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# 6

# International Joint Ventures, Economic Integration, and Government Policy

Kenzo Abe and Laixun Zhao

## 6.1 Introduction

Since the end of the cold war, the world economy has become more integrated. Cooperation between firms in different countries is the new trend. In particular, direct investment is one of the main strategies firms use to gain access to foreign markets. The Organization for Economic Cooperation and Development reports: "International direct investment grew rapidly and from more countries during the 1980s. . . . Mergers and acquisitions and strategic alliances became important investment vehicles as companies tried to increase sales quickly and cheaply. Steady economic growth, market integration, the globalization of business, the growth of regional economies, and technological innovation were behind FDI's (foreign direct investment) growth in the 80s. What happens in the 90s will depend largely on these factors" (OECD 1992).

Indeed, one of the chief arguments against the North American Free Trade Agreement was that a large portion of manufacturing activities in the United States and Canada would be relocated to Mexico, producing the alleged "giant sucking sound." It was also reported that a major reason behind the initiation of APEC was U.S. fears that Japanese firms would move in and have a headstart in the East Asian market, building their own networks and excluding outside competitors.

Thus the effects of economic integration cannot be fully understood if we do not take FDI into consideration. In this paper, we focus on economic integration in the presence of international joint ventures (JVs). We have in mind the case of Japanese firms. They export to other Asian countries. But facing restrictions on trade and investment, they also directly produce in these countries. According to Japan's Ministry of International Trade and Industry (MITI 1994), nearly 70 percent of Japanese FDI in manufacturing to other Asian countries is in the form of JVs, probably due to legal limits on local ownership by foreign firms. Most of the production by these Japanese firms is sold in local markets.

International JVs are one type of strategic alliance between firms in different countries. As explained in Harrigan (1985) and Contractor and Lorange (1988), they are formed for various reasons. A project may be carried out jointly by more than one firm when the cost of the project is enormous. Restrictions on foreign ownership of local firms or trade barriers may facilitate the formation of international JVs, as in the case of Japanese firms.

In spite of the increase in international JVs in the real world, there have been few developments in their theoretical analysis. Svejnar and Smith (1984) introduced the Nash bargaining approach to study JV profit sharing in less developed countries. Abe and Zhao (1994) extended their framework to include competition between parent firms and examined the effects of trade barriers on resource allocation and welfare.

In the present paper, we model an international JV that aims to overcome trade barriers and to take advantage of low wage costs. We use this model to investigate the effects of economic integration on output, profits, and welfare. The international JV is located in a developing country. It is operated by a local firm and a firm from a developed country, both located in the integrated region. The product of the international JV is sold locally. The developed country also exports both an intermediate input and the final product to the developing country, subject to import tariffs in the latter country.

Economic integration in this paper is defined as a reduction of tariff rates within the integrated region. Jovanović (1992) identifies five types of international economic integration: free trade area, customs union, common market, economic union, and total economic union. "Economic integration" in this paper means a free trade area (FTA). The goal of an FTA is to remove tariffs and quotas on trade within the integrated region, but it allows each member country to keep its own original trade restrictions against nonmember countries. An example is the North American Free Trade Area, whose member countries will remove internal trade barriers in several steps.[1]

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1. De Melo and Panagariya (1993) included more detailed studies of regional integration.

Our main results show the following: (1) Economic integration has two major effects. First, it reduces the tariff on the final output imported from the developed country, which in turn increases the exports and profits of the parent firm in the developed country and decreases the output of the international JV located in the developing country and the profits of the local firm. Second, economic integration also reduces the tariff on the intermediate input imported into the developing country, which in turn reduces the output of the parent firm in the developed country but raises that of the international JV in the developing country. However, the profits of the parent firms in both countries increase, and the welfare in the developing country may also rise. (2) A subsidy to the JV reduces the output of the foreign firm but raises that of the JV and the total supply in the developing country. (3) A subsidy to the JV raises the profits of both parent firms and the welfare of the developing country if the level of JV output is low enough.

The results above imply that economic integration may increase or decrease the welfare of the developing country, depending on whether the developing country imports the intermediate input from the developed country or not. The subsidy to the JV is a policy that is acceptable to both countries because it raises profits in both countries. This is perhaps why subsidies are adopted in various forms by many developing countries in order to attract FDI.

Viner (1950) first showed that economic integration could lead to trade creation and trade diversion. The former occurs because member countries eliminate internal tariffs, which leads to an expansion of trade; the latter occurs because member countries still keep positive tariffs against nonmember countries, which "diverts" trade to the member countries. Trade creation improves welfare because it results in efficient allocation of resources, while trade diversion could reduce welfare because it discriminates against the most efficient producers—the nonmember countries.

Viner's classical results are derived under perfect competition. In the present paper, we consider economic integration in an oligopolistic market structure. Furthermore, we allow the exporting country to produce directly in the importing country in the form of an international JV. A reduction in the import tariff raises imports from the developed country. However, the parent firms of the JV adjust JV output to maximize their joint profits. Thus changes in tariff rates affect the allocation of production in the two countries, but not total production, under a technology of constant marginal cost. As a consequence, economic integration in the present model does not lead to trade diversion through the change in the import tariff on the final output, even though trade creation occurs (in the sense that trade volume expands). In addition, the welfare of the developing country may be lowered by the reduction in the tariff on the final output.

Section 6.2 develops the basic model. Section 6.3 investigates the condi-

tions needed for the JV to be formed. Section 6.4 examines the effects of economic integration. Section 6.5 analyzes the impact of the subsidy. Section 6.6 explains how our model works if the subsidy appears in other forms and provides some concluding remarks.

## 6.2    The Model

Consider a firm X located in a developed country A (e.g., Japan), which exports output of its final good, $x$, to a developing country B (e.g., a certain country in Southeast Asia). The exports are subject to a tariff, $t$. To evade the tariff and to take advantage of a lower wage rate, firm X offers to form an international JV with a firm Y in country B. The international JV produces the final good also. Its output is denoted by $y$. For analytical simplicity, we assume firm Y does not produce alone.[2] The production of final goods in both countries requires an intermediate input, which is produced in country A only. Country B imposes a tariff, $\tau$, on the imported intermediate input from country A. In order to attract FDI, the host country offers a subsidy to the international JV. For each unit of its output, the JV receives a subsidy of $s$, which is eventually divided between the parent firms X and Y.

In addition to countries A and B, there is a collection of other countries, which is called country C. Because we want to focus on the effects of economic integration on the JV and firm X, we assume that firms in the other countries behave competitively and that they produce the final good using their own intermediate inputs. Let firm Z be a representative of these firms. Firm Z also exports its final product to country B, subject to a tariff, $t^z$. Then the export supply function of country C can be written as

$$(1) \qquad\qquad z \;=\; F(P - t^z),$$

where $P$ is the price in country B, taken as given by firm Z, and $F' > 0$.[3] The price $P$ (also the inverse demand function in country B) is derived as follows. Let the demand function in country B be

$$(2) \qquad\qquad D(P) \;=\; x + y + z.$$

Then from equations (1) and (2) we obtain[4]

$$(3) \qquad\qquad v \;=\; x + y \;=\; D(P) - F(P - t^z) \;\equiv\; d(P).$$

2. Our model can be extended to include independent production by firm Y straightforwardly.

3. If $F' = 0$, then our model corresponds to one without the third country. Our main results remain valid, though the formation of the FTA or the subsidy does not affect output $z$.

4. Since we do not change $t^z$ throughout this paper, we suppress it in the inverse demand function.

Thus $P = P(v) \equiv d^{-1}(v)$ is the inverse demand function for firm X and the international JV. We assume $P'(v) = dP(v)/dv < 0$ and $2P'(v) + vP''(v) = 2P'(v) + vdP'(v)/dv < 0$.

We consider a two-stage problem. In the first stage, firm X decides how much to export to country B, given the tariffs and the subsidy to the international JV. In the second stage, firms X and Y negotiate to form and operate the JV. This sequential structure can be justified on the grounds that in practice, many developed countries first export to developing countries. Faced with trade restrictions or production cost disadvantages at home, they begin to undertake FDI in the form of wholly owned subsidiaries or JVs.

For consistency, let us first consider the second stage. The formation of the JV is determined by a Nash bargaining process between parent firms X and Y. If bargaining is successful, the JV is formed and it produces output $y$. While the JV uses labor in country B and an intermediate input imported from country A, firm X uses labor and an intermediate input obtained in a competitive market in country A to produce the final output.

The unit production cost functions for firm X and the JV are, respectively,

$$\text{(4a)} \qquad\qquad c^X = h^X(w^X, m),$$

$$\text{(4b)} \qquad\qquad c^J = h^J(w^Y, m + \tau),$$

where $w^X$ and $w^Y$ are the exogenous wage rates in countries A and B, respectively, $m$ is the exogenous price of the intermediate input in country A, and $\tau$ is the tariff on the imported intermediate input.

The JV's profit function is then written as

$$\text{(5)} \qquad\qquad \pi^J(x, y, \tau, s) = [P(v) + s]y - c^J y,$$

where $s$ is the unit subsidy to the JV. Thus the profit functions of firms X and Y are obtained:

$$\text{(6)} \qquad \pi^X(x, y, \alpha, t, \tau, s) = [P(v) - t]x - c^X x + \alpha \pi^J(x, y, \tau, s),$$

$$\text{(7)} \qquad\qquad \pi^Y(x, y, \alpha, \tau, s) = (1 - \alpha)\pi^J(x, y, \tau, s),$$

where $\alpha$ is firm X's share of JV profits and $t$ is the tariff rate on the imported final good $x$. All profit functions are assumed to be concave in $x$, $y$, and $\alpha$.[5]

If bargaining breaks down, the international JV does not produce. Then the profits of firms X and Y become

$$\text{(8a)} \qquad\qquad \Pi^X(x, t) = [P(x) - t]x - c^X x,$$

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5. We suppress $w^X$, $w^Y$, and $m$ in the profit functions because we do not change them in the comparative statics analysis.

(8b)                             $\Pi^Y = 0.$

The combination of these profits is the threat point of this bargaining game.

Parent firms X and Y bargain over the output level and their shares of the profits of the international JV, given the other variables. We define the Nash product as

(9)     $H(x, y, \alpha, t, \tau, s) \equiv [\pi^X(x, y, \alpha, t, \tau, s) - \Pi^X(x, t)]^\beta$

$$\times [\pi^Y(x, y, \alpha, \tau, s)]^{1-\beta},$$

where $\beta$ is the relative bargaining power of parent firm X.

The solution to this game is obtained by maximizing the Nash product with respect to $y$ and $\alpha$. Then the first-order conditions can be written as

$$\partial H/\partial y = H[\beta(\pi^X - \Pi^X)^{-1}\pi_y^X + (1 - \beta)(\pi^Y)^{-1}\pi_y^Y] = 0,$$

$$\partial H/\partial \alpha = H[\beta(\pi^X - \Pi^X)^{-1} - (1 - \beta)(\pi^Y)^{-1}]\pi^J = 0,$$

where a subscript on a function represents the partial derivative of the function with respect to the subscripted variable throughout this paper; for example, $\pi_y^X = \partial\pi^X(x,y,\alpha,t,\tau,s)/\partial y$, and $\pi_y^Y = \partial\pi^Y(x,y,\alpha,\tau,s)/\partial y$. Rearranging these equations, we obtain

(10a)        $\pi_y^X + \pi_y^Y = P(v) + vP'(v) + s - c^J = 0,$

(10b) $(1 - \beta)[\pi^X(x, y, \alpha, t, \tau, s) - \Pi^X(x, t)] - \beta\pi^Y(x, y, \alpha, \tau, s) = 0.$

Equation (10a) implies that the parent firms maximize their joint profits through the JV by choosing output; while equation (10b) states that the two parents should divide the profits of the JV in such a way that the net gains from running the JV are equal for both parties, adjusted according to their relative bargaining power. These two conditions determine JV output and profit shares as functions of output $x$; that is, $y(\cdot) = y(x;t,\tau,s,\beta)$ and $\alpha(\cdot) = \alpha(x;t,\tau,s,\beta)$.

Now we turn to the first stage, in which firm X maximizes its own profits given in equation (6) by choosing the level of output, taking into consideration that $y$ and $\alpha$ are functions of $x$. Substituting $y(\cdot)$ and $\alpha(\cdot)$ into equation (6), we obtain the first-stage profit function of firm X as

(6′)    $\hat{\pi}^X(x, t, \tau, s, \beta) \equiv \pi^X(x, y(\cdot), \alpha(\cdot), t, \tau, s)$

$$= [P(x + y(\cdot)) - t]x - c^Xx + \alpha(\cdot)\hat{\pi}^J(x, y(\cdot), \tau, s),$$

where $\hat{\pi}^J(x,y(\cdot),\tau,s) \equiv [P(x + y(\cdot)) + s]y(\cdot) - c^Jy(\cdot)$. It is important to note the difference between the profit function in the first stage (in eq. [6′]) and that defined by equation (6). The former function includes solutions of $y$ and $\alpha$ as functions of $x$, obtained by solving the second-stage game, that is, bargaining for the international JV.

The first-order condition to equation (6') is given by

(11)                    $\hat{\pi}^X_x \equiv \partial \hat{\pi}^X(\cdot)/\partial x = 0,$

which can be expressed in the following expanded form, from the appendix:

(11') $P(v) - t + vP'(v) - c^X = -[(1 - \beta)/\beta][P(x) - t + xP'(x) - c^X].$

The right-hand side of equation (11') is negative (as shown in conditions [12] and [13] in the next section). The left-hand side of equation (11') would be the marginal profit if firms X and Y merged to become a monopolist. Thus condition (11') implies that the own production of firm X is larger than the level of output if firms X and Y merged and acted as a monopolist. This occurs because firm X can improve its threat point payoff in the second-stage bargaining game if its output is increased (condition [13]).

## 6.3   The Equilibrium

The equilibrium for this economy is determined by conditions (10a), (10b), and (11'). Given the policy variables $t$, $\tau$, and $s$, these three equations determine $y$, $\alpha$, and $x$.

We first investigate the conditions for the JV to be formed; that is, the JV produces positive output and is jointly operated by the two parent firms: $y > 0$ and $0 < \beta < 1$. Differentiating equation (8a) with respect to $x$, we obtain

(12)   $\Pi^X_x = P(x) - t + xP'(x) - c^X > P(v) - t + vP'(v) - c^X$

$= -[(1 - \beta)/\beta]\Pi^X_x.$

The inequality arises because $v > x$, $y > 0$, and $P(v) + vP'(v)$ is decreasing by assumption; that is, $2P'(v) + vP''(v) < 0$. The second equality in equation (12) is the same as condition (11'). Condition (12) then implies

(13)                          $\Pi^X_x > 0,$

given that $0 < \beta < 1$. Thus, by comparing conditions (10a) and (A5) in the appendix, we must have

(14)                    $\pi^X_x + \pi^Y_x < \pi^X_y + \pi^Y_y,$

which expands as

$P(v) - t + vP'(v) - c^X < P(v) + s + vP'(v) - c^J.$

Using conditions (4a) and (4b), it finally boils down to

(14')              $h^J(w^Y, m + \tau) < h^X(w^X, m) + s + t.$

Expression (14') is the necessary condition for the JV to be formed. It implies that in equilibrium, given the combination of the government policy variables $t$, $\tau$, and $s$, the wage rate in country B must be low enough to satisfy condition (14'). Otherwise, the JV is not formed. This result is supported by the fact that, in practice, many developed countries undertake FDI in developing countries to take advantage of low wages.[6]

A related question is when the JV degenerates to full-ownership FDI by firm X. So far we have assumed the bargaining powers of both parent firms to be exogenously given. But suppose both governments can impose some policy to affect the bargaining powers, then as $\beta \to 1$, that is, as parent firm X's bargaining power approaches 100 percent, from equations (10b) and (7) we have

(15)    $\pi^Y(x, y, \alpha, \tau, s) = 0 = (1 - \alpha)\pi^J(x, y, \tau, s)$.

If the subsidiary in country B produces positive output, then $\pi^J(x, y, \tau, s) > 0$. It follows that $\alpha = 1$ by condition (15); that is, the JV approaches to full-ownership FDI by the foreign parent firm.

Note that besides legal limits on foreign ownership in host countries, in practice JVs are preferred to full-ownership FDI for various reasons. For either partner, the JV lowers total production costs relative to going it alone; the JV also enables each partner to benefit from the comparative advantage of the other. The foreign parent may bring better technology, while the local parent knows the domestic market and culture.

### 6.4   The Effects of Economic Integration

In this section, we analyze the impact of economic integration. When countries A and B form an FTA, import tariffs on both the final output and the intermediate input from country A are reduced. The two cases are analyzed sequentially. We consider the equilibrium with an internal solution, that is, $x > 0$, $y > 0$, $z > 0$, and $0 < \alpha < 1$.

Since $\alpha$ does not appear in equations (10a) and (11'), these two equations determine the outputs of firm X and the international JV. By total differentiation, we obtain

(16)    $$\begin{bmatrix} M & M \\ M + (1 - \beta)M_0/\beta & M \end{bmatrix} \begin{bmatrix} dx \\ dy \end{bmatrix} = \begin{bmatrix} 0 \\ 1/\beta \end{bmatrix} dt + \begin{bmatrix} k \\ 0 \end{bmatrix} d\tau + \begin{bmatrix} -1 \\ 0 \end{bmatrix} ds,$$

where $M = 2P'(v) + vP''(v) < 0$, $M_0 = 2P'(x) + xP''(x) < 0$, and $k$ is the amount of the imported intermediate input required to produce one unit of JV output. The determinant is

$$\Delta = -(1 - \beta)MM_0/\beta < 0, \quad \text{if } \beta \neq 1.$$

6. As will be shown in later sections, the tariff on the final good and the subsidy to the JV facilitate the formation of the JV.

### 6.4.1   The Tariff on Final Good Imports

Using condition (16), we obtain the effects of the tariff on final output:

(17a) $$dx/dt = -\Delta^{-1}M/\beta < 0,$$

(17b) $$dy/dt = \Delta^{-1}M/\beta > 0,$$

(17c) $$dv/dt = 0,$$

(17d) $$dz/dt = F'P'(dv/dt) = 0.$$

From conditions (17a) and (17b), a decrease in the import tariff on the final good raises the output of firm X but reduces that of the JV by the same amount. This occurs because, for any tariff rate and any level of output $x$ determined in the first stage, the parent firms adjust JV output in the second stage to maximize their joint profits. Under the constant marginal cost of the JV, the total output of countries A and B remains constant. As a consequence, imports from country C to country B are not affected. In turn, total supply from the three countries remains unchanged. Hence, neither the price nor the consumer surplus is affected by the tariff on the final good.

The effects of $t$ on the profits of the parent firms are examined next. Substituting $y(\cdot)$ and $\alpha(\cdot)$ into condition (10b), and differentiating with respect to a policy variable $i$ $(= t, \tau, s,$ respectively), we obtain

$$[(1 - \beta)(\pi_x^X - \Pi_x^X) - \beta\pi_x^Y]dx/di + [(1 - \beta)\pi_y^X - \beta\pi_y^Y]dy/di$$
$$+ \pi^J d\alpha/di + (1 - \beta)(\pi_i^X - \Pi_i^X) - \beta\pi_i^Y = 0,$$

which can be rearranged to yield (for $i = t, \tau, s,$ respectively)

(18) $\pi^J d\alpha/di = -[(1 - \beta)(\pi_x^X - \Pi_x^X) - \beta\pi_x^Y]dx/di$
$$+ [\beta\pi_y^Y - (1 - \beta)\pi_y^X]dy/di - (1 - \beta)(\pi_i^X - \Pi_i^X) + \beta\pi_i^Y.$$

Using equations (6), (7), and (18) with $i = t,$ we can establish

(19) $d\pi^X/dt = \pi_x^X dx/dt + \pi_y^X dy/dt + \pi^J d\alpha/dt + \pi_t^X$
$$= [\beta(\pi_x^X + \pi_x^Y) + (1-\beta)\Pi_x^X]dx/dt + \beta(\pi_y^X + \pi_y^Y)dy/dt + \pi_t^X$$
$$= -x < 0,$$

(20) $d\pi^Y/dt = \pi_x^Y dx/dt + \pi_y^Y dy/dt - \pi^J d\alpha/dt$
$$= (1 - \beta)(\pi_x^X + \pi_x^Y - \Pi_x^X)dx/dt$$
$$+ (1 - \beta)(\pi_y^X + \pi_y^Y)dy/dt$$
$$= -[(1 - \beta)/\beta]\Pi_x^X dx/dt > 0.$$

In deriving the above, we have used conditions (10a), (13), and (A5) in the appendix. As expected, a drop in $t$ reduces the profits of the JV but raises those of firm X, even though firm X owns a share of the JV. The reason is that firm X is producing less than the optimal level for exporting to country B, due to the tariff.

Now we turn to the more important question—welfare implications. The welfare function in country B is the sum of the consumer surplus, $U^Y(x + y + z)$, firm Y's profits, tariff revenues on imports from countries C and A (including both the final output and the intermediate input), minus the subsidy:

$$(21) \quad W^Y = U^Y(x + y + z) + \pi^Y + tx + \tau ky + t^z z - s^J y.$$

We assume that the tariff revenue is transferred to consumers directly and the subsidy to the JV is financed by a lump-sum tax on consumers.[7] Thus the government budget is balanced.

Differentiating equation (21) with respect to $t$ yields

$$(22) \quad dW^Y/dt = PD'dP/dt + d\pi^Y/dt + x + tdx/dt$$
$$+ (\tau k - s)dy/dt + t^z dz/dt$$
$$= d\pi^Y/dt + x + tdx/dt + (\tau k - s)dy/dt,$$

where $D(P) = x + y + z$, $dU^Y/dt = PD'dP/dt = 0$, and $dz/dt = 0$ by conditions (17c) and (17d). The first term on the right-hand side of equation (22) is the effect on firm Y's profits, which is positive. The last three terms are the effect on government revenue in country B. If $t$ and $s$ are sufficiently small, this effect is positive because $dy/dt > 0$. Thus a reduction in $t$ will reduce welfare in country B if $t$ and $s$ are sufficiently small.

Economic integration results in lower internal import tariffs in the integrated region. From the above, we can state one effect of economic integration, which is the effect brought about by the reduction of the import tariff on the final output of firm X.

PROPOSITION 1. *In the presence of the international JV, the formation of the FTA leads to trade creation in that it raises the exports of the developed country to the developing country, while it reduces the output of the JV. It increases the profits of the parent firm in the developed country but reduces those of the parent firm in the developing country. Finally, it reduces the welfare of the developing country if the tariff and the subsidy to the JV are sufficiently small.*

The profits of firm X increase because economic integration reduces production distortions in country A by lowering tariffs imposed on its

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7. Note that we call $U^Y(x + y + z)$ the consumer surplus, although we assume that the government surplus is transferred to consumers.

exports to country B. This causes JV output to decrease, which reduces parent firm Y's profits. Because total supply of the good and in turn consumer surplus in country B are not affected, welfare in country B decreases.

### 6.4.2   The Tariff on Intermediate Input Imports

Economic integration also reduces the tariff on the imported intermediate input. From condition (16), we obtain the effects of the tariff on the intermediate input as

(23a)  $\qquad dx/d\tau \ = \ k\Delta^{-1}M \ > \ 0,$

(23b)  $\qquad dy/d\tau \ = \ -k\Delta^{-1}[M \ + \ (1 \ - \ \beta)M_0/\beta] \ < \ 0,$

(23c)  $\qquad dv/d\tau \ = \ -k\Delta^{-1}(1 \ - \ \beta)M_0/\beta \ < \ 0,$

(23d)  $\qquad dz/d\tau \ = \ F'P' \, dv/d\tau \ > \ 0.$

Thus a decrease in the import tariff on the intermediate input used by the JV raises the output of the JV but reduces those of firms X and Z. This occurs because firm X reduces its output in expectation of the increase of $y$. In addition, condition (13) shows that the decrease in $x$ also reduces firm X's threat point payoff, which raises firm X's net gains in the bargaining game for the JV (i.e., the difference between the regular profit and the threat point payoff decreases). This makes firm X less aggressive in negotiations. As a consequence, the reduction in $x$ is less than the increase in $y$, which causes the price to decrease and in turn raises the output of country C. It follows that the net effect is an increase in the total supply of final output from the three countries. As a result, consumer surplus rises.

The effects of $\tau$ on the profits of the parent firms can be obtained by using equations (6), (7), and (18) with $i = \tau$:

(24)  $\qquad d\pi^X/d\tau \ = \ \pi_x^X dx/d\tau \ + \ \pi_y^X dy/d\tau \ + \ \pi^1 d\alpha/d\tau \ + \ \pi_\tau^X$

$\qquad\qquad\qquad = \ \beta(\pi_\tau^X \ + \ \pi_\tau^Y)$

$\qquad\qquad\qquad = \ -\beta ky \ < \ 0,$

(25)  $\quad d\pi^Y/d\tau \ = \ \pi_x^Y dx/d\tau \ + \ \pi_y^Y dy/d\tau \ - \ \pi^1 d\alpha/d\tau$

$\qquad\qquad\qquad = \ (1 \ - \ \beta)(\pi_\tau^X + \ \pi_\tau^Y) \ - \ \{[(1 \ - \ \beta)/\beta]\Pi_x^X\}dx/d\tau$

$\qquad\qquad\qquad = \ -[(1 \ - \ \beta)/\beta]\Pi_x^X dx/d\tau \ - \ (1 \ - \ \beta)ky \ < \ 0.$

Conditions (24) and (25) imply that a decrease in $\tau$ will raise the profits of the JV as well as those of firm X. Even though firm X's exports fall, its total profits rise because its revenue from the JV is increased due to the reduction in $\tau$.

Next, using equation (21), we obtain the welfare effect of $\tau$:

$$(26) \qquad dW^Y/d\tau = PD'dP/d\tau + d\pi^Y/d\tau + tdx/d\tau + ky$$
$$+ (\tau k - s)dy/d\tau + t^Z dz/d\tau.$$

The sign of equation (26) is ambiguous. But if $t$, $t^Z$, $s$, and $y$ are sufficiently small, then $dW/d\tau$ approximates the expression $PD'dP/d\tau + d\pi^Y/d\tau + \tau k dy/d\tau$. Thus it is negatively signed; that is, a reduction in $\tau$ will raise welfare in country B.

Summarizing the above, we can state a second effect of economic integration.

> PROPOSITION 2. *Economic integration between the developed country and the developing country also reduces the tariff rate on the imported intermediate input. In the presence of the international JV, it reduces the final good exports of the former to the latter, while it raises the output of the JV. It increases the profits of the parent firms in both countries. For small values of the policy variables, it also raises welfare in the developing country if JV output is small initially.*

From propositions 1 and 2, economic integration as modeled in the present paper has two (somewhat) opposing effects: On the one hand, it reduces the tariff on the final good imported from the developed country, which in turn increases the exports and profits of the parent firm in the developed country and decreases the output of the international JV located in the developing country, the profits of the local firm, and welfare in the developing country. On the other hand, it also reduces the tariff on the intermediate input imported into the developing country, which in turn reduces the output of the parent firm in the developed country but raises that of the international JV in the developing country. However, the profits of the parent firms in both countries increase, and welfare in the developing country may also rise.

## 6.5    The Government Subsidy to the Joint Venture

In this section, we investigate the impact of the government subsidy to the international JV. From condition (16), we obtain

$$(27a) \qquad dx/ds = -\Delta^{-1}M < 0,$$

$$(27b) \qquad dy/ds = \Delta^{-1}[M + (1 - \beta)M_0/\beta] > 0,$$

$$(27c) \qquad dv/ds = \Delta^{-1}(1 - \beta)M_0/\beta > 0,$$

$$(27d) \qquad dz/ds = F'P'dv/ds < 0.$$

As expected, a subsidy to the JV raises the output of the JV and reduces those of the foreign firms. But the increase outweighs the reduction, and the net effect is an increase in the total supply and a reduction in the price.

The effects of the subsidy on the profits of the parent firms can be obtained by using equations (16) and (18):

$$(28) \qquad d\pi^X/ds = \pi_x^X dx/ds + \pi_y^X dy/ds + \pi^J d\alpha/ds + \pi_s^X$$

$$= \beta y > 0,$$

$$(29) \qquad d\pi^Y/ds = \pi_x^Y dx/ds + \pi_y^Y dy/ds - \pi^J d\alpha/ds + \pi_s^Y$$

$$= -[(1 - \beta)/\beta]\Pi_x^X dx/ds + (1 - \beta)y > 0.$$

Thus the profits of both parent firms are increased by the subsidy to the JV, even though parent firm X's output is reduced. Firm X is more than compensated by the increase in its profits from the JV.

Using equation (21), we obtain the welfare effect of the subsidy as

$$(30) \qquad dW^Y/ds = PD'dP/ds + d\pi^Y/ds + tdx/ds - y$$

$$+ (\tau k - s)dy/ds + t^Z dz/ds.$$

The sign of expression (30) is ambiguous. But if $t$, $t^Z$, $s$, and $y$ are sufficiently small, the welfare change can be approximately expressed as $PD'dP/ds + d\pi^Y/ds + \tau k dy/ds$. Then it is positively signed; that is, an increase in $s$ will raise welfare in country B. Thus the subsidy to the JV works almost exactly like a reduction in the import tariff on the intermediate input the JV uses.

We are now in a position to state the impact of the subsidy to the JV.

PROPOSITION 3. *A subsidy to the international JV reduces the outputs of the foreign firms but raises that of the JV and the total supply of the good in the developing country and reduces the price. It increases the profits of the parent firms in both countries. For small values of the policy variables, it also raises welfare in the developing country if JV output is small initially.*

Note the above restrictive conditions for welfare to increase in country B. If the values of the policy variables are large, the welfare effect of the subsidy is ambiguous; and if JV output is large, the cost of the subsidy outweighs the gain in country B, resulting in a welfare loss because a portion of JV profits goes to firm X while country B bears the whole cost of the subsidy.[8]

8. Also, in a more general framework, a subsidy to one sector is a cost to other sectors, which may bring inefficient allocation of resources and result in a welfare loss in the whole economy.

## 6.6   Concluding Remarks

This paper used a simple model to analyze economic integration and other trade policies in the presence of an international JV in a developing country. We showed that while economic integration benefits the firm in the developed country, it may increase or decrease the welfare of the developing country, depending on whether the developing country imports an intermediate input from the developed country or not. A policy beneficial to both countries is a subsidy to the international JV.

In practice, the subsidy posited in the present paper can appear in various forms (see Slemrod 1995; Sumantoro 1984; China, Ministry of Foreign Relations 1987). For instance, many developing countries (e.g., China and the ASEAN countries) provide tax concessions to attract FDI, based on JV output, or on the volume of foreign capital attracted, or on the amount of local content used by the JV. In such cases, our model and results would remain the same if we assume fixed-coefficient production technology; that is, subsidies or tax credits to outputs work the same way as those on inputs. Some countries also allow accelerated depreciation in JVs. As can be seen in equation (5), accelerated depreciation is similar to a reduction in unit cost, $c^j$, by some proportion, which brings the same effects as the subsidy $s$. Another common form of tax holiday is a reduction of the corporate tax paid by the JV. Such a policy is qualitatively similar to a subsidy to JV output, which would not alter the results of the present paper.

The purpose of the paper has been to construct a model addressing the major pattern of FDI in East Asia, that is, shared ownership, and policies related to economic integration. In doing so, we have abstracted from modeling FDI from countries outside of the integrated region. Our model can be extended to include the situation in which the outside country C also forms a JV in the developing country. The developing country may gain by "playing off" the two foreign countries against each other, that is, making simultaneous but independent offers to form JVs with both countries. If bargaining in one game breaks down, the threat point payoff for the developing country is positive because it can form a JV with the other foreign country.

Often a developed country undertakes FDI in a developing country and sells the final product in a third country. If outputs are sold in a country outside of the integrated region, our results on output and profits remain valid but those on welfare may change. In particular, because consumer surplus disappears in country B, the level of welfare falls in country B for each of the policies we have analyzed.

Suppose instead of forming an FTA, country B conducts unilateral tariff reduction for all imports, then the effects on resource allocation and

welfare can be studied by letting $dt^z = dt < 0$. Certainly a reduction in $t$ raises $x$ and reduces $y$, but by equation (3), a reduction in $t^z$ may reduce both $x$ and $y$. The total effects depend on the elasticity of the inverse demand curve and are generally ambiguous.

Many Japanese firms produce in Southeast Asian countries (e.g., Thailand) and import back to Japan, to take advantage of low wages. Although the structure of our model is a little different, our paper can still shed light on such cases. Suppose Thailand imposes a tariff on intermediate inputs imported from Japan and Japan imposes a tariff on final outputs imported from Thailand, then economic integration reduces both types of tariffs, which increases both Thailand's imports of inputs and its exports of final outputs. As a result, welfare in both countries may rise.

Some developing countries encourage local firms to form JVs with foreign firms in order to obtain better technology. In this paper we have abstracted from analyzing endogenous technology transfer. We conjecture that a subsidy to the JV would increase such technology transfer.

## Appendix

This appendix derives an explicit expression for condition (11). Note that

$$(\text{A1}) \quad \hat{\pi}_x^X + \hat{\pi}_x^Y = (\pi_x^X + \pi_y^X y_x + \pi_\alpha^X \alpha_x) + (\pi_x^Y + \pi_y^Y y_x + \pi_\alpha^Y \alpha_x)$$

$$= (\pi_x^X + \pi_x^Y) + (\pi_y^X + \pi_y^Y)y_x + (\pi_\alpha^X + \pi_\alpha^Y)\alpha_x$$

$$= \pi_x^X + \pi_x^Y,$$

because $\pi_y^X + \pi_y^Y = 0$ by condition (10a) and $\pi_\alpha^X + \pi_\alpha^Y = 0$ by differentiating equations (6) and (7) with respect to $\alpha$. Then condition (11) can be expressed as

$$(\text{A2}) \qquad\qquad \hat{\pi}_x^X = (\pi_x^X + \pi_x^Y) - \hat{\pi}_x^Y = 0.$$

Moreover, equation (10b) is satisfied for any $x$ and $s$ when $y = y(\cdot)$ and $\alpha = \alpha(\cdot)$. Differentiating equation (10b) with respect to $x$, we obtain

$$(\text{A3}) \qquad\qquad (1 - \beta)(\hat{\pi}_x^X - \Pi_x^X) - \beta\hat{\pi}_x^Y = 0.$$

From equations (11) and (A3), we establish

$$(\text{A4}) \qquad \hat{\pi}_x^Y = -[(1 - \beta)/\beta]\Pi_x^X$$

$$= -[(1 - \beta)/\beta][P(x) - t^X + xP'(x) - c_x^X(x)].$$

Therefore, from equations (A2) and (A4), we obtain

(A5) $$\pi^X_x + \pi^Y_x = -[(1 - \beta)/\beta]\Pi^X_x,$$

which can be expanded as in equation (11').

# References

Abe, K., and L. Zhao. 1994. International joint ventures and trade policy. Unpublished manuscript.
China. Ministry of Foreign Economic Relations. 1987. *Guide to China's foreign economic relations and trade: Investment special, 1987–1988.* Beijing: Policy Research Department and Foreign Investment Administration.
Contractor, F. J., and P. Lorange. 1988. *Cooperative strategies in international business.* Lexington, Mass.: Lexington Books.
De Melo, J., and A. Panagariya. 1993. *New dimensions in regional integration.* Cambridge, New York, and Melbourne: Cambridge University Press.
Harrigan, K. R. 1985. *Strategies for joint venture.* Lexington, Mass.: Lexington Books.
Japan. Ministry of International Trade and Industry (MITI). 1994. *White papers,* 282–84.
Jovanovic, M. N. 1992. *International economic integration.* London: Routledge.
Nash, J. 1950. The bargaining problem. *Econometrica* 28:155–62.
Organization for Economic Cooperation and Development (OECD). 1992. *International direct investment: Policies and trends in the 1980s.* Paris: Organization for Economic Cooperation and Development.
Slemrod, J. 1995. Tax policy toward foreign direct investment in developing countries in light of recent international tax changes. In *Fiscal incentives for investment and innovation,* ed. A. Shah. Oxford and New York: Oxford University Press.
Sumantoro. 1984. *MNCs and the host country: The Indonesian case.* Singapore: Institute of Southeast Asian Studies.
Svejnar, J., and S. C. Smith. 1984. The economics of joint ventures in less developed countries. *Quarterly Journal of Economics* 199:149–67.
Viner, J. 1950. *The customs union issue.* New York: Carnegie Endowment for International Peace.

# Comment    Shin-ichi Fukuda

This paper presents a simple but interesting model to analyze economic integration and trade policy in the presence of an international joint venture in a developing country. A key characteristic of the paper is its theoretical analysis of FDI by focusing on trade restrictions, especially tariffs and subsidies. The approach is quite different from that of other papers in this volume, most of which analyze issues related to FDI empirically by

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allowing various possible factors but paying relatively little attention to their theoretical background. Thus the contribution made by this paper is unique and important for this conference. In addition, although the model structure is complicated, most of the derived propositions are unambiguous, so their policy implications are clear.

However, most of the propositions in the paper hold only under the restrictive assumptions of the model. This type of criticism may not be appropriate when the purpose of this paper is only intended to satisfy theoretical curiosity. But when pursuing some practical policy implications, we need to think about the more general "role of foreign direct investment in economic development" that provides the title of this conference. Therefore, from more practical points of view, I will mainly comment on what restrictive assumptions this theoretical paper may have imposed.

My first comment is on the welfare effects of international joint ventures or FDI in a developing country. In addition to the low wage rates in a developing country, there are two reasons why international joint ventures are profitable for a developed country in this model. One is the existence of trade restrictions, more specifically the existence of a tariff. Because the developed country can avoid tariff payments by undertaking joint ventures, it obviously has an incentive to begin joint ventures with the developing country. The other reason is a government subsidy to joint venture firms. Because exporters cannot obtain this subsidy, it produces another incentive to start joint ventures. Needless to say, both are important factors in making joint ventures profitable. However, in explaining the welfare effects of FDI, the paper did not mention several important welfare gains that the developing country may enjoy.

Among the possible welfare gains, at least the following two factors are important. One is the technological spillover effects that joint ventures may have on local companies. Several papers in this volume explore extensively what technological spillover effects FDI can have. But these effects are completely neglected in this theoretical model. Modeling technological spillover effects is difficult because we need to extend the static model to a dynamic one. But even without a formal theoretical analysis, we can easily imagine that FDI will have various technological spillover effects and may benefit the developing country a lot. The other important factor is the creation of new employment in the developing country. Usually, before joint ventures start, most workers are employed in traditional sectors, such as agriculture, whose returns are very low. Therefore, putting aside welfare gains from tariffs and subsidies, joint ventures can bring an important welfare gain to the developing country.

My second comment is on the definition of "economic integration." In this paper, economic integration is defined as a reduction of tariff rates within the integrated region. Given this definition, the propositions derived in the paper are plausible. However, the definition is a narrow one,

applicable in an early stage of economic integration. In fact, when we think of economic integration, we usually expect wider effects than those that tariff rate reduction will have.

One possible effect is the scale effect from integration. Although economic integration can have several types of scale effects, most previous theoretical and empirical studies have pointed out that it would have positive impact on the integrated region. Allowing additional factors such as increasing returns to scale in production, it is desirable to incorporate scale effects into the model for practical considerations. Another important effect of economic integration is that of monetary integration such as the European Monetary System. Monetary integration is usually considered desirable because it reduces the effects of exchange rate volatility on intraregional trade. Since it is not standard to introduce money into this type of trade model, this may not be an appropriate criticism of the theoretical analysis. However, in considering economic integration practically, monetary aspects are also far from negligible.

My final comment is on the policy implications of this paper. Given the various assumptions, the derived propositions are correct and clear-cut. However, even if we accept the assumptions, the propositions indicate only the direction of changes and say little about the quantitative changes that tariff cuts or subsidies would cause. In considering practical policy implications, it is more important to see how large the effects of a tariff cut or subsidy will be. I think that this would be possible by specifying profit functions in the model. In addition, various comparative statics analyses were done in order to discuss the second-best welfare implications of each policy. But it would be more desirable to discuss which policy is better than the others in terms of welfare more rigorously.

## Comment     Mahani Zainal-Abidin

The paper by Abe and Zhao investigates profit allocation among joint venture partners in an economic integration. The joint venture is between a firm in a developed country (A) and another firm in a developing country (B). The production of the joint venture and its output are sold in the developing country. The paper starts with the premise that because of the imposition of tariffs on imports into the developing country, a firm that exports final goods into that developing country would go into a joint venture with a firm from the developing country to avoid the high tariff.

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Besides avoiding the high tariff, the joint venture was formed to take advantage of the low labor costs in the developing country. The viability of the joint venture rests on the assumption that it receives a subsidy from the developing country's government. The developing country also imports the same final goods from another country, C, and these goods are subjected to the same level of import duties. The model is then expanded to allow for the use of an intermediate input imported from the developed country in the production of the final good. The ensuing economic integration in the form of a customs union lowers the tariffs on both final and intermediate goods. This leads to the reallocation of production level between the parent company in the developed country and its joint venture as well as affecting the level of welfare in the developing country.

With the advent of an economic integration, the unchanged level of imports from country C and the output combination between the joint venture and its parent company in the developed country as proposed in this paper need to be examined more closely. Imports from country C will have a distinct price disadvantage when the tariff on similar imports from country A, which has now formed a customs union with country B, is lowered. The reallocation of output must then involve all three producers, and country C's output cannot remain unaffected. Faced with higher prices, imports from country C will decline. This leaves the total supply to be shared between the joint venture and the parent companies. A lower tariff in the developing country does not necessarily mean that production of the joint venture will decrease while that of the parent company in the developed country will increase. This proposition is true if the tariff is the only reason why the joint venture was established. However, in the model, high wages in the developed country were assumed to be one of the push factors, and one of the equilibrium conditions is that the wage rate in the developing country must be low enough for the joint venture to take place. In addition, the joint venture was given an incentive in the form of a subsidy that will lower its cost of production or increase its profits. Therefore, when the tariff is reduced, the output of the joint venture may not drop because of these other two factors (wage rate and subsidy) that sustain profitability.

The paper uses a Nash bargaining position to represent the interest and returns to both the joint venture partners and includes a parameter to represent this variable. However, the bargaining position is largely seen from the point of view of the parent company in the developed country. The government of the developing country, which gives the subsidy, has quite a strong bargaining position to ensure that its interest is also protected. Thus, rather than taking a passive role as implied by the model, the government of the developing country will want to influence the outcome of the game. In fact, it can set conditions on the joint venture, especially if there are political pressures from domestic constituencies, since

the benefit of incentives will be mainly enjoyed by a foreign company, assuming that the local partner is neither involved in the production process nor in possession of the technological capability. The conditions imposed may be in the form of a tax on the profits accruing to the joint venture (direct condition) or indirect ones such as employment objectives (usually a requirement that a certain number of local staff members be hired), transfer of technology, or a local content target. The imposition of these conditions is more likely if the local joint venture partner is a public sector company, in the sense that it has to meet government requirements. Therefore, the bargaining position should reflect the more active position of the developing country government.

Another aspect that has not been considered in the paper is that if the developed country also imposes a tariff on imports of similar goods, economic integration (customs union) will require this tariff also to be reduced. The commonly cited advantage of economic integration is that it results in trade creation and not trade diversion; with lower tariffs, production will be reallocated to the lowest cost producer. In this model, if the developing country has lower labor costs, the joint venture's output should increase, not otherwise. In a customs union all members have to reduce their tariffs. In this case, if the developed country had previously protected its market for the product that it exports to the developing country, this product now can be produced much more cheaply in the latter because of lower labor costs. Production will be then be relocated from the developed to the developing country. A good example is the increase in output of the automotive industry in Turkey. Prior to Turkey's entry into a customs union with the European Union, some EU automotive producers had established joint ventures to penetrate the Turkish market. But since Turkey's entry into the customs union with the European Union, these European producers have made Turkey their production base because the output, which is now produced much more cheaply, can be exported back into other EU developed member economies with lower tariffs.

Proposition 2 in this paper needs to be analyzed carefully. It says that economic integration, for small values of the policy variables, raises welfare in the developing country if joint venture output is small initially. This proposition is contrary to the aim of the joint venture, which is to increase output in order to augment the welfare of the population. If output is limited and a subsidy has to be given to produce the output, there is then no justification for the existence of the joint venture. The issue of welfare can be related to two aspects—the assumption about the subsidy and the definition of welfare. Although the paper has covered various forms of subsidy, their inclusion in the joint venture profit equation could be varied. In particular, the most important kind of subsidy, exemption from payment of income tax given on the basis of the amount of capital invested, could not be assumed to be proportionally constant to units produced. This subsidy is normally valid for a limited period of time. The benefit of

the subsidy decreases as output increases, assuming that output perfor-
mance partly reflects time period. Thus the cost of the subsidy to the gov-
ernment diminishes as output expands, and consequently, welfare will
also increase.

The definition of welfare should be expanded to include employment
generated and export revenue. It is acknowledged that a high proportion
of international joint ventures in developing countries do not create as
much benefit as expected. Studies have shown that about 30 percent of
foreign investment costs the host country more in terms of the opportunity
cost of its resources than it earns from the investment (Helleiner 1989).
The benefits are especially questionable for foreign investment located in
free trade areas where these companies are given exemptions from export
and import taxes. Why then do developing countries still encourage for-
eign joint ventures even though they seem to reduce welfare and can only
increase profits to the private sector? Welfare is viewed in a wider context
where employment creation is considered a vital spillover in developing
countries usually faced with the problem of high unemployment. When
joint venture products are exported, the welfare effect becomes even more
important because of the large employment potential as well as export
revenue contribution. Many developing countries suffer from balance-of-
payments constraints that can hinder economic growth, and hence the
ability to generate export revenue features prominently in the government
decision to grant a subsidy to joint ventures. Thus the welfare effects of
a foreign joint venture extend beyond consumer surplus, private sector
profits, and tariff revenues.

This paper constructs a general model to elucidate the effects of eco-
nomic integration on international joint ventures, but it cannot fully meet
its objective of explaining the major pattern of FDI in East Asia. First,
East Asia has not followed the route of customs union toward economic
integration. Most countries in the region opt for unilateral trade liberaliza-
tion or multilateral trading arrangements. In these types of liberalization,
tariff levels are usually low and direct benefits that can be given by devel-
oping countries to joint ventures are minimal because companies from
outside the integration region can enter and compete effectively in the
domestic markets. In the case of ASEAN, a free trade area has been pro-
posed, but ASEAN members' external tariff rates, on average, are quite
low. Meanwhile, many ASEAN members have introduced tariff reduc-
tions, and the liberalization is offered to all trading partners. For existing
joint ventures in ASEAN, even though they now have a tariff advantage,
the surplus is getting smaller as a result of the tariff liberalization.

Second, most joint ventures do not produce final products for domestic
markets but are instead part of the production chains of multinational
companies. Initially, joint ventures in ASEAN assembled intermediate
goods that were later exported. Then joint ventures became almost fully
integrated manufacturers, having taken over from their parent companies

some of the R&D work, production of the intermediate goods, assembly of the products, and marketing to third countries. Joint ventures gained more autonomy and became more independent from their parent companies. In other words, joint ventures matured while economic integration (in the form of tariff reduction) was taking place.

This paper makes a commendable effort to analyze the existence of a joint venture in the context of economic integration. The authors may want to consider expanding the model to include other features of the joint venture relationship, such as transfer pricing. Since the joint venture partner from the developed country is the source and producer of the product while the other partner (from the developing country) is assumed to be inactive in the production process, the former has an incentive to engage in transfer pricing. As a consequence, the profits of the joint venture partner from the developed country may be higher than stated because of inflated transfer prices. In this case, the implicit bargaining position of the joint venture partner from the developed country is stronger, as evidenced by its ability to achieve higher profits than the other partner. Thus its desire to form the joint venture is far stronger than the other partner's, and this implies a weaker bargaining position.

The specification of products is critical in this model because the implications of output level and share and profits depend on it. Most joint ventures, particularly in the ASEAN countries, are not aimed at serving domestic markets. If a joint venture is part of an international production chain and it processes intermediate goods that will be sent back to its parent company in a developed country, a lower tariff rate will increase both the exports of intermediate goods by the parent company and the output of the joint venture because the production cost of the latter is now lower. A similar conclusion holds if the product is exported to a third country. In such a situation, the subsidy consideration is secondary to labor cost, which is the main reason why firms undertaking FDI locate their production in East Asia.

In conclusion, the model offers interesting propositions about a joint venture under economic integration, which rest heavily on the provision of a subsidy. Under the restrictive conditions stated, the model provides propositions about how a joint venture between firms from developed and developing countries could be mutually beneficial. However, the test of its validity lies very much with the empirical conditions prevailing and the variations of its assumptions.

### Reference

Helleiner, G. K. 1989. Transnational corporation. In *Handbook of development economics,* vol. 2, ed. H. Chenery and T. N. Srinivasan. Amsterdam: North Holland.