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# Joint Venture and Export Pessimism

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## ABSTRACT

The main point of this paper is that a firm in the less developed country will not be able to improve its export market performance by a joint venture agreement with a developed country firm. A joint venture may raise the profit of the LDC firms which would contain its share of monopoly rent. A two-firm-two-country model shows that the export performance of an LDC firm will suffer in a joint venture. We suggest that for a better performance in the product market, the LDC firm should compete with the DC firm and use various kinds of market signals for improving its credibility in the world market. It is shown that if the DC firm is a market leader, the LDC firm's export would be less than its Cournot exports. However, the DC firm may still be interested in a joint venture in which case the export pessimism associated with a joint venture prevails. A generalization by introducing 'n' LDC firms of 'n' countries forming global joint venture with one DC firm shows that it may be possible for a single LDC firm to meet the export commitment in the joint venture.

Key Words: Joint Venture, Oligopoly, Export, Signaling, Financial Markets

JEL Classification Codes: F23, L13, F10, G10

## Joint Venture and Export Pessimism

### I Introduction

Though many East Asian countries have successfully used their exports to the developed market economies as the primary source of economic growth, it still remains doubtful whether many other countries in South Asia and Africa would be able to achieve similar success in a world that is being increasingly globalized. Export growth in India, for instance, was fairly high during 1992-95 after a massive currency devaluation in 1991, but as the initial phase of economic liberalization was over one did not observe a spectacular growth of the export sector that could be compared to China.<sup>1</sup> The experience of other South Asian countries, such as Pakistan and Sri Lanka, is not at all different. On the other hand, recent studies, such as Zhang and Felmington (2002), have shown that export and foreign direct investment have played a crucial role in accelerating economic growth in China, though a greater exposure to the global economy may have increased its regional economic imbalance. The inflow of foreign direct investment in South Asia, however, has been rather modest.

One of the major problems faced by the developing world is the fact that the quality of manufactured goods produced by them often fails to meet the international standards. The technology for producing the best quality products often rests with the firms owned by the developed countries. The exporting firms in the less developed countries(LDC) will therefore have to sell their products of poor quality at a lower price in the world market, while the firms in the developed countries(DC) can sell at a higher price and extract a premium for quality. The LDC firms may however tie up with the DC firms and try to get the technology transferred. But, as Ethier and Markusen (1996) have argued, the DC firm has a choice between exporting, licensing and acquiring a subsidiary and may often avoid a direct tie-up with the LDC firm in any form. Even if we assume that the DC firm agrees to form a joint venture with the LDC firm which solves the latter's problem of quality and market reputation, it remains doubtful whether the LDC firm will be able to export more. The source of this doubt is the fact that the joint venture is like a cartel and the DC firm would be interested to extract the monopoly rent by restricting sales.

Sometimes the actual quality of the product manufactured by the LDC firm is not the issue. The LDC firm may possess the quality technology or may easily acquire it at a price, but the real problem is its credibility and market reputation. Information asymmetry between the firm and the international buyers of its products makes it very difficult for the firm to convince the buyers that its products would meet the quality standards. It is quite possible that even after raising the quality of the product the LDC firm would get a price that is lower than the DC firm's price. This would lead to adverse selection, as no LDC firm would have an incentive to raise quality. A joint venture agreement with the DC firm would of course solve this problem. But there are other ways in which the LDC firm may handle its problem of credibility in the world market. A great deal of work has been done in the corporate finance literature on the kind of signals a firm can send to both the investors in the financial markets and the buyers in the product

markets. It was Ross(1977) who first disputed the Modigliani-Miller theorem on the irrelevancy of financial structure in the determination of the market value of a firm's stocks. Bhattacharya(1979) has shown that payment of cash dividends can act as a signal of company's financial performance despite tax disadvantages associated with such a signal. In a subsequent paper Bhattacharya and Ritter(1983) have pointed out that a company giving signals to both the financial and product markets may have to face a paradoxical situation, as its product market competitors extract information from the signals meant for investors in the financial markets. Later work on this paradox by Myers and Majluf(1984) and Gertner, Gibbons and Scharfstein(1988) points to the possibility of companies avoiding share issue and preferring debt to equity. In fact, in many developing countries debentures and commercial papers are underwritten by banks and the companies not having well-established market reputation can use these financial instruments rather than share issue to have a better credibility in the product market. In this context it is also necessary to recognize the importance of business groups. A company that belongs to a business group is likely to have better credibility in both financial and product markets. For instance, Feenstra, Yang and Hamilton(1999) have shown that business groups play a decisive role in determining product variety as well as product quality in exports from South Korea, Taiwan and Japan.

The main point of this paper is that an LDC firm will not be able to improve its product market performance by a joint venture agreement with a DC firm. A joint venture may raise the profit of the LDC firms which would contain its share of monopoly rent. But the governments of many developing countries insist formally or informally on an export clause by which the home firm should export more for approving joint venture agreement with a foreign firm. In the following section, a two-firm-two-country model shows that the export performance requirement will not be met in a joint venture. This result explains why the governments in the South Asian countries are reported to be rather indifferent towards foreign collaboration and joint ventures.<sup>2</sup> Our model suggests that for a better performance in the product market, the LDC firm should compete with the DC firm and use various kinds of market signals for improving its credibility in the world market. In section III it is shown that if the DC firm is a market leader, the LDC firm's export would be less than its Cournot exports. However, the DC firm may still be interested in a joint venture in which case the export pessimism associated with a joint venture will prevail. Section IV generalizes the basic model by introducing 'n' LDC firms of 'n' countries forming global joint venture with one DC firm. In this model it may be possible for a single LDC firm to meet the export commitment in the joint venture. Concluding remarks appear in section V.

## II (a) The Cournot Model

What follows is a two-country-two-firm model with the second country being a developing country that is not in a position to match the first country's export quality in the world market. The first firm is located in the first country which is a developed country possessing the technology to produce the best possible quality. The second firm is located in the second country and the quality of its product (or quality perception)

needs improvement . Quality improvement is costly, though a better quality product can be sold at a higher price.

The world demand function is assumed to be linear and has the following form: :

$$(1) \quad p = a - Q, \quad Q = q_1 + q_2 \leq a \\ = 0, \quad \text{for } Q > a$$

$a > 0$  is the indicator of market size.  $q_1$  and  $q_2$  are the quantities sold by the two firms.

(1) is the valid description of world demand condition provided the two firms sell a homogenous product. However, we assume that the second firm's product does not possess full quality and therefore the two firms face different demand functions that are given as follows:

$$(2) \quad p_1 = a - q_1 - q_2$$

$$(3) \quad p_2 = a - \alpha q_2 - q_1$$

where  $p_1$  and  $p_2$  are the prices at which the two firms can sell their products in the world market. The quality index of the first firm is unity indicating full quality, whereas the quality index of the second firm is  $\alpha \geq 1$  which means that other things remaining the same the second firm will get a lower price for its product. If  $\alpha = 1$ , then goods have the same quality and  $p_1 = p_2 = p$ . Improvement of quality is costly and second firm will have to spend 'e' in order to improve quality, i.e., reduce  $\alpha$ . The quality production function is written as

$$(4) \quad \alpha(e) = 1 + \frac{\beta}{e} \quad 0 \leq \beta < \infty$$

$\alpha(e) \rightarrow 1$  as  $e \rightarrow \infty$ . We have introduced the quality parameter  $\beta$  which represents quality perception, market reputation and quality signals. For a given value of  $\beta$ , an increase in expenditure on quality improvement raises  $p_2$ . A decrease in  $\beta$  stands for improvements in quality perception and market reputation. We assume that  $c > 0$  is the constant average cost of production for both firms. When the firms play a Cournot game, their profit functions can be written as

$$(5) \quad \text{Max}_{q_1} \Pi_1(q_1, q_2) = (a - q_1 - q_2) q_1 - c q_1$$

$$(6) \quad \text{Max}_{q_2, e} \Pi_2(q_1, q_2, e) = [ a - (1 + \frac{\beta}{e}) q_2 - q_1 ] q_2 - c q_2 - e$$

From the first order conditions of profit maximization one can write the best response functions of the two firms as

$$(7) \quad 2 q_1 + q_2 = a - c$$

$$(8) \quad q_1 + 2 q_2 = a - c - 2 \sqrt{\beta}$$

The optimum value of  $e$  is determined from the equation

$$(9) \quad e = q_2 \sqrt{\beta}$$

We assume that the market size allows two firms to exist in the market and therefore,  $a - c > 0$ . The second order conditions for maximum profits are satisfied in the case of each firm. However, unless the second firm has a minimum level of quality ( a sufficiently low value of  $\beta$  ) or the market size is fairly large, there will be only one firm in the market. The solution of this static Cournot game is

$$(10) \quad q_1 = 1/3 (a - c - 2 \sqrt{\beta} )$$

$$q_2 = 1/3 (a - c - 4 \sqrt{\beta} )$$

$$e = 1/3 (a - c - 4 \sqrt{\beta} ) \sqrt{\beta}$$

$$\Pi_1 = 1/9 (a - c - 2 \sqrt{\beta} )^2$$

$$\Pi_2 = 1/9 (a - c - 4 \sqrt{\beta} )^2$$

$$p_1 = 1/3 ( a + 2 c + 2 \sqrt{\beta} )$$

$$p_2 = 1/3 ( a + 2 c - \sqrt{\beta} )$$

$$E_2 = p_2 q_2 = 1/9 (a - c - 4 \sqrt{\beta} ) (a + 2 c - \sqrt{\beta} )$$

$E_2$  is the total sale of the second firm and a part of it is the export earning. If we assume that the domestic sale is a constant fraction of the firm's world market export, then  $E_2$  represents the firm's export sale. One can make the following observations:  $p_2 < p_1$ ,  $q_2 < q_1$ ,  $\Pi_2 < \Pi_1$ . A reduction in  $\beta$  brought about by various policies such as quality certification, better quality perception or market reputation would result in higher export earning of the second firm.<sup>3</sup>

## II (b) Joint Venture

The two firms may consider joint venture formation, if such a move is advantageous to both the firms. For the developed country firm joint venture may produce more profit than its Cournot profit and the developing country firm will benefit quite substantially from the joint venture, as its quality problem will be solved with the technology (or brand equity or market reputation) being transferred from the developed country firm. Under the joint venture agreement, monopoly profits are shared in accordance with the terms of the agreement. The second firm will not have to spend on quality improvement or on improving its market reputation. The joint venture profit function is

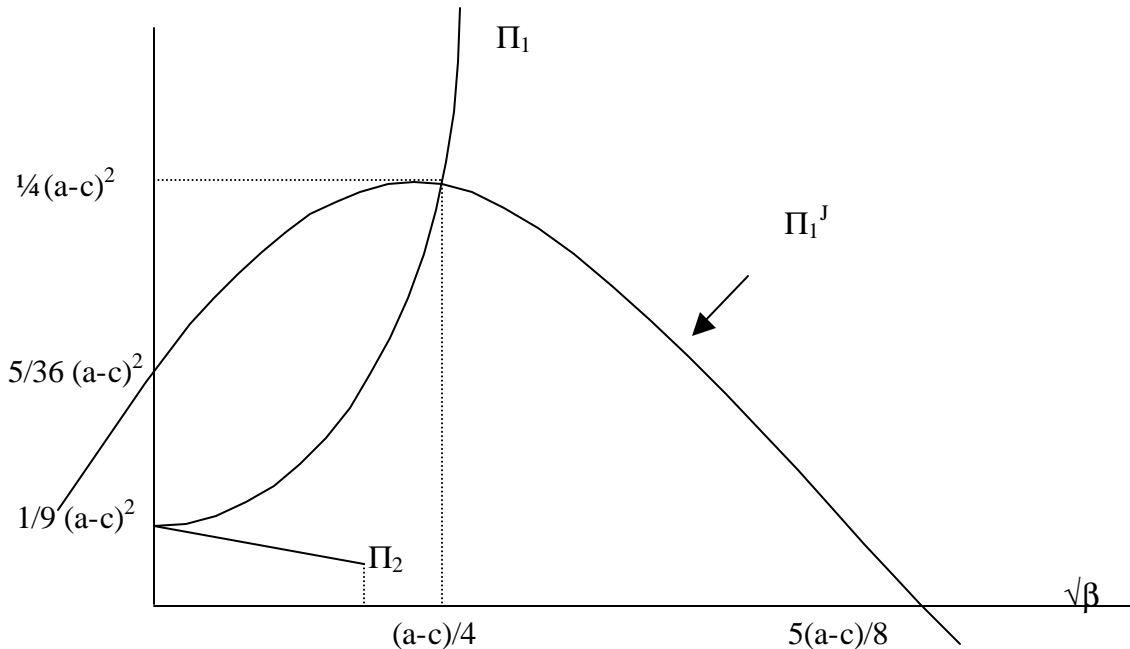
$$(11) \quad \text{Max}_Q \quad \Pi^J = (a - Q)Q - cQ$$

Under the joint venture the total output is  $Q = (a - c) / 2$ , price  $p = (a + c) / 2$  and  $\Pi^J = (a - c)^2 / 4$ . The second firm will join the joint venture if it gets at least the Cournot profit.<sup>4</sup> The feasibility of the joint venture then depends on the first firm which will accept the joint venture agreement if and only if

$$(12) \quad \Pi_1^J \equiv \Pi^J - \Pi_2 \geq \Pi_1$$

Condition (12) may not be satisfied by all values of  $\beta$ . The following diagram shows the range of values of  $\beta$  for which the joint venture will work.<sup>5</sup>

Figure I



The diagram shows that the range of values of  $\sqrt{\beta}$  for which the condition (12) is satisfied is between 0 and  $(a-c)/4$ .

## II (c) Export Pessimism

We have shown that there is a range of values of  $\sqrt{\beta}$  for which the joint venture will work, assuming that the developing country firm will accept the joint venture even if its profit from the joint venture is equal to its Cournot profit and that the developed country firm get at least its Cournot profit. It has been observed that the government of the developing country often insists on an export clause as a condition for giving approval to the joint venture agreement with a foreign firm. The question now is whether the developing country firm can earn at least the same export revenue from the joint venture as it earns as a Cournot competitor. We will assume that export is a constant fraction of total world market sale that includes the developing country firm's domestic sale. In other words, the home country export is a given fraction of  $E_2$  defined in (10). Let us suppose that the first firm allows the second firm to sell  $q_2^*$  under the agreement. Then the second firm's joint venture sale is:  $(a+c) q_2^*/2$ . The export performance clause the government of the developing country may insist on is that home firm under the agreement should earn at least as much export revenue as it earns as Cournot competitor, or  $(a+c) q_2^*/2 \geq E_2$  which works out to be the following condition:

$$(13) \quad q_2^* \geq \frac{2(a-c-4\sqrt{\beta})(a+2c-\sqrt{\beta})}{9(a+c)}$$

We will take the minimum value of  $q_2^*$  from (13) and compute the second firm's profit in the joint venture assuming that the second firm's output in is equal to the expression on the right hand side of (13). This profit is

$$(14) \quad \Pi_2^* = \frac{(a-c)(a-c-4\sqrt{\beta})(a+2c-\sqrt{\beta})}{9(a+c)}$$

However, the first firm will allow the second firm to sell  $q_2^*$  if and only if  $\Pi_2^* \leq \Pi_2$ . In other words, the export performance criterion will be met if and only if the following condition holds.

$$(15) \quad (a-c)(a+2c-\sqrt{\beta}) \leq (a+c)(a-c-4\sqrt{\beta})$$

There is however no  $\sqrt{\beta} > 0$  that can satisfy condition (15).<sup>6</sup> We have started by taking the minimum value of  $q_2^*$  in order to derive condition (15). If  $q_2^*$  is more than its



minimum value, then the impossibility of meeting condition (15) is further strengthened. The intuition behind this result is simple. A joint venture is like a cartel where the quantity is restricted for a higher price and this makes it impossible for the second firm to maintain its export revenue at the level of Cournot competition.

The export pessimism described above is based on the assumption that the first firm can keep the second firm's profit at its Cournot level in the joint venture. There are reasons for this assumption. The joint venture is attractive for the second firm because it solves its problem of quality perception. The joint venture also takes care of the problem of the second firm which does not have the technology to product the best quality product, as the first firm transfers this technology. For these reasons the first firm is in a stronger position in profit negotiation. In addition to all this, the second firm may be planning to copy the technology in the next period and get out of the joint venture and therefore would be quite satisfied with Cournot profits. For the sake of completeness, however, one can assume that the second firm would be interested in the joint venture formation if and only if its profit in the joint venture is no less than its Cournot profit, i.e.,  $\Pi_2^* \geq \Pi_2$ . The difference between these two cases is that while in the preceding one the first firm could ensure that the second firm's profit did not exceed its Cournot profit, in the present case the second firm insists that its profit is at least as large as its Cournot profit. We assume

$$(16) \quad \Pi_2^* = (1+d) \Pi_2, \quad d \geq .0.$$

The value of the parameter,  $d$ , is negotiable and it would normally vary inversely with  $\beta$ . Using (14) and the expression for the second firm's Cournot profit given in (10) we get

$$(17) \quad \sqrt{\beta} = \frac{(a-c) \{ d(a+c) - c \}}{3a + 5c + 4d(a+c)}$$

$\sqrt{\beta} > 0$  if and only if  $d > c/(a+c)$ . We can treat 'd' as a profit mark-up for the second firm. The developing country firm will not be able to meet its export commitment under the joint venture unless it has negotiated for a sufficiently high profit markup.

### III Market Leadership

There is a third possible market form in addition to Cournot competition and joint venture and this is market leadership of the developed country firm. The leader maximizes profit subject to the follower's best response function. The first firm's best response function is given by equation (8) which is rewritten as

$$(8a) \quad q_2 = \frac{1}{2}(a - c - 2\sqrt{\beta} - q_1)$$

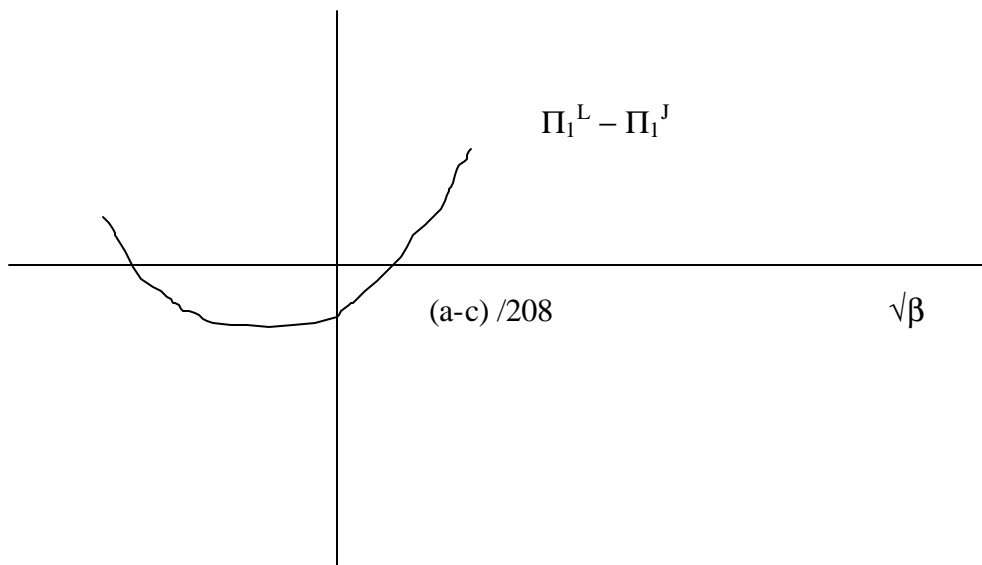
The first firm maximizes the profit function in (5) subject to (8a). The solutions are given in the following, using 'L' for the leader's variables and 'F' for the follower's variables.

$$(18) \quad \begin{aligned} q_1^L &= \frac{1}{4}(a - c + 2\sqrt{\beta}) > q_1 \\ q_2^F &= \frac{1}{4}(a - c - 6\sqrt{\beta}) < q_2 \\ \Pi_1^L &= \frac{1}{8}(a - c + 2\sqrt{\beta})^2 > \Pi_1 \\ \Pi_2^F &= \frac{1}{16}(a - c - 6\sqrt{\beta})^2 < \Pi_2 \\ p_1^L &= \frac{1}{4}(a + 3c + 2\sqrt{\beta}) < p_1 \\ p_2^F &= \frac{1}{4}(a + 3c - 2\sqrt{\beta}) < p_2 \\ p_2^F q_2^F &< p_2 q_2 \end{aligned}$$

The last inequality in (18) shows that the second firm will export less as a follower than as a Cournot competitor. It will however be non-optimal for the second firm to sell  $q_2^*$  when it is acting as a follower.

Even though leadership is an option for the first firm, it may not always choose to act as leader. There is a range of values of  $\sqrt{\beta}$  for which the first firm will choose joint venture. Figure II shows that for  $\sqrt{\beta} \leq (a - c)/208$ , the developed country firm will choose joint venture.<sup>7</sup>

Figure II



#### IV Global Joint Venture and Export Pessimism

We now assume that there are ‘n’ developing country firms, all facing quality problems and one developed country firm which produces the best quality product in the world market. Initially there is Cournot competition among n+1 firms in the market and then they form a global joint venture. It is then shown that if the world market size is sufficiently large, it may be possible for a single developing country firm to maintain its joint venture export sales at the Cournot level.

The world market demand function is given by (1) but now  $Q = \sum_{i=1}^{n+1} q_i$

The demand function faced by the first firm which is the developed country firm is

$$(19) \quad p_1 = a - \sum_{i=1}^n q_i - q_1$$

and the demand function of firm j which is a developing country firm is

$$(20) \quad p_j = a - q_1 - \alpha_j q_j - \sum_{i \neq j}^n \alpha_i q_i \quad j = 1, 2, \dots, n$$

where the quality production function in (4) is revised as

$$(4a) \quad \alpha_i(e_i) = 1 + \frac{\beta}{e_i} \quad 0 \leq \beta < \infty, i = 1, 2, \dots, n$$

$e_i$  is the expenditure on quality improvement for firm i .We assume that all developing country firms have the same quality production function. With ‘c’ representing the constant average cost of production, the first firm’s profit function is

$$(21) \quad \text{Max}_{q_1} \Pi_1 = \left[ a - \sum_{i=1}^n q_i - q_1 \right] q_1 - c q_1$$

The first order condition for the first firm's maximum profit is

$$(22) \quad a - \sum_1^n q_i - 2q_1 - c = 0$$

Firm j's profit function is written as

$$(23) \quad \text{Max}_{q_j, e_j} \Pi_j = \left[ a - q_1 - \sum_{i \neq j} \alpha_i q_i - (1 + \beta/e_j) q_j \right] q_j - c q_j - e_j$$

The first order conditions for firm j's maximum profit are

$$(24) \quad a - q_1 - \sum_{i \neq j} \alpha_i q_i - 2(1 + \beta/e_j) q_j - c = 0$$

$$(25) \quad \beta q_j^2 / e_j^2 = 1$$

For any two developing country firms, j and k, we can use (24) and (25) and write the following equations:

$$(26) \quad 2 q_j + q_k = d$$

$$(27) \quad q_j + 2 q_k = d$$

$$\text{where } d \equiv a - q_1 - \sum_{i \neq j, k} \alpha_i q_i - 3 \sqrt{\beta} - c$$

The solution of (26) and (27) shows that  $q_j = q_k = d/3$ . Since  $e_j = q_j \sqrt{\beta}$ , all developing country firms will produce the same quantity of output and spend the same amount of money on quality. The symmetric Cournot solutions of the model consisting of n+1 firms are

$$(28) \quad q_1 = \frac{a - c + n(n+1) \sqrt{\beta}}{n + 2}$$

$$(29) \quad q_j = \frac{a - c - 2(n+1) \sqrt{\beta}}{n + 2} \quad j = 1, 2, \dots, n$$

$$(30) \quad \Pi_1 = \left[ \frac{a - c + n(n+1) \sqrt{\beta}}{n + 2} \right]^2$$

$$(31) \quad \Pi_j = \left[ \frac{a - c - 2(n+1) \sqrt{\beta}}{n + 2} \right]^2 \quad j = 1, 2, \dots, n$$

It is easy to verify that for  $n=1$  these solutions will be the same as in (10). In a global joint venture  $Q = (a-c)/2$ ,  $p = (a+c)/2$  and profit  $\Pi_J = (a-c)^2 / 4$ . Therefore, the first firm's joint venture profit, assuming that all other firms' profit are kept at the Cournot level is

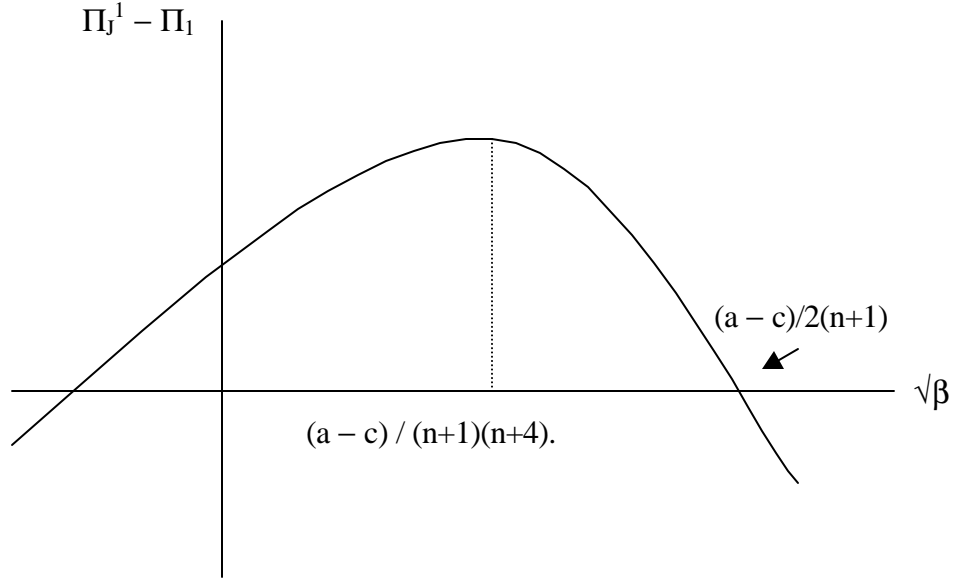
$$(32) \quad \bar{\Pi}_j^1 = \frac{(a-c)^2}{4} - \frac{n}{(n+2)^2} [a - c - 2(n+1) \sqrt{\beta}]^2$$

Joint venture is feasible if and only if the first firm's joint venture profit in (32) is no less than its Cournot profit in (30). The equation  $\bar{\Pi}_j^1 - \Pi_1 = 0$  is quadratic in  $\sqrt{\beta}$  which can be written as

$$(33) \quad - \frac{n(n+1)^2 (n+4)}{(n+2)^2} (\sqrt{\beta})^2 + \frac{2n(n+1)(a-c)}{(n+2)^2} \sqrt{\beta} + \frac{n^2 (a-c)^2}{4(n+2)^2} = 0$$

The equation in (33) has two roots, one positive and one negative. The positive root is  $(a-c) / 2(n+1)$ . The graph of  $\bar{\Pi}_j^1 - \Pi_1$ , plotted against  $\sqrt{\beta}$  is shown in Figure III and it is obvious that there exists a range of values of  $\sqrt{\beta}$  for which the joint venture is feasible.

Figure III



We now explore the possibility of one of the developing country firms being able to maintain the Cournot level of export revenue in the global joint venture. The Cournot price at which firm  $j$  sells the product is given by

$$(34) \quad p_j = a - \frac{n+1}{n+2} (a-c) - \frac{n}{n+2} \sqrt{\beta}$$

As in the case of single developing country firm, the export criterion is

$$(35) \quad \frac{a+c}{2} \bar{q}_j \geq p_j q_j$$

where  $\bar{q}_j$  is the quantity the firm  $j$  must sell in the joint venture in order to maintain the export earnings of Cournot competition. Using (29) and (34), the export performance criterion can be written as

$$(36) \quad \bar{q}_j \geq \frac{2\{a(n+2) - (n+1)(a-c) - n\sqrt{\beta}\} \{a-c - 2n(n+1)\sqrt{\beta}\}}{(a+c)(n+2)^2}$$

Taking the minimum value of  $\bar{q}_j$  firm j's profit from selling  $\bar{q}_j$  in the joint venture is

$$(37) \quad \bar{\Pi}_j = \frac{1}{2}(a - c) \bar{q}_j$$

The first firm will allow firm j to sell  $\bar{q}_j$  provided that  $\bar{\Pi}_j$  does not exceed  $\Pi_j$ . The equation  $\bar{\Pi}_j - \Pi_j = 0$  is quadratic in  $\sqrt{\beta}$  and it can be written as

$$(38) \quad -2n(n+1) \{n(a+3c)+2(a+c)\}(\sqrt{\beta})^2 + (a - c) \{a(n+2) - c(2n^3 + 2n^2 - 3n - 2)\} \sqrt{\beta} + nc(a - c)^2 = 0$$

The equation in (38) is of the form:  $a^*(\sqrt{\beta})^2 + b^*\sqrt{\beta} + c^* = 0$ . The sign of the coefficient of  $\sqrt{\beta}$  is indeterminate, but it will be positive if the market size is large or if the average cost is small. We assume that the coefficient of  $\sqrt{\beta}$  is positive. Since  $b^{*2} - 4a^*c^* > 0$ , the equation in (38) has at least one real and positive root.

## V Summary and Conclusions

It is not the purpose of this paper to revive the old version of export pessimism which one finds in the writings of Joan Robinson(1951) or Hirschman(1958). The basic proposition of the earlier form of export pessimism is that with low trade elasticities a country will not be able to promote export by currency devaluation or by export subsidization. This form of export pessimism had led to inward-looking policies of economic development. Subsequent development in econometric methods has disproved this thesis and it is now a well known fact that the trade elasticities were underestimated due to wrong econometric specifications. It is also not our purpose to reiterate another kind of export pessimism which is due to Linder(1961) who emphasized the possibility of greater trade among developed countries having similar consumer preferences and much less trade between the developed and the developing countries having widely divergent consumer preferences. However, a part of the Linder Hypothesis is relevant for this study because the lack of quality consciousness on the part of the LDC consumers is responsible for poor quality of exportable manufactures in all South Asian and African countries. Export pessimism of this paper follows from the creation of product market monopolies that is invariably associated with joint ventures.

There is one interesting hypothesis in the last equation of (10) that deserves empirical investigation. It is shown that when the LDC firm competes with the DC firm in the world market, the former is handicapped due to the poor quality of its product. The LDC firm can improve the market perception of its quality by giving financial market

signals, such as raising funds through issue of debentures and commercial papers rather than share issue. There are even some direct product market signals like international quality certification (ISO9000). Being a member of a reputed business group is also conducive to better performance in the product market. In a panel regression the significance of these signals in explaining firm-level export performance can be tested. Our model does not distinguish between the domestic market and the export market and assumes that a constant proportion of output is exported. In many developing countries, the domestic consumers are less sensitive to quality than international consumers. In other words, quality matters much more in exports than in domestic sales. In an econometric analysis it will be possible to see if the product and financial market signals operate differently for exports and domestic sales.

The basic thrust of the paper has been on export pessimism and it has been shown that business collaboration with foreign firms may not promote exports of a developing country. The underlying model, however, is static and therefore it has limitations. By export pessimism we do not mean that the developing countries in South Asia and Africa can never expand their exports. The growth of market size ( increase in parameter 'a') will lead to an expansion of sales in any market form. What we suggest is that competition is better than merging with foreign monopolists and that there are ways in which exporting firms in developing countries can improve export performance without losing their identity.



## Footnotes

1. *Economic Survey*, Government of India, Annual Issues.
2. The governments are generally choosy about foreign collaborations and there are long delays in giving approval to tie-ups with foreign firms.
3. We claim that a reduction in the value of  $\beta$  is the only way in which the LDC firm can improve its product market performance.
4. It is not unreasonable to assume that the LDC firm will accept joint venture even if it get only its Cournot profit. The static structure of our model does not allow us to introduce dynamic considerations but one can visualize the possibility of the LDC firm needing one period to copy the quality technology from its foreign partner and then getting out of the joint venture in the next period. Such joint venture life cycles are discussed by Roy Chowdhury and Roy Chowdhury (2001).
5. The equation  $\Pi_1^J - \Pi_1 = 0$  is a quadratic equation in  $\sqrt{\beta}$  which can be written as :  
$$-20/9 (\sqrt{\beta})^2 + 4/9 (a - c) \sqrt{\beta} + 1/36 (a - c)^2 = 0$$
 which has one negative and one positive root.
6. Treating (15) as an equation, the solution of  $\sqrt{\beta}$  is :  $-c(a - c)/(3a+5c) < 0$ .
7. Taking the difference between the first firm's leadership profit and joint venture profit (assuming that the second firm gets only its Cournot profit in the joint venture) and equating this difference to zero, we get the following quadratic equation:  
$$52/4 (\sqrt{\beta})^2 + 28/9 (a - c) \sqrt{\beta} - 1/72 (a - c)^2 = 0$$
 which has one positive and one negative root. The positive root is  $(a - c)/208$ .

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