

# INTERNATIONAL TRADE AND FOREIGN INVESTMENT: SUBSTITUTES OR COMPLEMENTS

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## I. Introduction

Recently, there has been some discussion on whether foreign investment “substitutes” for or “complements” international trade. First, as will be briefly reviewed in Section II, Robert Mundell<sup>1</sup> showed that both are *complete* substitutes for each other under the assumption of identical production functions for two countries within the framework of ordinary Heckscher-Ohlin-Samuelson theory of trade. Second, Andrew Schmitz and Peter Helmerger<sup>2</sup> and especially Douglas D. Purvis<sup>3</sup> demonstrated that foreign investment may work complementarily to international trade if production functions vary in the two countries (Section III). However, these people seem not to be able to show definite conditions for substitute or complementary cases.

Mundell and Purvis dealt with international movements of capital as one of the homogeneous factors of production, referring to it as a real, or physical capital.<sup>4</sup> I would like in this paper to call it “money capital” for it is to be a general, homogeneous factor of production which is allocable and reallocable to any sector of the economy. It is money capital before allocated while it becomes real capital after allocated.<sup>5</sup> Schmitz and Helmerger had in mind foreign direct investment but dealt with it as if there were no difference from money capital movement. But, there is a critical difference, among others, in the sense that the foreign direct investment affects the activities of specific sectors of investing and host economies, whereas international money capital movement is absorbed by and results in the reallocation of factors of production (capital and labor) so as to attain a general equilibrium of both countries.

Keeping in mind this characteristic of foreign direct investment, we may be able to differentiate succinctly two cases in which foreign direct investment works as a complement to international trade (trade-creating type) or as a substitute for it (trade-destroying type). This is the main purpose of the present paper (Section IV).

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<sup>1</sup> R.A. Mundell, “International Trade and Factor Mobility,” *American Economic Review*, June 1957 (reprinted in his book, *International Economics*, Macmillan, 1968, Chap. 6).

<sup>2</sup> Andrew Schmitz and Peter Helmerger, “Factor Mobility and International Trade: The Case of Complementarity,” *American Economic Review*, September 1970, pp. 761-67.

<sup>3</sup> Douglas D. Purvis, “Technology, Trade and Factor Mobility,” *Economic Journal*, September 1972, pp. 991-99.

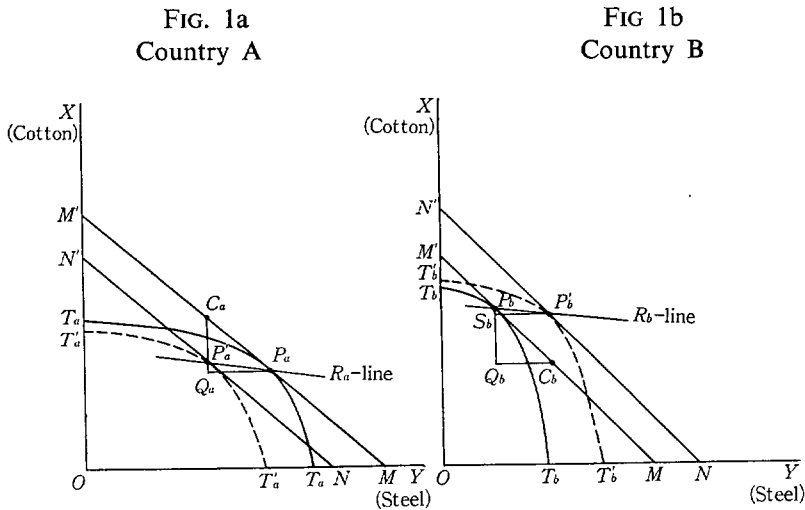
<sup>4</sup> Purvis, *ibid.*, p. 992, footnote 1.

<sup>5</sup> In this sense, it might be better to refer it as to “abstract” capital as Baldwin points out. R.E. Baldwin, “Export Technology and Development from Subsistence Level,” *Economic Journal*, March 1963, p. 841.

I have been developing elsewhere<sup>6</sup> a macro-economic theory of trade-oriented (Japanese-type) versus anti-trade-oriented (American-type) foreign direct investment. The former corresponds to the complements case while the latter to the substitutes case in the present paper. My theory must be constructed with further verifications<sup>7</sup> and the present paper is one of the supplements to that endeavour.

## II. Mundell's Complete Substitutes Case

Mundell demonstrates that "the substitution of commodity for factor movements will be complete" under rigorous Heckscher-Ohlin-Samuelson assumptions such as: "(a) production functions are homogeneous of the first degree (i.e., if marginal productivities, relatively and absolutely, depend only on the proportions in which factors are combined) and are identical in both countries; (b) one commodity requires a greater proportion of one factor than the other commodity at any factor prices at all points on any production function: and (c) factor endowments are such as to exclude specialization." Practically, "assume two countries, A and B, two commodities, cotton (textiles) and steel, and two factors, labor and capital."<sup>8</sup> Country A is well endowed with capital but poorly endowed



<sup>6</sup> Kiyoshi Kojima, "A Macroeconomic Approach to Foreign Direct Investment," *Hitotsubashi Journal of Economics*, June 1973, pp. 1-21 (reprinted in Fred Bergsten, ed., *Toward A New World Trade Policy: The Maidenhead Papers*; Lexington Books, 1975, pp. 75-104).

<sup>7</sup> I am grateful for those valuable comments which I have received from abroad by now such as: H.W. Arndt, "Professor Kojima on the Macroeconomics of Foreign Direct Investment" and Kiyoshi Kojima, "Reply," *Hitotsubashi Journal of Economics*, June 1974, pp. 26-35 and pp. 36-38 respectively. G.C. Hufbauer, "Multinational Corporations and the International Adjustment Process," *American Economic Review*, May 1974, p. 272 footnote 1. John Roemer, "Features of Japanese Direct Investment; Some Comparisons with the American Pattern," *Economic Record* (forthcoming).

<sup>8</sup> Robert A. Mundell, "International Trade and Factor Mobility," *American Economic Review*, June 1957, pp. 321-22.

with labor relative to country B;<sup>9</sup> "cotton is labor-intensive relative to steel. For expositional convenience we shall use community indifference curves."<sup>10</sup> Therefore, country A has a comparative advantage in capital intensive Y-goods, or steel, whereas country B in labor intensive X-goods, or cotton.

In Figure 1,<sup>11</sup>  $T_aT_a$  and  $T_bT_b$  are initial (before capital movements) transformation functions (production possibility curves) for country A and B respectively, production is at  $P$  and consumption is at  $C$  in each country. Country A is exporting  $P_aQ_a$  of steel and importing  $Q_aC_a$  of cotton, whereas correspondingly country B is importing  $C_bQ_b$  of steel and exporting  $Q_bP_b$  of cotton. In other words, since  $C_aQ_aP_a$  and  $P_bQ_bC_b$  are identical triangles, international trade between the two countries is in equilibrium.

Suppose now, induced by the imposition of a tariff on steel by country B, capital as large as  $MN$  in terms of Y-goods or  $M'N'$  in terms of X-goods moves from country A to B. Country B becomes more capital-abundant and reallocates the increased capital and the original labour in general equilibrium fashion—this process is explained precisely by the aid of a box diagram, as Mundell does—, reaching a new equilibrium production point at  $P_b'$  on a new expanded production possibility curve  $T_b'T_b'$ . Thus a Rybczynski line<sup>12</sup> for country B, i.e.,  $R_b$ -line, is drawn. Similarly, in country A which loses capital, a new equilibrium production point is achieved at  $P_a'$  and  $R_a$ -line is drawn. Both  $R_a$ - and  $R_b$ -lines are parallel to each other and result in identical triangles,  $P_a'Q_aP_a$  and  $P_bS_bP_b'$ , i.e., an increased output of Y-goods and a decreased output of X-goods in country B and reverse changes of the same magnitude in country A. These results are due to the assumption of identical production functions between the two countries. If "interest payments must be made to country A (instead of B in Mundell's original) equal in value to the marginal product of the capital inflow,"<sup>13</sup> the value equivalent to  $M'N'$  in terms of X-goods or  $MN$  in terms of Y-goods is transferred as interest payments from country B to A, so income in both countries is unchanged as before the capital movements were undertaken. Thus, the capital movements are complete substitutes for commodity trade.

It should be noted here that in such a case as Mundell's, the capital abundant country A has comparative advantage in capital-intensive Y-goods while the capital moved from country A to B will necessarily increase the production of capital-intensive Y-goods, or, more generally, it will increase the production which uses the increased factor of production more intensively than the other goods. Thus, the potentials of exporting capital intensive goods from capital abundant country and capital movements out of that country are substitutes for (and therefore competitive) to each other, the latter eliminating the former. Accordingly this case can be regarded as "trade-destroying" or "anti-trade-oriented." And this will necessarily happen in the case of international movements of *money* capital which usually flows from a capital abundant country.

As far as Mundell's demonstration is concerned, there is no positive gain from capital movement for it is a complete substitute for commodity trade. Does this mean that it is

<sup>9</sup> Here, country A and B are reversed from Mundell's original usage in order to make the former an investing country.

<sup>10</sup> Mundell, *ibid.*, p. 322.

<sup>11</sup> This is a combined figure of Mundell's Fig. 1 and 3 with only the reversal of country A and B.

<sup>12</sup> Cf. T.M. Rybczynski, "Factor Endowment and Relative Commodity Prices," *Economica*, Nov. 1955, pp. 336-41.

<sup>13</sup> Mundell, *ibid.*, p. 324.

of no worth undertaking capital movement even if trade impediments exist?

In Mundell, it is not clear whether or not tariffs still remain with the new equilibrium situation in both countries after the capital movements, although he says that "the tariff is now no longer necessary."<sup>14</sup> If tariffs remain, the capital movement must bring about some distortion and inefficiency in world production, especially in the host country. If this is true, free trade is preferable to capital movements with trade impediments.

Hamada demonstrates clearly that foreign investments induced by tariffs deteriorate the host country's income at international prices, for the tariffs give the advantage to foreign investors who can sell their products at a higher price than the international price within the tariff wall.<sup>15</sup>

### III. Purvis' Complements Case

It might be advisable to make clear what do "complements" and "substitutes" mean in this paper. Purvis defines complements as follows: "A sufficient condition for complementarity is that the initial capital outflow generates an excess demand for imports and an excess supply of exportables at constant terms of trade."<sup>16</sup> I agree with this definition. In other words, if foreign investment is complementary to product trade, it creates and / or expands the opportunity to import one product and to export the other product. Thus, this kind of foreign investment is trade-creating or trade-oriented.

Symmetrically, if the initial capital outflow decreases or eliminates the opportunity to import one product and to export the other product,<sup>17</sup> this kind of foreign investment "substitutes" for product trade and is thus "trade-destroying" or "anti-trade-oriented." This is the case which is brought about when the foreign investment induces a competitive production in the host country against the investing country's comparative advantageous production (exportables).

We may skip over Schmitz-Helmlinger's paper for it deals with one product (particularly primary products and primary manufacturing) in a partial equilibrium model,<sup>18</sup> although its contribution can be found in pointing out the importance of different production functions between countries.

One of the focuses of Purvis' argument is to show the effect of different production functions between country A (capital abundant, investing country), and country B (labour abundant, host country), by varied Rybczynski lines.

Let us suppose that in Fig. 1,  $R_b$ , the Rybczynski line for country B is steeper than it is drawn and therefore steeper than  $R_a$ , the Rybczynski line for country A. This is possible if the expanded production frontier of country B,  $T_b'/T_b'$ , is skewed towards Y-goods

<sup>14</sup> Mundell, *ibid.*, p. 325.

<sup>15</sup> K. Hamada, "An Economic Analysis of the Duty-free Zone," *Journal of International Economics*, August 1974, pp. 231-35. Originally, H. Uzawa proved the proposition geometrically, in his "Shihon Jiyuka to Kokumin Keizai (Liberalization of Foreign Investments and the National Economy)," *Ekonomisuto*, December 23rd, 1969, pp. 106-122 (in Japanese).

<sup>16</sup> Purvis, *ibid.*, p. 998.

<sup>17</sup> Purvis mentions his second usage of the "substitutes," i.e., "impediments to trade will stimulate factor movements, and such relocation of factors of production will eliminate trade in goods." (*ibid.*, p. 991 footnote 3). My definition may be broader than this for it is not confined to refer to Mundell's result.

<sup>18</sup> Schmitz and Helmlinger, *ibid.*, pp. 762-63.

much more than it is drawn in Fig. 1. This, in turn, is possible if production functions in country B, which are supposed to be different from those in country A, are of *comparatively* higher productivity in Y-goods than in X-goods as compared with the same relationship in country A. How and why the production functions differ between two countries is a crucial element in the present arguments, but both Schmitz and Helmlinger<sup>19</sup> and Purvis<sup>20</sup> do not give any rigorous specification.

It is still assumed here that the distance between the two parallel lines  $MM'$  and  $NN'$  is the same in both countries for it shows the value of capital internationally moved. In so far as the  $R_b$ -line is steeper than the  $R_a$ -line, the production of Y-goods is increased in country B much more than that decreased in country A, resulting in a net increase in the output of Y-goods for the two countries taken together. This may be counted as a gain from capital movement in a narrower sense.<sup>21</sup> But, in the production of X-goods, the output decreased in country B is greater than that increased in country A, resulting in a net decrease. Therefore, whether or not the capital movement brings about a net gain is still uncertain until we compare in value terms the net increase of Y-goods and the net decrease of X-goods.

Even if the capital movement results in a net increase of Y-goods, there remains another serious concern for both countries. Country A which, by the assumption, is capital abundant and has a comparative advantage in capital intensive Y-goods, now, after the capital movement, decreased an excess demand for importables, X-goods, and an excess supply of exportables, Y-goods, country B has now greater capacity in producing and even in exporting Y-goods which is competitive against country A's comparative advantage production. The capital movement may in this case again decrease or eliminate product trade similarly as in the complete substitutes case. If the Rybczynski lines in both countries have the same direction, say, downwards to the right, even if they have different degrees of slope, the capital movement will result in destroying product trade. This is true simply, as already mentioned, because the money capital moves out of the capital abundant country which has its comparative advantage in capital-intensive goods and increases production of competitive goods in the host country.

In the above, it is suggested that two conditions must be satisfied for capital movements to be complements to product trade: 1) the capital movements must increase the total value of production of the two goods in the two countries taken together, for otherwise their welfare will not rise. 2) The capital must move internationally in such a way that it reduces the production of comparative disadvantage goods (instead of advantage goods), in the investing country and increases those in the host country, or, in brief, the capital must move out from a *pro-comparative disadvantage line*.

Purvis realises well himself the second condition when he says as follows: "In the present case, the capital abundant country A is initially exporting the labour intensive good X, so A must have a strong technological advantage in the production of X."<sup>22</sup> But,

<sup>19</sup> Schmitz and Helmlinger, *ibid.*, p. 764, especially footnote 12.

<sup>20</sup> Purvis, *ibid.*, p. 994 footnote 1.

<sup>21</sup> If  $R_b$ -line is flatter than  $R_a$ -line as Purvis shows in his Fig. 3 (*ibid.*, p. 995), capital movements result in a net decrease of the production of Y-goods. Practically this may be more plausible, for a capital abundant country usually has a comparatively superior production function in capital-intensive goods compared to a labour abundant country. If so, there must not be any incentive to invest abroad in this line.

<sup>22</sup> Purvis, *ibid.*, p. 998.

this is a rather unusual assumption in the context of Heckscher-Ohlin-Samuelson model, and seems to me difficult to justify.<sup>23</sup> Such an unusual assumption is perhaps taken by him to evade logic such as the case when capital moves from the capital abundant country and increases production capacity of capital-intensive goods in the host country whereas the capital abundant, investing country has comparative advantage in capital intensive production. This is a dilemma into which international movements of money capital necessarily fall, as we have already explained. This dilemma will be avoided in the case of foreign direct investment as will be developed in the next section.

As we have touched upon in a previous footnote, Purvis assumes that the  $R_b$ -line is flatter than the  $R_a$ -line. This results in a net decrease in output of Y-goods and a net increase in output of X-goods for the two countries taken together. It is quite uncertain whether or not this increases the total value of the two outputs and thus welfare of the two countries. And it is rather peculiar that the capital movement does not increase but instead decreases the output of capital intensive Y-goods. Then, we have such a question why and for what purpose capital was moved. Even if the Purvis' model can be used to bring about "complements", its welfare effects may neither be definite nor dramatic.<sup>24</sup> This second difficulty will also be solved in the discussion of the role of foreign direct investment.

A distinctly "complements" case will be shown if the Ryczynski line of the host country directs upwards while that of the investing country downwards to the right. This is expected from the effects of foreign direct investment.

#### IV. *Foreign Direct Investment: Trade-Oriented vs. Anti-Trade-Oriented*

How is a foreign direct investment able to achieve those two conditions mentioned above and to be definitely "complements" with product trade. It comes from the two main characteristics, among others, of foreign direct investment, differing from international money capital movements.

First, "the essence of direct foreign investment is the transmission to the 'host' country of a 'package' of capital, managerial skill, and technical knowledge."<sup>25</sup> The international movement of money capital is not the main concern in direct investment: joint ventures are becoming popular; some part of the necessary money capital is procured in the host country; and a large part of capital contributed from the investor is transferred in the form of capital goods such as technical know-how, machines and equipment which embody technology. Thus, both a decreased money capital in the investing country and an increased one in the host country may be neglected as marginal in a theoretical model, as will be done here. The main role of foreign direct investment is to transplant superior

<sup>23</sup> In order to justify this, Purvis should show rigorously the specification of the technological differences between two countries.

<sup>24</sup> Purvis admits himself that "it is essential to note that this complementarity is not a necessary result of differing technologies, only a possible one." (*ibid.*, p. 998).

<sup>25</sup> Harry Johnson, "Survey of Issues," Peter Drysdale, ed., *Direct Foreign Investment in Asia and the Pacific*, Australian National University Press, Canberra, 1972, p. 2.

production technology through training of labour, management and marketing, from the advanced industrial country to lesser developed countries, or, in brief, it is the transfer of superior production functions which replace inferior ones in the host country. The foreign direct investment is to be a starter and a tutor of industrialization in less developed countries.

Second, the foreign direct investment is undertaken by a certain firm which belongs to a specific industry of the investing country and creates that specific activity through subsidiary and joint venture in the host country. Which industry is affected in the investing and host countries is specific and definite. In this point, direct investment differs from international money capital movement in which money capital as a general, homogeneous factor of production is reallocated in a general equilibrium fashion, instead of a specific way, according to its outflow from the investing country and its inflow into the host country. Thus it necessarily results in the competitive expansion of production that uses the increased general factor (capital) more intensively in the host country than the other production. However, the fact that a subsidiary or joint venture firm is established in the host country is not enough to analyse national (or macro) economic effects, although there is the so-called "enclave" direct investment whose effects are limited. The foreign direct investment gradually has an effect spread over that specific industry in the host country through training of labourers, engineers and managers and makes the establishment of competitive firms by local capital possible, and ultimately improves the production function of that specific industry in general. This is a role of foreign direct investment as a tutor. When the process is completed, it can be said the new technology is really transferred and settled in the host country.<sup>26</sup>

Now, a problem for study is in what type of industry it is easier to transfer technology to the host country, and to improve the production function there through foreign direct investment. There must be "comparative advantages in improving productivity" of the host economy. Here it is assumed that the smaller the technological difference between the investing and host country industry is, the easier it is to transfer and improve the technology in the latter.<sup>27</sup> This means that low technology is easier to transfer and high technology often results in "enclave" direct investment. Practically, labour-intensive and low-technology industries such as textiles are easier to transfer technology to less developed countries than capital and/or knowledge intensive industries such as steel and large scale computers.

Let us assume, as before, that country A is capital abundant and has a comparative advantage in capital-intensive Y-industry while country B is labour abundant and has a comparative advantage in labour-intensive X-industry. Both countries A and B are so small that international commodity prices are given exogeneously.

Also, "comparative advantages in improving productivity" of the host country is assumed in such a way that the productivity of the host country is up-graded through direct investments greater in labour-intensive X-industry than in capital-intensive Y-industry, due

<sup>26</sup> The degree of ownership and managerial control is an important difference between direct and portfolio investments from the individual firm's microeconomic point of view. But this is not a great concern for macro-economic analysis.

<sup>27</sup> See, for example, Terumoto Ozawa, *Transfer of Technology from Japan to Developing Countries*, UNITAR, New York, 1971. Jan Kmenta, "Economic Theory and Transfer of Technology," Daniel Spencer and Alexander Woroniak, ed., *The Transfer of Technology to Developing Countries*, Praeger, 1967.

to the smaller technological gap and the greater spread effects. More exactly, let us suppose that the production function of the host country becomes two times superior if direct investment flows into X-industry, and 1.5 times superior if it flows into Y-industry. Superiority of production function means that the same amount of output is produced with proportionately smaller inputs of labour and capital resulting in effects similar to the neutral technological improvement *a la* Hicks.<sup>28</sup>

The initial (before direct investment) production possibility curve is  $TT$  for country A in Fig. 2a and  $tt$  for country B in Fig. 2b, the latter being smaller than the former, because country B initially has inferior production functions in both industries, although there is no significant difference in the size of countries. The community indifference curve touches the production possibility curve at  $Q$  in country A and  $q$  in country B, and commodity price ratio at autarky situation is shown by  $P$ - and  $p$ -lines respectively. This means that country A has a comparative advantage in capital intensive Y-goods, and country B in labour intensive X-goods, along the lines of the Heckscher-Ohlin theorem.

Let us suppose that the international commodity price ratio is given to be the slope of the  $P'$ -line in Fig. 2a to which both  $p$ - and  $p'$ -lines in Fig. 2b are parallel. Now, country A shifts the production point from  $Q$  to  $Q'$  and the consumption point from  $Q$  to  $C$ , creating an excess demand for X-importables and an excess supply of Y-exportables equivalent to the vertical and horizontal distance respectively between  $Q'$  and  $C$ . However, international trade between country A and B is not yet possible for under the international commodity price ratio, shown by  $p$ -line, country B is in an autarky situation.

Let us now introduce foreign direct investments which are undertaken by a firm in X-industry of country A so as to improve technology of the same X-industry in country B. Such direct investment is stimulated by the fact that the production of X-goods at  $Q$  under the international commodity price ratio, shown by the slope of  $P'$ -line, gives lower rewards both to labour and capital in that industry as compared with the other industry Y, and labour and capital must shift from the less profitable X-industry to the more profitable Y-industry<sup>29</sup> until  $Q'$ -point, where marginal productivity of labour and capital becomes equal in both industries. This is an internal structural adjustment. But there is another possibility for a firm in X-industry to use its accumulated technology and managerial skills: that is in foreign direct investment.

We assume that money capital movements are negligible<sup>30</sup> mainly in order to make our figures simple and also because the most important role of foreign direct investments is the improvement of productivity through the transfer and spread of superior technology into the host country. Then, since the technology and managerial skills do not decrease even when they are applied abroad and since labour and capital are assumed to remain unchanged in country A, the  $TT$  curve remains intact. In country B, as it is assumed, the production possibility curve is expanded two times as large vertically from  $tt$  to  $tt'$ . Now, the international commodity price ratio, shown by  $p'$ -line touches the expanded production possibility curve,  $tt'$  at  $q'$  (a new production point). Line  $qq'$  becomes the Rybczynski

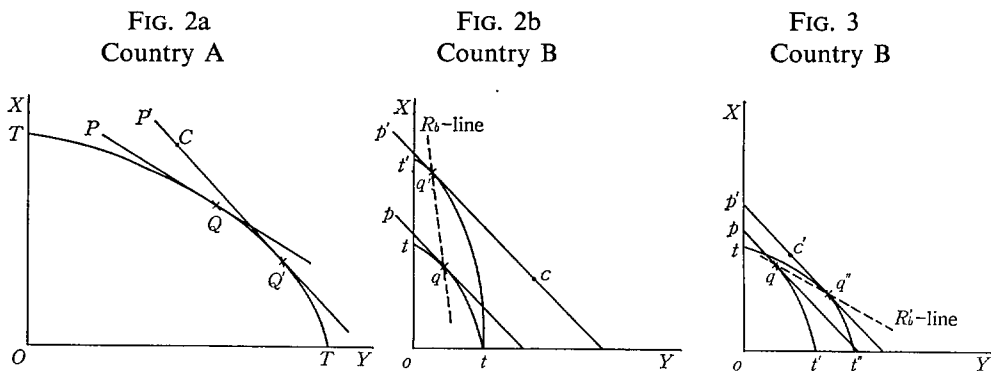
<sup>28</sup> J.R. Hicks, *The Theory of Wages*, Macmillan, London, 1932, Chap. 6, Section 3.

<sup>29</sup> Alternatively, we may assume that, under a given commodity price ratio, the labour-intensive X-industry becomes less profitable than capital-intensive Y-industry due to the rise in wage/rental ratio.

<sup>30</sup> Even if we take into account the money capital movements, this will not change, but strengthen our results, for money capital accompanied in direct investments flows out from a specific industry in the investing country and is invested in the same specific industry in the host country.



line in this case, and directs definitely upwards. A new triangle made by points  $q'$  and  $c$  in country B is identical to that made by points  $Q'$  and  $C$  in country A. Harmonious trade will be established in such a way that country A exports its comparative advantage Y-goods, and imports its comparative disadvantage X-goods. Thus, foreign direct investments are complements to commodity trade, the former creating the latter.



It should be noted that such trade-creating or pro-trade type of foreign direct investment is feasible only when it is undertaken in a pro-comparative disadvantage industry.

So far we have considered two manufacturing activities. But the logic is easily extended to foreign direct investment in the extractive industry,<sup>31</sup> which is definitely a comparative disadvantage production in the investing country.

Payments of rewards to foreign direct investments must be taken into consideration and this makes some complication of our analysis. However, it is certain, differing from the case of money capital movements, that the rewards are a part, perhaps smaller, of the distance between  $p$ - and  $p'$ -lines in Fig. 2b which is the direct and indirect contribution of foreign direct investments. This may be true, first, as far as the rate of rewards to foreign direct investments, i.e., royalty, know-how fees, dividends and profits, etc., are determined under international competitive basis, and, secondly, for the gain comes not only from the direct contribution of the foreign subsidiary or joint venture but largely from the spill-over effects of the foreign direct investments. In other words, a foreign direct investment in our model has the same effects as technological progress. As far as the foreign direct investment is undertaken in a pro-comparative disadvantage industry, it creates a harmonious commodity trade and, therefore, it is trade oriented;<sup>32</sup> and its direct and indirect contribution brings about a net gain in welfare of the two countries taken together similar to that of technological progress, not considering the distribution of the gain to each country.

<sup>31</sup> This is what Schmitz and Helmberger had in mind as a "complements" case and it is true that "the larger the differences in production conditions among countries in primary products the greater will be the flow of international capital." Schmitz and Helmberger, *ibid.*, p. 763 footnote 7.

<sup>32</sup> It is an established theory that technological progress undertaken in an exportable industry is trade-oriented whereas in an importable industry it is anti-trade oriented. This is unambiguously true if the technological progress is neutral. Our dichotomy of foreign direct investment comes to the same conclusion. See Harry Johnson, *International Trade and Economic Growth*, George Allen and Unwin, London 1958, Chapter 3.

In contrast to the pro-comparative disadvantage industry type, what will happen if a foreign direct investment is undertaken by a firm of comparative advantage industry in country A? In Fig. 3, country B's production possibility curve expands, as it is assumed, 1.5 times as large horizontally from  $tt$  to  $tt''$ . Under the given international commodity price ratio, shown by  $p'$ -line, production point is at  $q''^{33}$  and consumption point at  $c'$ , creating an excess demand for X-goods (importables) and an excess supply of Y-goods (exportables) in country B. Country A's situation is the same as mentioned previously in Fig. 2a, and it has an excess demand for X-goods (importables) and an excess supply of Y-goods (exportables) equivalent to the horizontal and vertical distances, respectively, between  $Q'$  and  $C$  points. The two countries are competing both in importing and exporting capacity. The foreign direct investment in this case will not open any commodity trade between the two countries, and may even destroy commodity trade which was opened by variation in the international commodity price ratio (for example, if  $P'$ - and  $p$ -lines are slightly less steeper than they are drawn in Fig. 2a and 3.)<sup>34</sup> Thus, the foreign direct investment of pro-comparative advantage industry is trade-destroying or anti-trade-oriented, similar to the money capital movements in the Mundell and Purvis cases.

Here, we have to remember that there is no proper motivation or incentive for a firm of Y-industry in country A to undertake direct investment abroad. For the firm it is possible and profitable to expand production of Y-goods from  $Q$  to  $Q'$  in Fig. 2a and export them to country B<sup>35</sup> or even to third countries. Moreover, there is no sound reason under a free market mechanism to do foreign direct investment so as to create competitive production abroad against its exportables. If still there is some motivation, it must be a quite different one; for example monopolistic or oligopolistic motivation to maintain technological, marketing and other monopolistic superiority.<sup>36</sup>

Therefore, we have to pay much attention to whether a foreign direct investment is undertaken in a pro-comparative disadvantage industry which is trade-creating, or in a pro-comparative advantage industry which results in trade destruction. This must be a primary criterion from the national economic point of view for both investing and host countries, although it is rather neglected from a firm's micro-economic point of view.<sup>37</sup>

We have a second criterion; that is "comparative advantages in improving productivity" in the host country through foreign direct investments. It is usual, as we have assumed, that labour-intensive and low-technology industry such as textiles in which the investing country A has comparative disadvantage, overt or potential, is easier to transfer its technology to less developed countries and improves productivity there far more than

<sup>33</sup> A. Rybczynski line,  $Rb'$ , is  $qq''$  extended which directs downwards to the right, similar to the money capital movements.

<sup>34</sup> This is applicable to the previous case and might have resulted in a better explanation, but we refrained from doing so simply in order to avoid the complexity of figures.

<sup>35</sup> Although our Fig. 3 is not adequate to allow for country B to import Y-goods, it is not unreasonable to modify the Figure to allow it, as mentioned in the text, for country B has a comparative disadvantage in Y-goods.

<sup>36</sup> See, Raymond Vernon, "The Location of Economic Activity," John H. Dunning, ed., *Economic Analysis and Multinational Enterprise*, Allen and Unwin, London, 1974.

<sup>37</sup> Almost all studies on multinational corporations including Raymond Vernon's product cycle theory ("International Investment and International Trade in the Product Cycle," *Quarterly Journal of Economics*, May 1966; *Sovereignty at Bay: The Multinational Spread of U.S. Enterprises*, Basic Books, 1971.) use a one-commodity analysis and are based upon the location theory and the theory of oligopolistic firms, neglecting the theory of comparative advantage.

capital- and/or knowledge-intensive industries such as steel and large scale computers. This may be true; the less developed country had comparative disadvantage in capital-intensive goods because of its lower capital/labour endowments, the lack of capital, engineers, skilled labour (even neglecting the lack of demand), etc., suitable to the capital-intensive, high technology industry. The same reasons are applicable to difficulty in transferring technology and in improving productivity. This case satisfies harmoniously the two criteria: comparative advantages in trade and in improving productivity, and no conflict between macro-economic point of view of international division of labour and micro-economic interest of individual direct-investors.

However, it is theoretically conceivable to have a conflict case: while the investing country has comparative advantage in Y-industry, productivity in the host country increases in that industry through foreign direct investment much more than in the other industry, X. This type of investment should be refrained from the point of view of national economy both of investing and host countries since it destroys commodity trade, but it will be undertaken from individual firm's interests as far as it is profitable. But, it seems to me that practically any such conflict case may not be possible as far as comparative advantage in trade dominates the improving productivity criterion mentioned above, except that foreign direct investments are motivated by monopolistic or oligopolistic performance which usually results in "enclave" activity in less developed countries.

Furthermore, it can be easily imagined theoretically that country A's firms undertake foreign direct investments in both X- and Y- industries, ignoring comparative advantages, as far as foreign investment provides higher profit than domestic investment for each industry. Then, country A incurs an increased import of X-goods and a decreased export or even reversed-import of Y-goods, resulting in a heavy trade-deficit and export of jobs which means erosion of the investing country's economy through excessive direct investments. This is, among other causes, due to an excessively overvalued exchange rate of the country. If the exchange rate is devalued sufficiently, imports are cut; exports are increased; annual flow of direct investments from both industries is decreased or one of them is eliminated; and it may be possible to regain the balance of trade or the balance of payments, including return flow from past investments. If the investment from comparative advantage Y-industry is eliminated, the adjustment process is easier, but if not, it is difficult or impossible. Therefore, some direct and selective control of direct investments outflow is necessary especially in order to eliminate anti-trade investments. And this is applicable to the host country, too.

## V. *Concluding Remarks*

It has become clear in this paper, first, that international money capital movements result necessarily in destroying commodity trade within the framework of Heckscher-Ohlin-Samuelson theorem with either identical or different production functions between two countries. Even in the case of foreign direct investment, if it is undertaken from the investing country's comparative advantage industry, it results in the same trade-destroying pattern.

Secondly, only foreign direct investment which is undertaken in the investing country's

comparative disadvantage industry complements commodity trade and creates a harmonious trade with the host country.

Therefore, the most important criterion in undertaking foreign investment should be to take into consideration the present and potential pattern of comparative advantages between investing and host countries and to undertake foreign direct investment from the investing country's comparative disadvantage industry. This is a trade-oriented investment and will bring about up-grading structural adjustment on both sides, resulting in harmonious trade-reorganization.<sup>38</sup>

Can the multinational firm ignore or oppose the pattern of comparative advantages in trade as is so often seen in American foreign direct investment?<sup>39</sup> Trade-destroying effects of such investment should be carefully examined for the sake of better world trade conditions.

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<sup>38</sup> A theory of trade-oriented foreign direct investment presented in this paper may be an important fillip to guide trade expansion between advanced industrial and less developed countries with the help of foreign direct investment, although two-way direct investment between advanced industrial countries may be explained by different theory such as Bhagwati's theory of mutual interpenetration or my theory of agreed specialization. See, Jagdish N. Bhagwati, "Book Review of Raymond Vernon, *Sovereignty at Bay*," *Journal of International Economics*, September 1972, pp. 457-58. Kiyoshi Kojima, "Towards a Theory of Agreed Specialization: the Economics of Integration," W.A. Eltis, M. FG. Scott, and J.N. Wolfe, eds., *Induction, Growth and Trade, Essays in Honour of Sir Roy Harrod*, Clarendon Press, Oxford, 1970, pp. 305-24.

<sup>39</sup> See, Kiyoshi Koyima, "A Macroeconomic Approach to Foreign Direct Investment," *Hitotsubashi Journal of Economics*, June 1973, pp. 5-8.