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# Endogenous protection, foreign direct investment and protection-building trade

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**Abstract**

We introduce the possibility of foreign direct investment (FDI) in a strategic, oligopolistic setting with endogenous protection and find that a number of unique subgame-perfect equilibria may arise, including a new result we call ''protection-building trade.'' This phenomenon occurs in our model when foreign firms locating production in the home country try to *increase* protectionist pressures in the home country (through increased exports) to provide larger barriers against other foreign competitors in future periods. We discuss how the foreign firm behavior surrounding significant U.S. protectionist actions, including the VERs on Japanese automobiles, may be consistent with protection-building trade behavior. 

*Keywords:* Endogenous protection; Foreign direct investment; Strategic trade policy

*JEL classification:* F13; F23

## 1. Introduction

Strategic reaction of firms to trade policy that is endogenously determined by firms' actions has been an important topic in the international trade literature. The idea that export levels may affect the level of protection a firm faces is a notion that stems back at least to Bhagwati and Srinivasan (1976). They examine the

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optimal trade policy for an exporting country which anticipates more restrictive quantitative restrictions associated with higher levels of imports. Their central result is that a country exports less when it faces endogenous protection than when it anticipates exogenous quantitative restrictions. Empirically, studies have largely confirmed that import penetration and import growth tend to increase the probability of protection (for example, see Moore, 1992; Baldwin and Steagall, 1994; Hansen and Prusa, 1997). Numerous theoretical papers have used a similar endogenous protection notion to derive interesting results and policy conclusions. Most recently, Fischer (1992) and Prusa (1994) examine endogenous protection in an oligopolistic setting with a home firm and foreign firm competing for the home market.

While these papers investigate how the prospect of protection reduces exports, Anderson (1992), (1993) develops a model where firms will strategically export more (or ''dump'') when facing the possibility of voluntary export restraint (VER) protection. Quantitative restrictions, such as VER protection, create rents for the exporting firms. Allocation of export licences which allow exporting firms to capture these rents is often based on market shares of the firms before the VER is put in place. This means that exporting firms have incentives to dump in order to increase market share in the importing country and garner a larger share of export licences in the future.

Despite the differences, Anderson's papers, like the others mentioned, predict similar responses by foreign firms facing the same protectionist investigation. However, in the real world examples we observe, firms facing the same protectionist investigation often act quite differently. In perhaps the most renowned case of U.S. protection – the automobile VERs with Japan – the major Japanese automakers sent very different signals about their exports to the U.S. during the escape clause investigation that led to the negotiated VER. A *Wall Street Journal* article (September 17, 1980, p. 21;1) noted during the investigation that Nissan and Toyota publicly announced that they expected auto exports to the United States to ''slow in the short run,'' but that ''It is true that Toyota and Nissan shipments may go down, but... declines in Nissan and Toyota shipments don't mean that Japanese shipments overall will drop. Honda Motor Co., for example, bluntly declares that it wants to increase its exports to the U.S. the rest of the year.'' Nissan and Toyota's publicly-stated intentions seem consistent with the traditional endogenous protection literature, while Honda seems to be reacting as Anderson's model would predict. Another example of markedly different reactions to potential U.S. protection on the part of exporting firms involves a 1986 antidumping (AD) case in color picture tubes, an AD case where there were no discussions of a resulting VER and, thus, one that is not applicable to Anderson's model. In this case, the firm found to have the largest dumping margin, Toshiba Corporation, refused to participate in the investigation, while the other investigated firms participated fully and attempted to receive lower AD duties.

This paper presents a model that is capable of explaining these diverse reactions

of exporting firms facing possible protection by including the possibility of foreign direct investment (FDI) in a model where firms' future protection levels depend positively on their current export levels.[1] In the protection cases described above, both Honda and Toshiba were the only one of their foreign competitors that had recently established or committed to construct a significant manufacturing plant in the United States. We draw a link between FDI and different strategic reactions to possible protection in the following manner.[2] We set up a simple two-period Cournot duopoly model where two firms from different countries compete for the home market. In the first period, foreign firms can serve the home market only through exports. Observing first-period export volumes, the home government then sets country-specific tariff rates at the end of period 1. In the second period, we allow both foreign firms the option of locating production in the importing country with a fixed cost, or continuing exporting, followed by a final Cournot game between the firms. We couple this model with two important empirically relevant features: (1) the foreign firms may differ in their willingness to substitute FDI for exporting due to varying cost tradeoffs between the two options, and (2) protection levels faced by the foreign firms depend not only on their own level of exports to the protected market, but the level of exports by the other firm to the same market.

We find that three types of unique subgame-perfect equilibria may occur. First, both firms may decide not to engage in FDI in the second period, and instead both firms strategically lower their exports to the home country in the first-period to achieve lower levels of protection in the second period. This is the standard endogenous protection result. Second, both firms may decide to engage in FDI in the second period. In this case, neither firm strategically lowers their first-period export level, and instead the firms' output levels in both periods are the standard Cournot output levels. This is the classic tariff-jumping case, which shows that if the costs of FDI relative to exporting are low enough, the standard endogenous protection result does not occur. Finally, one firm may engage in FDI, while the

[1]Bhagwati et al. (1987) introduced the possibility of FDI into the context of endogenous protection as well. However, they also assume that FDI, contrary to import penetration, has an inverse relationship with the level of protection due to the political appeasement characteristics of FDI. We do not assume this here, partly because of model tractability concerns, but primarily due to the limited theoretical and empirical support for this assumption (see Grossman and Helpman, 1994; Zhao, 1996; Blonigen and Feenstra, 1997; Blonigen and Figlio, 1996).

[2]With respect to FDI and *exogenous* trade protection, Smith (1987) looks at the possibility of FDI when a foreign exporting firm faces entry from a domestic rival in the home country. His model shows that a number of possible equilibria arise depending on the degree of sunk costs of FDI, the size of the exogenous tariff, and other important parameters. Flam (1994) examines the possibility of Japanese automakers tariff- jumping voluntary export restraints (VERs) by European Community members. He focuses on the welfare aspects of protection in the face of possible FDI and finds that protectionist policy which does not take into account the possibility of induced FDI can actually minimize welfare of the protectionist country. Unlike these papers we do not focus on strategic interaction between home and foreign firms facing exogenous protection, but instead on the interactions of foreign rivals in the face of endogenous protection.

other does not. This is an asymmetric case that has not been explored before, but leads to an interesting phenomenon we call ''protection-building trade.'' In this case, the foreign firm that locates production in the home country in period 2 *increases* first-period exports to the home market to raise the second-period protectionist barriers on its foreign competitor, while the other foreign firm *lowers* first-period exports. Protection-building trade occurs because the firm that is investing has incentive to increase future protection on its rivals.[3] Thus, the phenomenon can be thought of as an example of a cost-raising strategy or ''non-price predation'' as described by Salop and Scheffman (1983), (1987).

The rest of the paper is structured as follows. First, we provide a formal model of FDI in a strategic Cournot setting with endogenous protection and characterize the subgame-perfect equilibria that arise. As noted, our model allows for the possibility of standard endogenous protection results, classic tariff-jumping, or protection-building trade. Second, we detail U.S. AD cases in tapered roller bearings and color picture tubes, as well as the escape clause investigation of Japanese autos, to provide evidence of firm-level behavior consistent with protection-building trade.

## 2. Model

We construct a two-period model with three countries: home, country A, and country B. Duopolies, firm A and firm B, are located in country A and B respectively and play a quantity-setting game in the home market, while there is a competitive fringe in the home country. Let $p(x^{\mathrm{A}} + x^{\mathrm{B}})$ denote the time-invariant residual inverse demand in the home market with $p' < 0$. For simplicity, we assume that each firm's cost function is given by $c^i(x^i)$ where $i = \mathrm{A,B}$ and $\frac{\partial c^i}{\partial x^i} > 0$, $\frac{\partial^2 c^i}{\partial (x^i)^2} \geq 0$, regardless of the location of production.

The timing of the game is as follows. In period 1 stage 1, firms A and B export to the home market. Let $x_1^{\mathrm{A}}$ and $x_1^{\mathrm{B}}$ denote the first-period exports of firm A and B, respectively. In stage 2 of period 1, trade protection, in the form of a country-specific tariff, will be determined as a function of period 1 outputs. In this setup of the model, with firm-specific tariffs, one can think of the modeled policy as

[3] Goodman et al. (1996) present the argument that foreign firms may begin to lobby for protectionism once they invest in the home country if FDI and exports are substitutes, and present a number of case studies to support this. This paper goes a step further by presenting a model where foreign firms strategically alter exporting behavior *before* investing to achieve higher future barriers on rivals' exports.

antidumping or countervailing duty protection. At the end of Section 2, we explain how one could model other protectionist policies such as VERs and obtain similar results. Observing the levels of trade protection, firms A and B decide whether to engage in FDI in the home country (i.e., tariff jump) in the first stage of period 2. Finally, in stage 2 of period 2, the firms again play a Cournot game.

### 2.1. Period 2 – stage 2

Since we are going to focus on subgame-perfect equilibria, we solve the model backward and begin with stage 2 of period 2. Let $\tau^{\mathrm{A}}$ and $\tau^{\mathrm{B}}$ be the levels of the tariff imposed in the second stage of period 1. Then firm $i$ maximizes its period 2 profit:

$$p(x_2^{\mathrm{A}} + x_2^{\mathrm{B}})x_2^i - c^i(x_2^i) - t^i x_2^i \tag{1}$$

where $t^i$ is the effective tariff rate; i.e. $t^i = \tau^i I^i$, and $I^i$ is an index function such that

$$I^i \equiv 1 \text{ if firm } i \text{ exports from country } i$$

$$I^i \equiv 0 \text{ if firm } i \text{ produces in the home country}$$

The best-response functions of the firms are

$$x_2^i = b(x_2^j;t^i) = \arg\max\ p(x_2^{\mathrm{A}} + x_2^{\mathrm{B}})x_2^i - c^i(x_2^i) - t^i x_2^i \tag{2}$$

where $j \neq i$. Note that the best-response function, $b(.;0)$, is the usual best-response function of the static Nash game. Solving the best-response functions simultaneously, we have the Cournot outputs, $\{\hat{x}_2^{\mathrm{A}}, \hat{x}_2^{\mathrm{B}}\}$. Substituting these into the objective functions in Eq. (1), we get equilibrium profits

$$\pi_2^i(t^{\mathrm{A}},t^{\mathrm{B}}) \equiv p[\hat{x}_2^{\mathrm{A}}(t^{\mathrm{A}},t^{\mathrm{B}}) + \hat{x}_2^{\mathrm{B}}(t^{\mathrm{A}},t^{\mathrm{B}})]\hat{x}_2^i(t^{\mathrm{A}},t^{\mathrm{B}}) - c^i[\hat{x}_2^i(t^{\mathrm{A}},t^{\mathrm{B}})] - t^i\hat{x}_2^i(t^{\mathrm{A}},t^{\mathrm{B}}) \tag{3}$$

where $i = \mathrm{A,B}$

### 2.2. Period 2 – stage 1

In stage 1 of period 2, firms choose whether to locate production in the home country. We assume that FDI requires an up-front fixed cost.[4] Thus, firm $i$ chooses FDI if

$$k^i \leq \pi_2^i(0,t^j) - \pi_2^i(\tau^i,t^j) = -\int_0^{\tau^i} \left[ \frac{\partial \pi_2^i(x,t^j)}{\partial \tau^i} \right] \mathrm{d}x \tag{4}$$

where $k^i$ is firm $i$'s fixed cost of locating production in the home country. It is easy to verify that $\partial \pi_2^i / \partial t^i < 0$ and $\partial^2 \pi_2^i / \partial (t^i)^2 > 0$. Furthermore, we assume that $\partial^2 \pi^i / \partial t^i \, \partial t^j < 0$, which is a standard assumption found in a broad literature that addresses similar issues.[5] This assumption implies that the higher the effective tariff rate, $t^j$, the larger the difference in firm $i$'s payoffs in the two locations, and hence, the more likely that firm A will locate production in the home country. These assumptions are sufficient for period-one outputs to be strategic substitutes. Therefore, the equilibrium investment decisions, which we denote as $\hat{I}^i(\tau^i,\tau^j)$, are functions of the tariff rates determined in stage 2 of period 1. We assume that exporting firms may have different fixed costs of FDI, $k^i$, which will be important in determining equilibria below. There are a number of reasons why the relative trade-off between FDI and exporting may vary substantially from firm to firm in the real world. First, this up-front fixed cost may require significant financing costs for a firm. In the presence of imperfect capital markets, the cost of financing FDI may vary significantly from firm to firm and thus the relative cost of exporting versus FDI may vary as well. Froot and Stein (1991) detail how the cost of financing investment may vary from country to country in the face of currency movements. In fact, to the extent that firms face varying degrees of imperfection in available capital markets, there will be differences in abilities to finance FDI. Second, a significant portion of the up-front costs of FDI is determining a suitable location in the host country and overcoming informational and cultural barriers. In this respect, firms which already enjoy a physical presence in the home country (perhaps having already established production plants for other commodities) may enjoy much smaller costs of FDI relative to exporting than other firms.

Finally, government policy may have a role to play in this as well. One example is a policy change on the part of the South Korean government in October 1995 regarding the financing of FDI by Korean firms. Specifically, South Korean firms

[4]This assumption is found in a number of other studies of FDI including Buckley and Casson (1981), Markusen (1984), Smith (1987), Horstmann and Markusen (1989), and Grossman and Helpman (1994).

[5]For example, see Besley and Suzumura (1992), Bagwell and Staiger (1994), and McAfee and Schwartz (1994).

were required to finance 20% of any overseas investment with South Korean lenders (*Register Guard*, Eugene, Oregon, October 19, 1995, p. E1). The restrictiveness of this policy comes in the fact that South Korean interest rates at the time of the announcement averaged about 13–15%, or approximately double the interest rates available in the United States at that time. This policy clearly creates disincentives for FDI relative to trade for South Korean firms. In a similar manner, any type of government trade promotion policies may bias its firms toward exporting over FDI.[6]

### *2.3. Period 1 – stage 2*

In stage 2 of period 1, the tariff rates are determined endogenously from some political equilibrium in the home country. Although the political process of tariff-rate determination is an interesting issue itself, we refrain from detailing this since it is not the focus of this paper. Instead, we assume simple tariff functions $\tau^i \equiv \tau^i(x_1^A, x_1^B)$, where $\partial\tau^i/\partial x_1^i \geq \partial\tau^i/\partial x_1^j > 0$. This assumption is consistent with notable features of AD and countervailing duty (CVD) laws, common in the United States and other countries, and is essential for our model's results. First, both partial derivatives are nonzero, implying that import penetration leads to higher expected tariff levels in the future; i.e., like other studies modeling AD/CVD duties such as Staiger and Wolak (1992), Fischer (1992), Leidy (1994), and Prusa (1994), protection is modeled as endogenous. This is consistent with the empirical studies listed in the introduction above that find import penetration positively correlated with the probability of future AD/CVD protection. Second, our tariff function assumes that a firm's future protection level depends not only on its own first-period export behavior, but the export behavior of its rival as well, though the firm's tariff rate is more sensitive to its own exports than to its competitor's exports. This assumption has not been modeled before, but as we argue below, the structure of AD/CVD law in the U.S. (and, arguably, in other countries as well) makes the interdependence between a firm's tariff and its rivals' exports quite likely.

There are a number of features of U.S. AD/CVD law that create an interdependence between the expected future protection a foreign firm will face and its rivals' actions. First, once a product from a country is investigated in an AD/CVD case, *all* exporters of the product from the investigated country are subject to the investigation, regardless of their import penetration or pricing behavior. In

[6]We note that even if firms face similar financial markets, government policies, etc., protection-building trade may still occur if expected costs of FDI differ between the exporting firms. For example, with respect to the Japanese auto VER, most of the major Japanese auto manufacturers besides Honda had expressed significant concerns that U.S. labor would be efficient enough to profitably produce cars in the United States, especially given the very different production processes and culture surrounding Japanese firms' operations.

addition, Boltuck et al. (1991) present compelling evidence that the margin determination in AD/CVD cases is biased for finding a positive duty in all cases.[7] Thus, the U.S. Department of Commerce (USDOC) finds a positive margin in over 95% of the cases it examines. In this way, future levels of protection for a foreign firm can be determined by the import penetration of another firm from the same foreign country.

While this suggests that firms from the same country have interdependent tariff functions, our model supposes two foreign firms from *different* countries. However, there are features of U.S. AD/CVD law that lead to tariff-function interdependence in this case as well. First, it is common for petitioners to file against more than one country in an AD/CVD investigation of a product (see Prusa, 1997). This is because of trade diversion concerns: the petitioners want to ensure that the domestic industry, *not* the non-investigated foreign exporters, benefit from any protection that is imposed. Thus, in many cases the future level of protection for all foreign exporters, regardless of country, depends on the import penetration of other foreign firms. Second, in 1984, Congress amended the AD/CVD laws so that the U.S. International Trade Commission (USITC) considers the cumulation of imports across all investigated countries when determining injury to the domestic industry. As Hansen and Prusa (1996) show, this has significant impact in yielding affirmative decisions against firms from countries with relatively small levels of imports to the United States. In conclusion, whether we model the foreign firms as from the same country or different countries, there are reasons to suggest that future AD/CVD protection depends not only on one own's actions, but that of one's rivals as well.

### *2.4. Period 1 – stage 1: Best-response functions*

In stage 1 of period 1, firms maximize intertemporal profit by choosing first-period output given their competitor's output. More formally, firm $i$'s problem is

$$\max_{x_1^i} \; p(x_1^{\mathrm{A}} + x_1^{\mathrm{B}})x_1^i - c^i(x^i) + \delta^i \pi_2^i(t^{\mathrm{A}},t^{\mathrm{B}}) \tag{5}$$

where $t^i = \tau^i(x_1^{\mathrm{A}},x_1^{\mathrm{B}})\hat{I}^i[\tau^{\mathrm{A}}(x_1^{\mathrm{A}},x_1^{\mathrm{B}}),\tau^{\mathrm{B}}(x_1^{\mathrm{A}},x_1^{\mathrm{B}})]$ and $\delta^i > 0$ is an exogenous discount factor. For ease of analysis, we focus on firm A's maximization problem. In order to derive firm A's best-response function, we have to consider the following four

[7]The U.S. Department of Commerce (USDOC) determines the dumping margin as the difference between the price it charges in the U.S. and "normal" value, which is generally based on the price charged by the firm in its own market. This estimated margin becomes the ad valorem duty assessed by Customs when there is an affirmative ruling in an AD case. In the rest of the paper, we use the terms "margin" and "duty" interchangeably.

cases: (i) both firms engage in FDI, (ii) firm A invests, but firm B does not, (iii) firm A does not invest, but firm B invests, and (iv) both firms do not invest.[8]

Case (i) is the simplest. Using Eq. (4), if

$$k^{A} < \pi_2^{A}(0,t^{B}) - \pi_2^{A}(\tau^{A},t^{B}) \text{ and } k^{B} < \pi_2^{B}(0,t^{A}) - \pi_2^{B}(\tau^{B},t^{A}) \tag{6}$$

in equilibrium, then $\hat{I}^{A} = 0$ and $\hat{I}^{B} = 0$ (both firms engage in FDI) and case (i) arises. Hence, period-two profits are independent of the firms' first-period output choices because neither firm will face a tariff in period 2, and the first period simply becomes a one-shot game. Thus, firm A's best-response function will correspond to the usual one in a one-shot Cournot game.

In case (ii), inequalities for each firm in Eq. (4) are such that $\hat{I}^{A} = 0$ and $\hat{I}^{B} = 1$. The first-order condition for firm A in this case is given by

$$p + p'x_1^{A} - c' + \delta^{A}\left(\frac{\partial \pi_2^{A}}{\partial t^{B}}\right)\left(\frac{\partial \tau^{B}}{\partial x_1^{A}}\right) = 0 \tag{7}$$

Since firm A's profit in period 2 is increasing in firm B's tariff and $\partial(p + p'x_1^{A} - c')/\partial x_1^{A} < 0$, the best-response function associated with case (ii) implies higher first-period output for firm A relative to case (i).

In case (iii), $\hat{I}^{A} = 1$ and $\hat{I}^{B} = 0$. Therefore, the first-order condition to Eq. (5) for firm A becomes

$$p + p'x_1^{A} - c' + \delta^{A}\left(\frac{\partial \pi_2^{A}}{\partial t^{A}}\right)\left(\frac{\partial \tau^{A}}{\partial x_1^{A}}\right) = 0 \tag{8}$$

Since the last term on the LHS is negative, firm A's best-response function in case (iii) lies to the left of its best-response function under case (i).

Finally, in case (iv) we have the following first-order condition for firm A:

$$p + p'x_1^{A} - c' + \delta^{A}\left[\left(\frac{\partial \pi_2^{A}}{\partial t^{A}}\right)\left(\frac{\partial \tau^{A}}{\partial x_1^{A}}\right) + \left(\frac{\partial \pi_2^{A}}{\partial t^{B}}\right)\left(\frac{\partial \tau^{B}}{\partial x_1^{A}}\right)\right] = 0 \tag{9}$$

The first term in brackets in Eq. (9) is negative and the second term is positive. However, provided that firm A's profit is more sensitive to its own tariff than firm B's tariff (i.e., $|\partial \pi_2^{A}/\partial \tau^{A}| > |\partial \pi_2^{A}/\partial \tau^{B}|$), and that a firm's tariff is more sensitive to its own first-period output than the other firm's first-period output, it is easy to verify that firm A's best-response function under case (iv) lies between that of case (i) and case (iii). Fig. 1 shows firm A's best-response function under the four cases. These functions are drawn with the assumption that certain parameter conditions are satisfied and may not be relevant for the whole range.

[8]It is straightforward from Eq. (4) that case (i) arises when both $k^{A}$ and $k^{B}$ are sufficiently close to zero. Likewise, when the fixed costs of FDI are prohibitively large, then case (iv) arises.

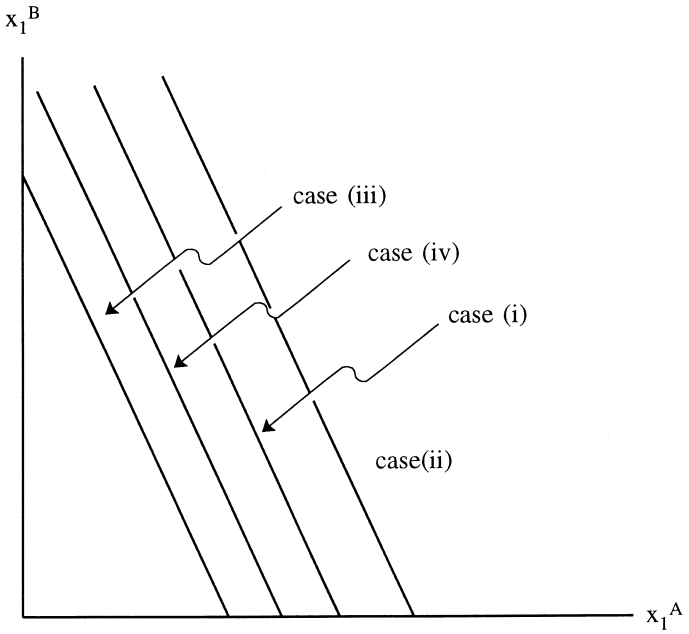


Fig. 1. Firm A's best-response functions in cases (i)–(iv).

### 2.5. Subgame-perfect equilibria

The actual equilibrium is determined by the intersection of firm A and B's relevant best-response functions. However, appropriate reaction functions (as shown in Fig. 1) are determined by the firms' dichotomous choice concerning location of production. We represent the firms' FDI decisions using what we call "indifference lines," which we formally derive in Appendix A – $K^i$ which denotes firm $i$'s indifference between the two production locations when the other firm does not engage in FDI, and $\kappa^i$ which indicates firm $i$'s indifference when the other firm locates production in the home country. These indifference lines are drawn in Fig. 2. If the first period output combination $(x_1^A, x_1^B)$ lies outside of $K^A$ in Fig. 2, for example, then the resultant tariff rate for country A becomes so high that even when firm B does not engage in FDI, firm A prefers FDI to exporting. On the other hand, if $(x_1^A, x_1^B)$ lies below $K^A$, firm A does not face a very high tariff in period 2 and firm A prefers exporting. If the tariff rates react to firm A and B's first-period output in the same way, the indifference conditions have a slope of $-1$ in the $(x_1^A, x_1^B)$ space (see Appendix A), and $\kappa^i$ always lies outside of $K^i$ for each firm. As discussed above, we model the firms as having different fixed costs of FDI. Thus, without loss of generality, we evaluate the case where $k^A < k^B$ so that $K^B$ lies outside of $K^A$ and $\kappa^B$ lies outside of $\kappa^A$.

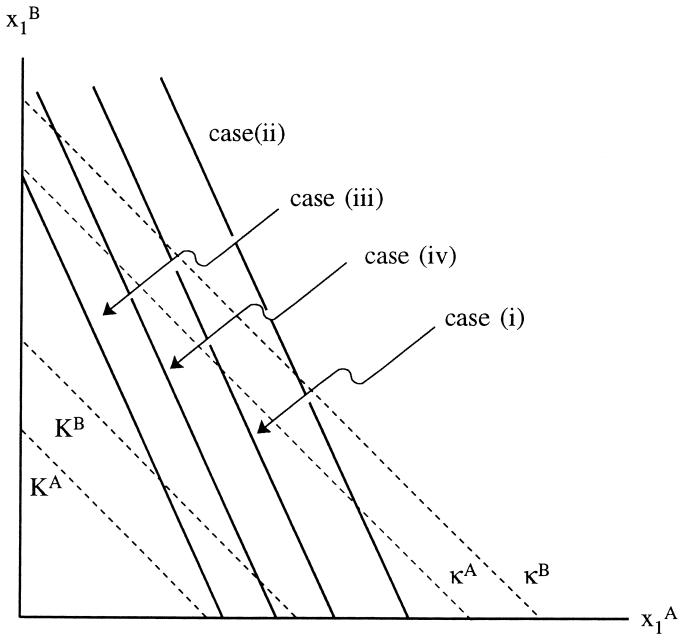


Fig. 2. Firm A's best-response functions and FDI indifference conditions.

We use the indifference lines along with the firms' best-response functions to illustrate two interesting cases among many possible outcomes: case (i) – the simple case of tariff jumping behavior by both firms, and case (ii) – the case where firm A engages in FDI and protection-building trade behavior because firm B does not engage in FDI in equilibrium.[9]

If the cost of FDI for both firms, $k^A$ and $k^B$, are sufficiently small relative to the home country's market size and the tariff function, then one equilibrium has both firms setting up production in the home market. We call this case (i) and Fig. 3 illustrates this possibility. In Fig. 3 as drawn, case (i) equilibrium arises since the intersection of case (i) reaction functions for firm A and B intersect above both indifference lines, $\kappa^A$ and $\kappa^B$; i.e., each firm prefers to FDI even when its competitor invests. As we found in the previous subsection, when both firms engage in FDI in the second period, tariff rates do not matter. Therefore, both firms export the static Cournot outputs in the first period.

Fig. 4 illustrates the case in which firm A engages in FDI in the second period

[9]For given values of the parameters, the equilibrium may not be unique and there may be mixed strategy equilibrium. However, every pure-strategy equilibrium in the model falls into one of four types we discuss in the text. In addition, the existence of multiple or mixed strategy pure-strategy equilibria does not modify in any way our main point that our unique pure-strategy equilibria (in particular, protection-building trade) are possibilities.

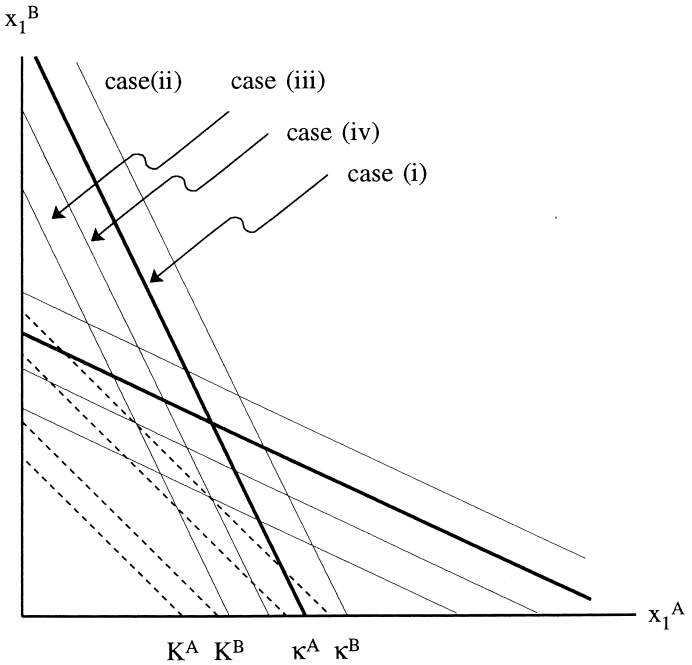


Fig. 3. Case (i): Both firms FDI in period 2.

while firm B exports from its own country – case (ii). Since firm A's case (ii) best-response function lies outside the static one and firm B's case (ii) best-response function lies inside of its static best-response function, their intersection lies southeast of the static Cournot equilibrium, which is indicated by point S in the diagram. This reflects firm A's incentive to build up future tariff rates for firm B by exporting a larger quantity in period 1 since firm B does not invest in the second period. On the other hand, provided firm B keeps exporting, firm B lowers its own first-period exports to lower its tariff rate in period 2. Therefore, this is the interesting case in which firms react in a completely different manner when confronted with the same prospect of future protection.

However, some care is necessary in evaluating this equilibrium. As drawn, the intersection of the two best-response functions at point 1 in Fig. 4 cannot be the equilibrium level of first-period exports, since the equilibrium must lie inside of firm B's indifference condition, $\kappa^B$. Therefore, firm A's ability to build up the tariff rate for firm B by increasing first-period exports is limited by the $\kappa^B$ condition. Thus, the equilibrium is given by the intersection of $\kappa^B$ and firm B's case (ii) best-response function, which is indicated as point 2 in Fig. 4. However, since this equilibrium point in $(x_1^A, x_1^B)$ space still lies southeast of the standard Cournot outputs, this equilibrium still represents the case where firm A exports

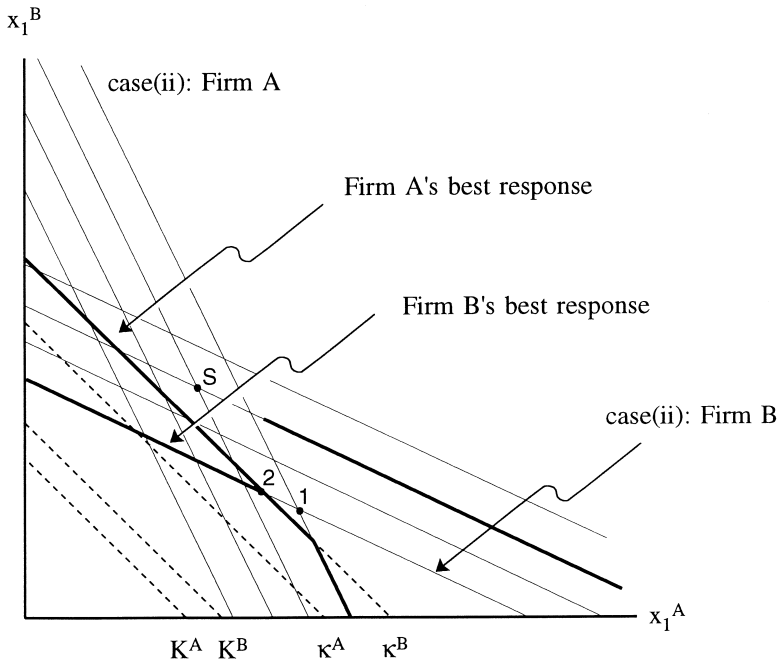


Fig. 4. Case (ii): Firm A invests and firm B exports in period 2.

more in the first period (i.e., protection-building trade), while firm B restricts first-period exports because of the second-period tariff threat. It is straightforward to show the case where neither firm locates production to the home country and, hence, both lower their first-period exports to reduce the second-period tariff they face. Thus, our model allows for the possibility of (1) no strategic reaction by foreign firms because both tariff jump, (2) traditional endogenous protection reaction by foreign firms, and (3) protection-building trade by one firm as the other firm limits first-period exports.

### *2.6. Sensitivity of results to alternative model specifications*

As is well known, strategic trade policy conclusions from duopoly models such as the one we present here can often be sensitive to model assumptions. First, as Fischer (1992) has shown in a similar endogenous protection setting, whether firms compete in quantities or prices (i.e., whether decision variables are strategic substitutes or complements) can significantly affect results. This is important here, because other papers, including Prusa (1994), have modeled expected AD/CVD duties as functions of prices in an oligopoly price-setting game. However, our results, and in particular the protection-building trade effect, are strengthened by

the fact that they are not sensitive to whether firms compete in quantities or prices, with appropriate assumptions on the tariff function. In particular, one could specify the future tariff function as an inverse relationship to first-period prices, which is similar to Prusa (1994). Given this tariff function, allowing firms to compete in prices can yield equilibria similar to the ones we characterize above, including protection-building trade. This is because a tariff on a rival in a price-setting game will raise the rival's price and allow your firm greater profitability through the ability to raise price some as well. Thus, a firm may have incentives, given certain differing costs of FDI, to dump in the first period (i.e. lower price) to obtain a tariff on its rival in the second period and enjoy greater profits if it invests in the host country; i.e., protection-building trade is a possible equilibrium.

Our main results are also generalizable to specifying protection as quantitative restrictions, such as VERs, instead of protection leading to tariffs. Importantly, the assumption of interdependence between a firm's future protection and its rivals actions is just as defendable in the case of a VER, as in AD/CVD protection. The main reason, as noted by Anderson (1992), (1993), is that VERs often arise from AD investigations. Thus, all the reasons that cause interdependence with AD/CVD protection carry over to VER protection. Even if there is no preceding AD/CVD investigation, trade diversion concerns often mean that all foreign firms are subject to VER protection once an investigation begins.[10]

## 3. Empirical relevance of protection-building trade

The motivation for the model above is to explain strategically different reactions on the part of exporting rival firms when facing possible protection. In our model, differences in firm strategies occur when a protection-building trade equilibrium emerges and we now briefly detail three cases that are consistent with such an equilibrium: U.S. AD cases in tapered roller bearings and color picture tubes, as well as the U.S. escape clause investigation and resulting VER on Japanese automobiles. In all three cases, the firms which had established or at least committed to producing in the United States at the time of the case were also the firms found to be the most aggressive dumpers or, in the case of Honda and the Japanese auto VERs, the only firms with a publicly stated intention of higher export levels. The traditional endogenous protection literature does not predict this aggressive behavior on the part of some firms, and while the model of Anderson (1992), (1993) may have some explanatory power for the Japanese auto VER case, his model does not address protection cases where there is no discussion of a VER, as in the AD cases we analyze.

[10] A nice example of this is the U.S. machine tool VERs placed on imports from *both* Japan and Taiwan, which began with an investigation under section 232 of the Trade Expansion Act of 1962, not an AD/CVD investigation.

### 3.1. AD case in tapered roller bearings

On August 25, 1986, Timken Corporation, a U.S. manufacturer of tapered roller bearings, filed separate antidumping petitions against imports from Hungary, Italy, Japan, China, Romania and Yugoslavia (USITC cases 731–341 through 731–346, respectively). By March 1987, the USDOC ruled that there was dumping in each case and the USITC ruled that imports in each case had caused ''material injury'' to the domestic industry. Columns 1 and 2 of Table 1 indicate the countries involved in the tapered roller bearing cases and the 1985 dollar value of imports from each country subject to the investigation, while columns 3 and 4 detail the exporting firms from each country and the ad valorem duty assessed after USDOC's final determination. As mentioned earlier, the duty assigned to ''all others'' is a trade-weighted margin that is applied in the future to any firm from the subject country that imports to the U.S. Based on the ''all other'' duty for Japan, it is easy to see that the NTN Corporation was responsible for most of the Japanese imports into the United States, which was the most substantial portion of imported tapered roller bearings from all countries in 1985.

Protection-building trade would suggest that these final duties could vary substantially across the investigated firms. In particular, firms that are already

Table 1
U.S. antidumping cases in tapered roller bearings, 1986–87: Investigated countries and firms, 1985 import values, and ad valorem final margins

| Country | 1985 imports ($ million) | Firm | Ad valorem final margin (%) |
|---|---|---|---|
| Hungary | 1.785 | Magyar Gordulocsogy Muvek | 7.42 |
| | | All others | 7.42 |
| Italy | 1.034 | RIV-SKF | 124.75 |
| | | All others | 124.75 |
| Japan | 104.685 | American Koyo Bearing Manufac. Corp. | 77.44 |
| | | NTN Corp. | 47.05 |
| | | All others | 47.57 |
| China | 0.886 | China National Machinery and Equipment Import and Export Corp. | 0.97 |
| | | All others | 0.97 |
| Romania | 7.046 | Technoimportexport | 8.70 |
| | | All others | 8.70 |
| Yugoslavia | 1.244 | Unis | 33.61 |
| | | All others | 33.61 |

Sources: Countries, firms, and ad valorem final margins recorded from various issues of the *Federal Register*. 1985 import values are taken from the U.S. International Trade Commission final reports that accompany each case.

located, or have plans to be located, in the U.S. market will more likely dump their product. Thus, these firms should receive larger margins. Table 1 shows that the Italian-based RIV-SKF and the Japanese firms obtained substantially larger duties, while firms in China, Romania, and Hungary received quite low duties.[11] Consistent with the protection-building trade hypothesis, these firms with larger duties were also located (or locating) in the United States at the time of the investigation, while the state-controlled firms from China, Hungary, Romania, and Yugoslavia were not. In particular, SKF, the parent of RIV-SKF, has produced tapered roller bearing at a plant in Kentucky since the early 1960s.[12] With respect to the Japanese firms, the American Koyo Bearing Manufacturing Company has been manufacturing in the United States since 1975 (Japan Economic Institute, 1992). NTN Corporation had established a bearings manufacturing plant in the United States in 1975 as well, and had just recently acquired a fairly large U.S. bearings manufacturer (the Bower Corporation with two manufacturing plants and 1000 employees) in 1985. Thus, the firm which was responsible for most of the import volume of tapered roller bearings in 1985 not only received one of the higher margins, but had just greatly expanded its manufacturing presence in the United States. At the same time, production in the United States for the state-controlled firms was most likely a prohibitive option.

Thus, these facts suggest that there may have been protection-building trade motives on the part of the NTN Corporation, and to some extent SKF and Koyo Seiko, which owned the American Koyo Bearing Manufacturing Corp.[13] If the goal was to keep out the state-controlled firms, there may be a question whether their tactics worked, given the relatively small duties assigned the state-controlled firms. However, as Boltuck et al. (1991) explain, the administration of antidumping laws makes any positive duty a serious issue. First, final duties are only estimates. Each year, duties are subject to a review upon request by a subject party. If the duty is reviewed, a higher duty could be found and the additional amount of duties are collected in arrears. This creates quite a bit of uncertainty. In addition, it is not the foreign firm, but rather the domestic importer, that has

[11]One might expect that countries that are not engaged in protection-building behavior would receive no margin. However, as mentioned earlier, Boltuck et al. (1991) detail how procedural biases at the USDOC leads to a finding of positive duties in virtually all cases.

[12]This information was obtained from the communications department at SKF's U.S. headquarters.

[13]Ideally, one would like to construct a firm-level time series of import and pricing data during the years preceding and during the investigation to explore the possibility of protection-building trade. However, firm-level pricing and import data are not publicly available in these cases. However, we used the NBER database on imports detailed by Feenstra (1996) to look at subject imports of tapered roller bearings by country. In the case of Japan, U.S. imports of tapered roller bearings went from about 7 000 000 units in 1985–86 to an average of around 5 250 000 in 1987–88. This suggests some significant production shifting on the part of the two Japanese firms involved. With SKF the picture is perhaps even clearer, since they were the only investigated firm from Italy and thus presumably the only Italy-based firm to be exporting to the United States. Quantity went from over a million units in 1986 to less than 100 000 by 1988.

ultimate responsibility to pay any antidumping duties. This creates obvious incentives for the domestic importers to discontinue handling imports that are subject to antidumping duties.

### *3.2. AD case in color picture tubes*

The facts surrounding the 1986–87 U.S. AD case of color picture tubes from Canada, Japan, Korea, and Singapore (USITC case numbers 731–367 through 731–370) are largely consistent with a protection-building story as well. On November 26, 1986, U.S. domestic labor unions petitioned for an investigation into alleged dumping of color picture tubes in the U.S. market by exporters from Canada, Japan, Korea, and Singapore which led to an affirmative decision in November 1987. Dumping duties were assessed on all the investigated firms. Columns 1 and 2 of Table 2 detail the countries that were involved in the investigation and the 1985 value of the imports subject to investigation, while columns 3 and 4 list the firms investigated and final duties. All firms investigated were Japanese, or had Japanese parents, with the exception of Samsung from Korea.

As in tapered roller bearings, the final duties vary considerably across firms. In this case, Toshiba Corporation from Japan receives a substantially higher margin than the other firms. In addition, based on the ''all other'' margin for Japan, Toshiba also had the highest share of Japanese exports to the U.S. during the investigation period. This information may suggest that Toshiba was interested in increasing market share in the U.S. during the investigation period. But during the same period, Toshiba planned on moving their production of color picture tubes

Table 2
U.S. antidumping cases in color picture tubes, 1986–87: Investigated countries and firms, 1985 import values, and ad valorem final margins

| Country | 1985 imports ($ million) | Firm | Ad valorem final margin (%) |
|---|---|---|---|
| Canada | 17.983 | Mitsubishi Canada | 0.65 |
| | | All others | 0.65 |
| Japan | 47.742 | Mitsubishi Electric | 1.34 |
| | | Hitachi | 22.29 |
| | | Matsushita | 22.91 |
| | | Toshiba Corp. | 33.50 |
| | | All others | 30.02 |
| Korea | 36.274 | Samsung | 1.91 |
| | | All others | 1.91 |
| Singapore | 17.195 | Hitachi Electric | 5.33 |
| | | All others | 5.33 |

Sources: Countries, firms, and ad valorem final margins recorded from various issues of the *Federal Register*. 1985 import values are taken from the U.S. International Trade Commission final reports that accompany each case.

from Japan to the United States as well. In fact, the USDOC reports in the *Federal Register* (FR 24321, Vol. 52, No. 125, June 30, 1987): ''On March 18, 1987, Toshiba Corporation notified us that they would not be responding to the questionnaire because they are moving their color picture tube operations from Japan to the United States.'' Japan Economic Institute (1992) confirms that a new Toshiba color picture tube plant opened in 1986 in Horseheads, New York, and as of 1990 employed 1300 workers. No other Japanese firms built a color picture tube plant in the years preceding or during the case. Thus, while Toshiba did not cooperate with the U.S. AD investigation, all other firms provided proprietary pricing data and spent a significant amount of effort to defend themselves to receive as low a final duty as possible.[14]

### *3.3. VERs in Japanese automobiles*

Finally, there is anecdotal evidence that protection-building trade played a role in perhaps the most famous and largest incident of targeted protection by the U.S. government: the case of Japanese automobile exports to the United States in the early 1980s which led to VERs in 1981. In early 1980 an escape clause investigation was initiated at the USITC, creating a signal that protection against Japanese autos was a strong possibility. Yet, protection was not inevitable,[15] and Japanese auto firms had an opportunity to influence the ultimate decision through their actions. Once again, we find diverse strategies by the Japanese auto firms indicative of protection-building trade behavior.

The issue of engaging in FDI in the United States was a sensitive one for the Japanese auto firms during this time. With no experience at producing in the United States, Japanese automakers were very unsure about using U.S. workers they perceived as less productive to manufacture autos. By the early part of 1980 however, Honda had made a commitment and began building a plant in Marysville, Ohio, while Nissan and Toyota still expressed their unwillingness to locate production in the United States. Thus, by late 1980, Honda had a lead time of at least a year of getting viable production in the United States. From that point onward, the firms' publicly stated intentions diverged noticeably. As noted in the Introduction, Nissan and Toyota publicly announced that they expected auto exports to the U.S. to slow in the short run, while Honda boldly predicted

[14] *Federal Register* notices 24316-23 and 44161-94, 1987, record the many petitions filed and issues contended by all Japanese firms investigated, with the exception of Toshiba.

[15] In fact, the final determination of the escape clause investigation by the USITC in December 1980 was negative, and it appeared that President Reagan was not going to act until rumblings in the Congress pushed the president to negotiate the initial VERs, which were concluded in April 1981.

increased export growth. The actual data reveal decent growth of exports from all three firms to the U.S. market during this period, which is consistent with Anderson's prediction of competition for future export licenses. However, this still leaves open the question why the firms would differ so markedly in their publicly-stated intentions, since these public statements arguably may have more impact on the probability of a VER than the export flows. With a relative advantage of having host country production in place by the time future protection occurred, Honda appears to have at least engaged in the rhetoric of protection-building trade during 1980, while the other Japanese automakers followed the traditional strategy of appeasement. Of course, Honda's relative advantage in producing in the United States may have been short-run (Nissan and Toyota located significant manufacturing plants in the United States by the latter half of the 1980s), but this short-run advantage may have been extremely important to Honda ex ante, since the U.S. consumer's preferences for Japanese autos was growing fairly rapidly at the time of their investment and the market was in a major development phase for Japanese automakers.

While these case studies detail behavior that is consistent with protection-building trade, this evidence is only suggestive, not conclusive. Alternative explanations could be offered to explain why firms that are exporting more aggressively are investing in the target market as well. For example, firms that decide to invest in a host country may aggressively export to that market to increase market share beforehand, so that their customer base in the host country can support the scale of operation necessary to make the new manufacturing plant most efficient. This alternative motivation for aggressive exporting behavior before investment does not involve strategic considerations of rivals, and the intention of the firm is certainly not to incite protectionist pressures. The quid pro quo hypothesis may suggest another alternative – aggressive exporters may invest to appease protectionist sentiment arising from their exporting behavior. However, if that was the intention of the firms in our AD case studies, this ploy failed, as the firms that engaged in FDI still ended up with the highest AD duties. A final consideration is that a home government could apply protectionist penalties on the firms' U.S. plants, as occurred in the case of Honda and Kawasaki U.S. plants in the section 201 motorcycle case in 1983. This is a case that again shows a correlation between aggressive exporting (especially on the part of Honda) and FDI, but if protection-building trade was the intention, it evidently backfired.[16] Future empirical work hopes to take a more systematic look at the connection between investigated firms' FDI decisions and dumping margins in U.S. antidumping cases for possible patterns of protection-building trade.

[16]We thank Robert Feenstra for pointing out this case to us.

## 4. Conclusion

This paper has shown that the option of FDI may have significant strategic effects among foreign oligopolistic firms competing for a market where protection is endogenous with their export levels to that market. As we have shown, if foreign firms' protection levels depend to some extent on each other's actions and these firms have differing (expected) costs of FDI relative to exporting, consideration of FDI in a strategic setting with endogenous protection can lead to quite different results than previously considered. In addition to the standard endogenous protection result that exporting firms will strategically lower exports levels to obtain lower levels of protection, our model also allows for the possibility of classic tariff-jumping (which involves no strategic change in exports) and a new phenomenon which we label protection-building trade. Protection-building trade occurs in our model when foreign firms, which have relative advantages in FDI over exporting, build protectionist pressures in the host country (through their own increased exports) to provide barriers against other foreign competitors in future periods.

Our second point is that protection-building trade seems to have explanatory power forming the substantially varied behavior of firms when facing possible protection, particularly those cases where strategic reactions do not fit predictions by the standard endogenous protection literature or the model of Anderson (1992), (1993). Our case studies of U.S. AD cases in tapered roller bearings and color picture tubes and the escape clause investigation of Japanese autos, show that firms with the most aggressive import behavior immediately preceding and during the investigations were systematically the ones that had recently established a significant production presence in the United States.

Policy implications follow immediately. First, when protectionist programs are structured so that an exporting firm's protection levels depend on the behavior of rivals, some foreign firms can use host country protectionism to block out future and current rivals located outside the protectionist market. This means that protection levels can often be higher in the host country due to the protection-building trade behavior of one or more foreign firms than otherwise would be the case. This, of course, implies greater relief for the domestic industry, but larger deadweight losses for the economy.

The second policy issue concerns the disadvantages such endogenous protection gives to those firms which prefer exporting to FDI. It may be that firms from less-developed countries and/or smaller firms that have no multinational experience often comprise the type of firms for which FDI is a very prohibitive option. The state-controlled firms in the tapered roller bearing case may be examples of this. In addition, governments may often create disincentives for their firms to service foreign markets through FDI because of concerns of ''hollowing out'' their domestic economy. However, our analysis shows that these types of

government policies may cause their exporting firms to be more susceptible to protection-building trade on the part of their rivals in the world market.

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## Appendix A

### Derivation of production location indifference conditions

To derive conditions for production location indifference, we begin by focusing on firm A. Firm A will locate production in the home country in period 2 if and only if Eq. (4) holds. Replacing the inequality in Eq. (4) with equality, we have

$$k^{\mathrm{A}} = \pi_2^{\mathrm{A}}[0,\tau^{\mathrm{B}}(x_1^{\mathrm{A}},x_1^{\mathrm{B}})] - \pi_2^{\mathrm{A}}[\tau^{\mathrm{A}}(x_1^{\mathrm{A}},x_1^{\mathrm{B}}),\tau^{\mathrm{B}}(x_1^{\mathrm{A}},x_1^{\mathrm{B}})] \tag{A.1}$$

Differentiation of Eq. (A.1) yields

$$\frac{\mathrm{d}x_1^{\mathrm{B}}}{\mathrm{d}x_1^{\mathrm{A}}} = -\frac{z\partial\tau^{\mathrm{B}}/\partial x_1^{\mathrm{A}} - y\partial\tau^{\mathrm{A}}/\partial x_1^{\mathrm{A}}}{z\partial\tau^{\mathrm{B}}/\partial x_1^{\mathrm{B}} - y\partial\tau^{\mathrm{A}}/\partial x_1^{\mathrm{B}}} \tag{A.2}$$

where $y = \partial\pi_2^{\mathrm{A}}[\tau^{\mathrm{A}},\tau^{\mathrm{B}}]/\partial\tau^{\mathrm{A}} < 0$ and $z = (\partial\pi_2^{\mathrm{A}}[0,\tau^{\mathrm{B}}]/\partial\tau^{\mathrm{B}}) - (\partial\pi_2^{\mathrm{A}}[\tau^{\mathrm{A}},\tau^{\mathrm{B}}]/\partial\tau^{\mathrm{B}}) > 0$. Moreover, assuming that the tariff function is symmetric, the slope in Eq. (A.2) becomes $-1$. The graph of this line in $(x_1^{\mathrm{B}},x_1^{\mathrm{A}})$ space we denote as $K^{\mathrm{A}}$ (see Fig. 2). Above and to the right of the line $K^{\mathrm{A}}$, firm A will locate production in the home country, given that firm B does not locate in the home country. Differentiating Eq. (A.1) with respect to $k^{\mathrm{A}}$ and $x_1^{\mathrm{B}}$, holding $x_1^{\mathrm{A}}$ constant, we have

$$\mathrm{d}k = \left[z\frac{\partial\tau^{\mathrm{B}}}{\partial x_1^{\mathrm{B}}} - y\frac{\partial\tau^{\mathrm{A}}}{\partial x_1^{\mathrm{B}}}\right]\mathrm{d}x_1^{\mathrm{B}} > 0 \tag{A.3}$$

Thus, the indifference condition for firm A regarding FDI shifts out as the fixed cost of FDI increases. We denote this indifference condition as $\kappa^{\mathrm{A}}$ in Fig. 2. It is straightforward to show that $\kappa^{\mathrm{A}}$ lies outside of $K^{\mathrm{A}}$ since $\partial^2\pi_2^{\mathrm{A}}/\partial\tau^{\mathrm{A}}\,\partial\tau^{\mathrm{B}} < 0$. If

firm B does locate production in the home country, we can derive a similar indifference condition for the production location of firm A.

## References

Anderson, J.E., 1992. Domino dumping I: Competitive exporters. American Economic Review 82, 65–83.

Anderson, J.E., 1993. Domino dumping II: Anti-dumping. Journal of International Economics 35, 133–150.

Bagwell, K., Staiger, R.W., 1994. The sensitivity of strategic and corrective R&D policy in oligopolistic industries. Journal of International Economics 36, 133–150.

Baldwin, R.E., Steagall, J.W., 1994. An analysis of ITC decisions in antidumping, countervailing duty and safeguard cases. Weltwirtschaftliches Archiv 130, 290–308.

Besley, T., Suzumura, K., 1992. Taxation and welfare in an oligopoly with strategic commitment. International Economic Review 33, 413–432.

Bhagwati, J.N., Srinivasan, T.N., 1976. Optimal trade policy and compensation under endogenous uncertainty: The phenomenon of market disruption. Journal of International Economics 6, 317–336.

Bhagwati, J.N., Brecher, R.A., Dinopoulos, E., Srinivasan, T.N., 1987. Quid pro quo foreign investment and welfare: A political-economy-theoretic model. Journal of Development Economics 27, 127–138.

Blonigen, B.A., Feenstra, R.C., 1997. Protectionist threats and foreign direct investment. In: Feenstra, R.C. (Ed.), The Effects of U.S. Trade Protection and Promotion Policies. University of Chicago Press, Chicago, IL, pp. 55–80.

Blonigen, B.A., Figlio, D.N., 1996. Voting for protection: Does direct foreign investment influence legislator behavior? Working paper, University of Oregon.

Boltuck, R., Francois, J.F., Kaplan, S., 1991. The economic implications of the administration of the U.S. unfair trade laws. In: Boltuck, R., Litan, R.E. (Eds.), Down in the Dumps: Administration of the Unfair Trade Laws. The Brookings Institute, Washington, DC, pp. 152–195.

Buckley, P.J., Casson, M., 1981. The optimal timing of foreign direct investment. Economic Journal 91, 75–87.

Feenstra, R.C., 1996. U.S. imports, 1972–1994: Data and concordances. NBER Working Paper No. 5515. National Bureau of Economic Research, Cambridge, MA.

Fischer, R., 1992. Endogenous probability of protection and firm behavior. Journal of International Economics 32, 149–163.

Flam, H., 1994. EC members fighting about surplus: VERs, FDI, and Japanese cars. Journal of International Economics 36, 117–131.

Froot, K.A., Stein, J., 1991. Exchange rates and foreign direct investment: An imperfect capital markets approach. Quarterly Journal of Economics 106, 1191–1217.

Goodman, J.B., Spar, D., Yoffie, D.B., 1996. Foreign direct investment and the demand for protection in the United States. International Organization 50, 565–591.

Grossman, G., Helpman, E., 1994. Foreign investment with endogenous protection. NBER Working Paper No. 4876. National Bureau of Economic Research, Cambridge, MA.

Hansen, W.L., Prusa, T.J., 1996. Cumulation and ITC decision-making: The sum of the parts is greater than the whole. Economic Inquiry 34, 746–769.

Hansen, W.L., Prusa, T.J., 1997. The economics and politics of trade policy: An empirical analysis of ITC decision making. Review of International Economics 5, 230–245.

Horstmann, I.J., Markusen, J.R., 1989. Firm-specific assets and the gains from trade. Economica 56, 41–48.

Japan Economic Institute, 1992. Japan's Expanding U.S. Manufacturing Presence: 1990 Update. Japan Economic Institute, Washington, DC.

Leidy, M.P., 1994. Quid pro quo restraint and spurious injury: Subsidies and the prospect of CVDs. In: Deardorff, A., Stern, R. (Eds.), Analytical and Negotiating Issues in the Global Trading System. University of Michigan Press, Ann Arbor, MI, pp. 263–305.

Markusen, J.R., 1984. Multinationals, multi-plant economies, and the gains from trade. Journal of International Economics 16, 205–226.

Moore, M., 1992. Rules or politics? An empirical analysis of ITC antidumping decisions. Economic Inquiry 30, 449–466.

McAfee, R.P., Schwartz, M., 1994. Opportunism in multilateral vertical contracting: Nondiscrimination, exclusivity, and uniformity. American Economic Review 84, 210–230.

Prusa, T.J., 1994. Pricing behavior in the presence of antidumping law. Journal of Economic Integration 9, 260–289.

Prusa, T.J., 1997. The trade effects of U.S. antidumping actions. In: Feenstra, R.C. (Ed.), The Effects of U.S. Trade Protection and Promotion Policies. University of Chicago Press, Chicago, IL, pp. 191–213.

Salop, S.C., Scheffman, D.T., 1983. Raising rivals' costs. American Economic Review 73, 267–271.

Salop, S.C., Scheffman, D.T., 1987. Cost-raising strategies. Journal of Industrial Economics 36, 19–34.

Smith, A., 1987. Strategic investment, multinational corporations and trade policy. European Economic Review 31, 89–96.

Staiger, R.W., Wolak, F.A., 1992. The effect of domestic antidumping law in the presence of foreign monopoly. Journal of International Economics 32, 265–287.

Zhao, L., 1996. The complementarity between endogenous protection and direct foreign investment. Economics and Politics 8, 61–72.