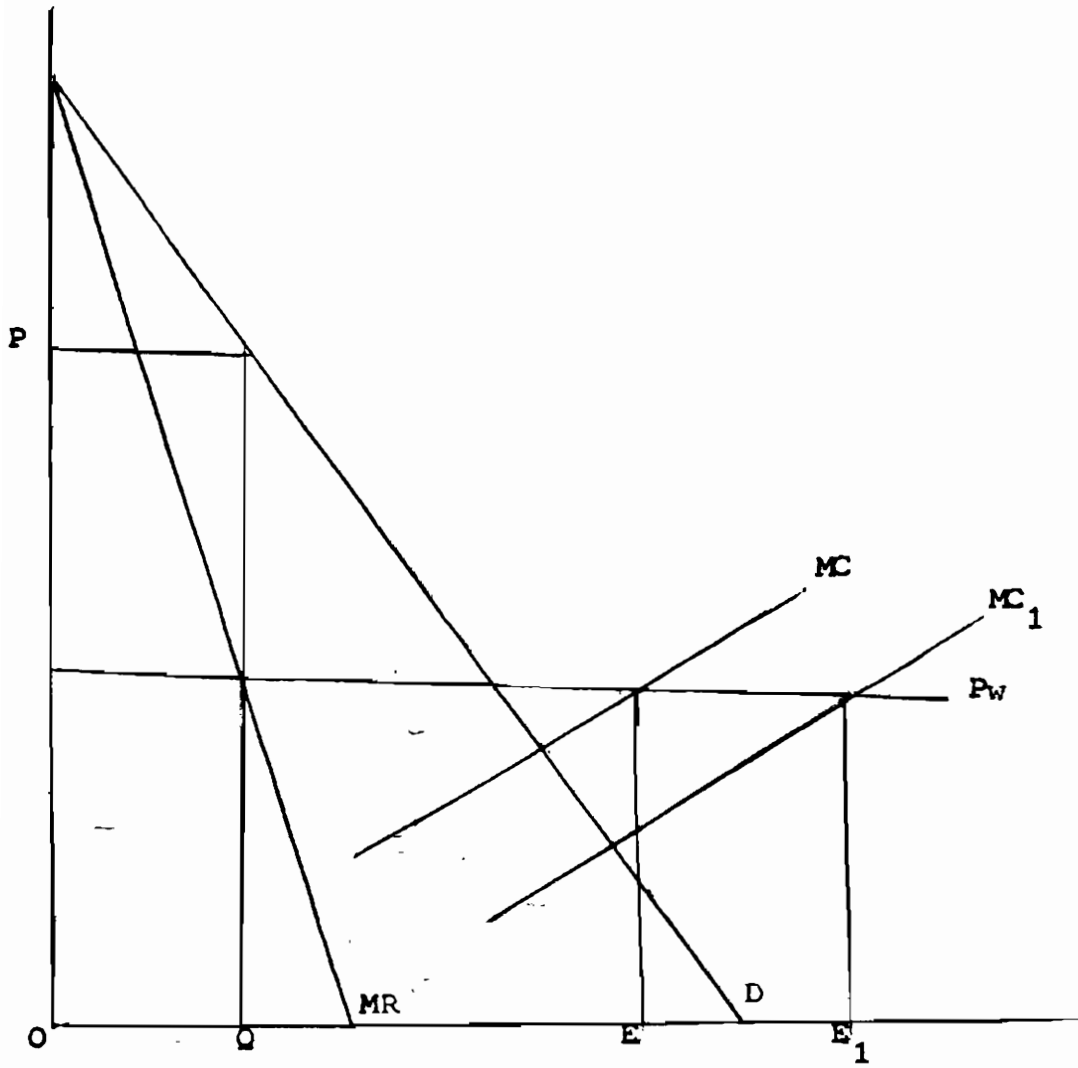
1. This assumption can be justified for many Indian industries where economies of scale are not significant.

$$[x_i^*/(x_i + x_i^*)] = 1 - [(P_w - P(\cdot))/P'(\cdot)](P_w/c_i)^{-1} \quad (8)$$

It can be observed from (7) and (8) that when there is symmetry in costs across firms ($c_i = c_j$), all firms will have equal market shares and if they export, i.e. if their cost functions permit, they export at equal export orientation (or intensity). If we introduce cost asymmetry, the results show certain interesting implications. If firm 'i' has lower costs ($c_i < c_j$), it will have higher total sales turnover and higher export orientation than the higher cost firm 'j'. But the home market shares remain equal. In other words, when firm 'i's costs decline relative to firm 'j', it expands only in the export market and its sales in the protected domestic market do not change. The lower cost firm is the larger firm with higher export orientation. This result has interesting implications in understanding oligopoly behaviour which is explained in the following.

In a straight forward Cournot model where firms face a single market, lower cost firm will always have higher market share [see Tirole (1993)]. When a firm's (i's) cost decline relative to the other's, it is credible for it to expand its sales (market share). The optimal reaction of the higher cost firm (j) to the expansion of the lower cost firm (i), is to contract its sales. But as the reaction curves are downward sloping and their slope is less than 'one', firm 'j' contracts less than proportionately in relation to the magnitude of firm 'i's expansion. Consequently, the total quantity supplied in the market increases and as a result the market price declines. In the present case, oligopoly firms face two

Figure



segmented markets - the protected domestic market and the perfectly competitive world (export) market. Because of the perfectly competitive export market, the firm with lower costs expand only in the export market, but not in the protected domestic market. Any expansion in the domestic market leads to a fall in the domestic market price. The expansion (due to decline in its' costs) in the competitive world market (where it is a price taker) helps the firm to avoid increase in the domestic market sales and consequent decline in the domestic market price.² This result is similar to a price discriminating monopolist facing protected domestic market and perfectly competitive world market. This is illustrated in the following on the basis of the Figure.

In the Figure, 'D' is the domestic market demand curve and 'MR' is the corresponding marginal revenue curve. 'Pw' is the world price line. 'MC' is the initial marginal cost curve of the monopolist. The price discriminating monopolist will maximize her output when her marginal cost is equal to marginal revenue of domestic sales and marginal revenue of exports (which is the world price, Pw). With the initial marginal cost curve 'MC', the firm produces 'OE' level of total output out of which it sells 'OQ' in the domestic market at the price 'OP' and exports to the extent of 'QE'. When the firm's marginal cost curve shifts downwards, as shown by MC1, it leads to an expansion of total output produced by the

² The domestic oligopolist can not charge a domestic market price (P) higher than $P_w(1+t)$, where 't' is the tariff rate on imports. If $P > P_w(1+t)$, imports will eliminate the domestic producers.

January-March.

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