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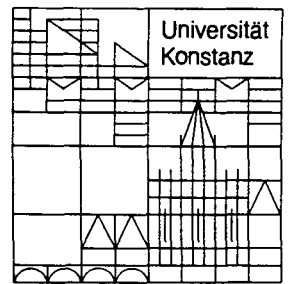
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**Sonderforschungsbereich 178
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Diskussionsbeiträge

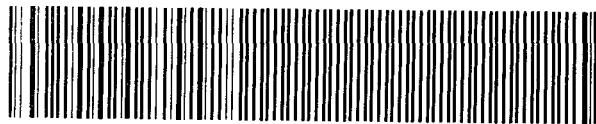
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**The Multinational Firm
and International Trade Policy**

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THE MULTINATIONAL FIRM AND INTERNATIONAL TRADE POLICY

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Abstract

This paper examines the relation between the multinational firm and the determination of international trade policy. At issue is whether the multinational firm exerts a protectionist or liberalizing influence on countries' national trade policies. Vertical integration appears quite unambivalently to give the multinational firm reason to favor liberal international trade policies. Horizontally integrated multinational enterprises, on the other hand, are inherently more protectionist than national firms since they own local import-competing production facilities at home and abroad, and hence have an interest in protection in both markets. Such protectionist presumption notwithstanding, we nevertheless demonstrate that via the process of political competition the horizontally integrated multinational enterprise has a liberalizing influence on the determination of countries' international trade policies.

This paper examines the relation between the multinational firm and the determination of international trade policy. At issue is whether the multinational firm exerts a protectionist or liberalizing influence on countries' national trade policies.

Multinational activity can entail horizontal or vertical integration of production across national boundaries ¹. Vertical integration appears quite unambivalently to give the multinational firm reason to favor liberal international trade policies, since protectionist policies applied to traded intermediate goods can but add to the firm's costs of internally provided inputs. We accordingly set aside the motives to influence international trade policies associated with vertical integration which evidently point to support for liberal trading policies, and focus on the relation between the formulation of trade policy and the horizontally integrated multinational firm.

Our setting for the investigation of how the horizontally integrated multinational firm influences international trade policy has the following characteristics. We view the multinational firm as arising in the course of a change of ownership of production facilities located in different policy jurisdictions. International trade policies in the jurisdictions are the outcome of political competition between candidates seeking political office, and we investigate how a change from national to multinational ownership of production facilities is reflected in the equilibrium trade-policy

positions adopted by the candidates. Candidates for political office in each jurisdiction are portrayed as influenced in the trade policy proposed for an industry by campaign contributions received from principals with a stake in the outcome of policy determination. These principals are, in addition to multinational enterprises with plants in each jurisdiction, national firms which are distinguished from their multinational counterparts in having production facilities located in one jurisdiction only.²

The multinational firms service markets exclusively from the output of their local production facilities, whereas national firms - trade policies permitting - engage in international trade, servicing foreign markets with exports. Horizontally integrated multinational enterprises are as a consequence inherently more protectionist than national firms; since the national firm, while seeking protection at home, benefits from market access abroad for its exports. The multinational enterprise on the other hand owns local import-competing production facilities at home and abroad, and hence has an interest in protection in both markets. Horizontal integration which results in multinational ownership of otherwise separate national enterprises thus converts entities which previously had a free-trade interest - although in foreign markets, not at home - into a single entity which has but protectionist interests. There is thus a protectionist presumption associated with the influence of the horizontally integrated multinational enterprise on international trade policy.

Such protectionist presumption notwithstanding, we nevertheless demonstrate that via the process of political competition the horizontally integrated multinational enterprise has a liberalizing influence on the determination of countries' international trade policies.

Since multinational ownership in itself increases protectionist sentiments, the liberalizing influence of the multinational enterprise that we shall demonstrate can but derive from the changed incentives confronting other agents. We set out the model which encompasses these incentives in section 1. Section 2 describes firms' optimizing behavior, as Cournot-Nash competitors in output markets, and also with respect to decisions regarding campaign contributions directed at influencing the trade-policy positions of candidates for political office.

The central issue, that of the influence of the horizontally integrated multinational enterprise on the conduct of countries' international trade policies, is addressed in section 3: via the process of political competition, a multinational ownership structure is shown to exert a liberalizing influence on countries' trade policies. Section 4 elaborates on this result. The final section compares our conception of the relation between multinational activity and international trade policy with views of the relation between the multinational firm and trade policy explicated in previous literature.

1. The Model

A. National and multinational firms

We adopt the partial equilibrium setting of an industry composed of firms in two countries producing a homogeneous internationally traded good. Firms are Cournot-Nash oligopolists, hence allowing for the possibility of two-way or intra-industry trade in the same good. The demand function for the industry's output in country 1 is

$$(1) \quad p = a - bQ$$

and in country 2

$$(2) \quad z = \alpha - \beta\Omega$$

where p and z are domestic prices and Q and Ω are respective domestic sales in the two economies.

There are n production plants in country 1 and v production plants in country 2. Market structure is established by the pattern of ownership of production facilities. $(n-s)$ plants in country 1 are owned by national enterprises, and in country 2 $(v-s)$ plants are domestically owned. The remaining plants are owned by s multinational firms, which have production facilities in both economies. All plants are characterized by a constant per unit cost of production c .³

The multinational enterprises accordingly have no incentive to engage in international trade, and in each market therefore sell only locally produced output. The national firms, which own only one production facility, do on the other hand, subject to

trade restrictions, engage in international trade, to service the foreign market via exports.

Profits of a national firm in country 1 are

$$(3) \quad \pi_i = (p-c)q_i + x_i(\phi - c - \tau) \quad i = 1..(n-s)$$

where q_i and x_i respectively denote domestic and foreign sales, and τ is the tariff levied abroad on imports in country 2.⁴ Similarly, for a national firm in country 2, profits are

$$(4) \quad \pi_j^* = q_j^*(p - c - t) + x_j^*(\phi - c) \quad j = 1..(v-s)$$

where t is the tariff levied by country 1. The domestic prices which appear in the profit functions (3) and (4) are increasing functions (up to an autarkic bound) of a country's tariff; hence $p'(t) > 0$, $\phi'(\tau) > 0$.

Like the national firms, the multinational enterprises' profits are composed of earnings from sales in the two markets, and are given by

$$(5) \quad \pi_k^m = q_k^m (p - c) + x_k^m (\phi - c) \quad k = 1..s$$

where q_k^m and x_k^m denote sales (and output) in economy 1 and 2.

B. Political Competition

The national trade policies reflected in the levels of the tariffs t and τ are determined as the outcome of political competition between candidates for political office in the two

policy jurisdictions. Firms' profit-maximizing choices of output and sales in each market are made subject to trade policies in the two jurisdictions, and hence are contingent on the outcome of political competition. Since profits depend upon international trade restrictions, or the absence thereof, firms thus have an interest in influencing the determination of trade policies, which they can do by the provision of campaign contributions directed at influencing the outcome of the political contest in each policy jurisdiction.

In the contest for political office in each jurisdiction, one candidate will have preassociated himself with a liberal trade-policy position toward the industry, the other with a protectionist position. The trade policies actually proposed by each candidate as his or her policy platform will however be the outcome of political optimization, as each candidate formulates a trade-policy position to maximize the probability of election. In principle, thus, the liberal trade-policy and protectionist candidates could announce the same policy, as would occur in a Hotelling type equilibrium.

A candidate's probability of success in a political contest increases with the value of the campaign contributions received, relative to the total value of campaign contributions provided for the contest. Thus, in the contest for political office in country 1, the probability that the liberal trade-policy candidate will be successful is

$$(7) \quad W = \frac{L_f}{L_f + L_A} \cdot$$

where L_L is the value of campaign contributions received by the liberal trade-policy candidate, and L_A is the value of campaign contributions received by the protectionist opponent. The probability of electoral success W^* of the liberal trade-policy candidate abroad is established by campaign contributions in an analogous manner. Liberal trade-policy candidates thus make policy pronouncements with the objective of maximizing W and W^* in their respective contests, while the protectionist candidates formulate trade policies to maximize $(1 - W)$ and $(1 - W^*)$.⁵

2. Economic and Political Optimization

A. Output and sales

Contingent on the trade policies that emerge from political competition, profit-maximizing Nash-equilibrium sales in economy 1 by that economy's national firms, by the national firms of economy 2 in the form of exported output, and by multinational enterprises are respectively described by

$$(8) \quad \frac{\partial \pi_i}{\partial q_i} = (a - c) - b(q_i + Q) = 0 \quad (q_i \geq 0) \quad i=1..n-s$$

$$(9) \quad \frac{\partial \pi_j^*}{\partial q_j^*} = (a - c - t) - b(q_j^* + Q) = 0 \quad (q_j^* \geq 0) \quad j=1..v-s$$

$$(10) \quad \frac{\partial \pi_k^m}{\partial q_k^m} = (a - c) - b(q_k^m + Q) = 0 \quad (q_k^m \geq 0) \quad k=1..s.$$

Multinational enterprises behave as do national firms in their manner of choice of domestic sales. From (8) and (10), in equilibrium $q_i = q_k^m$. The reaction functions which follow from (8) - (10) are then

$$(11) \quad q_i = q_k^m = \frac{(a - c) - (v - s) \cdot bq_j^*}{(n + 1) \cdot b} \quad \begin{array}{l} i = 1 \dots n-s \\ k = 1 \dots s \end{array}$$

$$(12) \quad q_j^* = \frac{(a - c - t) - nbq_i}{(v - s + 1) b} \quad j = 1 \dots v-s$$

which in turn establish profit-maximizing sales as

$$(13) \quad q_i = q_k^m = \frac{(a - c) + (v - s) t}{(z + 1) b} \quad \begin{array}{l} i = 1 \dots n-s \\ k = 1 \dots s \end{array}$$

$$(14) \quad q_j^* = \frac{(a - c) - (n + 1) t}{(z + 1) b} \quad j = 1 \dots v-s$$

where $z \equiv n + v - s$ is the total number of firms (encompassing both economies).

Reflected in (13) and (14) is the protective effect of country 1's tariff. As the tariff t levied in country 1 increases, domestic sales of domestic and multinational firms increase, at the expense of the export sales of the foreign national enterprises.

Setting $q_j^* = 0$ in (14) yields as the tariff which denies foreign national enterprises market access for their exports

$$(15) \quad t_a = \frac{a - c}{n + 1} .$$

Thus, the more competitive is the local market, as indicated by the total number of domestic producers, national and multinational, the lower the level of the protective tariff at which competitive imports cease. Evidently, the more competitive the domestic industry, the greater the domestic output response evoked by a marginal increase in the tariff, and hence overall the smaller the tariff that equates domestic supply and demand in the absence of imports.

Equilibrium sales in country 2 are correspondingly

$$(13') \quad x_i = \frac{(\alpha - c) - (v + 1) \tau}{(z + 1) \beta} \quad i = 1 \dots n-s$$

$$(14') \quad x_j^* = x_k^m = \frac{(\alpha - c) + (n - s) \tau}{(z + 1) \beta} \quad \begin{array}{l} j = 1 \dots v-s \\ k = 1 \dots s \end{array}$$

and the tariff which denies market access to the exports of national firms of country 1 follows from (13') as

$$(15') \quad \tau_a = \frac{\alpha - c}{v + 1} .$$

B. Political optimization

In addition to the economic activity entailed in choice of output and sales in the different markets, firms make decisions regarding participation in the process of political competition whereby equilibrium trade policies are established. The incentives to participate in the political process are demonstrated by substituting (13), (13'), (14) and (14') into (3) - (5), which yields expressions for firms' profits as functions of the trade policies adopted. For national firms in country 1, profits are

$$(3') \quad \pi_1(t, \tau) = [p(t) - c] \cdot \frac{a - c + (v - s) t}{(z + 1) b} \\ + [\phi(\tau) - c - \tau] \cdot \frac{\alpha - c - (v + 1) \tau}{(z + 1) \beta} \quad i = 1 \dots n-s$$

and for national firms of country 2,

$$(4') \quad \pi_j^*(t, \tau) = [p(t) - c - t] \cdot \frac{a - c - (n + 1) t}{(z + 1) b} \\ + [\phi(\tau) - c] \cdot \frac{\alpha - c + (n - s) \tau}{(z + 1) \beta} \quad j = 1 \dots v-s$$

Profits of a multinational enterprise are

$$(5') \quad \pi_k^m(t, \tau) = [p(t) - c] \cdot \frac{a - c + (v - s) t}{(z + 1) b} \\ + [\phi(\tau) - c] \cdot \frac{\alpha - c + (n - s) \tau}{(z + 1) \beta} \quad k = 1 \dots s.$$

The political-support incentives underlying firms' political behavior now follow directly. Taking note of the upper bounds to tariff levels t_a and τ_a established by (15) and (15'), (3') reveals that for national firms of country 1, profits respond to trade policy according to

$$(16) \quad \frac{\partial \pi_1}{\partial t} = \frac{v-s}{z+1} \cdot \left(q_1 + \frac{p-c}{b} \right) > 0$$

$$(17) \quad \frac{\partial \pi_1}{\partial \tau} = -\frac{v+1}{z+1} \cdot \left(x_1 + \frac{\phi-c-\tau}{\beta} \right) < 0$$

thereby indicating an interest in protection at home and free trade abroad. The policy interests of the national firms of country 2 are symmetric: they too seek protection at home and free trade abroad, as reflected in

$$(16') \quad \frac{\partial \pi_j^*}{\partial t} = -\frac{n+1}{z+1} \cdot q_1^* + \frac{p-c-t}{b} < 0$$

$$(17') \quad \frac{\partial \pi_1}{\partial \tau} = \frac{n-s}{z+1} \cdot \left(x_j^* + \frac{\phi-c}{\beta} \right) > 0$$

The interests of the multinational enterprises are revealed as protectionist in both policy jurisdictions. From (5') we observe that

$$(18) \quad \frac{\partial \pi_k^m}{\partial t} = \frac{v-s}{z+1} \cdot \left(q_k^m + \frac{p-c}{b} \right) > 0$$

$$(19) \quad \frac{\partial \pi_k^m}{\partial \tau} = \frac{n-s}{z+1} \cdot \left(x_k^m + \frac{\phi-c}{\beta} \right) > 0$$

These reflections of self-interest in the determination of trade policy underly the campaign contributions chosen to influence the outcome of political competition. Thus national firms support protectionist candidates at home and liberal trade-policy candidates abroad. Multinational enterprises on the other hand provide political support only to protectionist candidates.

Since campaign contributions are made before it is known which candidates will be successful, and hence which policies will be implemented, firms choose campaign contributions to maximize expected profits. Via their campaign contributions, firms influence the probabilities of success of the different candidates, and hence the probabilities of implementation of the trade policies which the different candidates announce.

C. Political competition

The policy equilibrium that is established by the process of political competition can be specified by noting how candidates' probabilities of election respond to marginal changes in their policy pronouncements. With the structure of political support which we have established as deriving from the profit-maximizing objectives of national and multinational firms, the equilibrium which emerges finds candidates maximizing probabilities of election by associating themselves with the most preferred policies of their constituencies. Thus, liberal trade-policy candidates choose free-trade policies, and protectionist candidates announce as their policies the autarkic tariffs specified by (15) and (15').

The outcome of perfect identification of candidates' policy positions with the policies that maximize the profits of their respective political supporters is by no means necessary. For, as we show in the appendix, a candidate's probability of election is a function of the relative stakes which firms have in one candidate's policy rather than the other's being enacted. These relative stakes need not necessarily respond to changed policy pronouncements in the manner of profits of a candidate's supporters. We relegate to the appendix the proof that political competition results in a unique equilibrium wherein each candidate adopts the policy position, free-trade or denial of market access to imports, which maximizes the profit of his constituency, and conversely thereby adopts the trade policy which minimizes the profits of his political opponent's constituency.⁶

3. Multinational organization and trade policy

The political equilibrium specifies the probabilities of free-trade and protectionist outcomes in the two policy jurisdictions. Our objective is to establish how a change from national to multinational ownership of production facilities affects these probabilities, via the effects on the likelihood of electoral success of the liberal trade-policy and protectionist candidates. Since political support for different policies is reflected in campaign

contributions, we proceed by first deriving the expected profit-maximizing values of campaign contributions by national and multinational firms. Thereafter we establish how equilibrium campaign contributions change as a consequence of ownership restructuring when two nationally owned enterprises are replaced by one multinational enterprise.

A. Expected Profits and Campaign Contributions

Since candidates associate themselves with either free trade or prohibitive tariffs, states of the world are characterized by combinations of these two types of trade policies in the different national jurisdictions. Denoting by A a contribution made in support of a protectionist candidate and by F a contribution made in support of a liberal trade-policy candidate, the expected profits of a national enterprise of country 1 encompassing the different state-contingent policy possibilities are

$$\begin{aligned}
 (20) \quad E\Pi_1 &= WW^* \Pi_1(O, O) + W(1 - W^*) \Pi_1(O, \tau_a) \\
 &+ (1 - W)W^* \Pi_1(\tau_a, O) + (1 - W)(1 - W^*) \Pi_1(\tau_a, \tau_a) \\
 &- A_1 - F_1 \qquad i = 1..(n - s)
 \end{aligned}$$

while, for national enterprises of country 2,

$$\begin{aligned}
 (21) \quad E\Pi_j^* &= WW^* \Pi_j^*(O, O) + W(1 - W^*) \Pi_j^*(O, \tau_a) \\
 &+ (1 - W)W^* \Pi_j^*(\tau_a, O) + (1 - W)(1 - W^*) \Pi_j^*(\tau_a, \tau_a) \\
 &- A_j^* - F_j^* \qquad i = 1..(v - s)
 \end{aligned}$$

and for multinational enterprises

$$\begin{aligned}
 (22) \quad E\Pi_k^m &= WW^* \Pi_k^m(O, O) + W(1 - W^*) \Pi_k^m(O, \tau_a) \\
 &+ (1 - W)W^* \Pi_k^m(\tau_a, O) + (1 - W)(1 - W^*) \Pi_k^m(\tau_a, \tau_a) \\
 &- A_k - A_k^* \qquad k = 1..s
 \end{aligned}$$

Campaign contributions that maximize expected profits now follow, for the national firms in both policy jurisdictions, from

$$(23) \quad \frac{\partial E\Pi_1}{\partial A_1} = \frac{F^*}{(F^* + A)^2} [W^* (\Pi_1(\tau_a, O) - \Pi_1(O, O)) + (1 - W^*) (\Pi_1(\tau_a, \tau_a) - \Pi_1(O, \tau_a))] - 1$$

$$\left. \begin{aligned} & \\ & \end{aligned} \right\} \begin{aligned} &= 0, A_1 > 0 \\ &\leq 0, A_1 = 0 \end{aligned}$$

$$(24) \quad \frac{\partial E\Pi_1}{\partial F_1} = \frac{A^*}{(F + A^*)^2} [W(\Pi_1(O, O) - \Pi_1(O, \tau_a)) + (1 - W) (\Pi_1(\tau_a, O) - \Pi_1(\tau_a, \tau_a))] - 1$$

$$\left. \begin{aligned} & \\ & \end{aligned} \right\} \begin{aligned} &= 0, F_1 > 0 \\ &\leq 0, F_1 = 0 \end{aligned}$$

$$(25) \quad \frac{\partial E\Pi_j^*}{\partial A_j^*} = \frac{F}{(F + A^*)^2} [W(\Pi_j^*(O, \tau_a) - \Pi_j^*(O, O)) + (1 - W) (\Pi_j^*(\tau_a, \tau_a) - \Pi_j^*(\tau_a, O))] - 1$$

$$\left. \begin{aligned} & \\ & \end{aligned} \right\} \begin{aligned} &= 0, A_j^* > 0 \\ &\leq 0, A_j^* = 0 \end{aligned}$$

$$(26) \quad \frac{\partial E\Pi_j^*}{\partial F_j^*} = \frac{A}{(F^* + A)^2} [W^* (\Pi_j^*(O, O) - \Pi_j^*(\tau_a, O)) + (1 - W^*) (\Pi_j^*(O, \tau_a) - \Pi_j^*(\tau_a, \tau_a))] - 1$$

$$\left. \begin{aligned} & \\ & \end{aligned} \right\} \begin{aligned} &= 0, F_j^* > 0 \\ &\leq 0, F_j^* = 0 \end{aligned}$$

For the multinational enterprises, contributions to the protectionist candidates follow from

$$(27) \quad \frac{\delta E \Pi_k^m}{\delta A_k} = \frac{F^*}{(F^* + A)^2} [W^* (\Pi_k^m(t_a, 0) - \Pi_k^m(0, 0)) + (1 - W^*) (\Pi_k^m(t_a, \tau_a) - \Pi_k^m(0, \tau_a))] - 1 \quad \left\{ \begin{array}{l} = 0, A_k > 0 \\ \leq 0, A_k = 0 \end{array} \right.$$

$$(28) \quad \frac{\delta E \Pi_k^m}{\delta A_k^*} = \frac{F}{(F + A^*)^2} [W (\Pi_k^m(0, \tau_a) - \Pi_k^m(0, 0)) + (1 - W) (\Pi_k^m(t_a, \tau_a) - \Pi_k^m(t_a, 0))] - 1 \quad \left\{ \begin{array}{l} = 0, A_k^* > 0 \\ \leq 0, A_k^* = 0. \end{array} \right.$$

Since the national firms of country 1 and the multinational firms earn the same profit in the market of country 1 and since this profit does not depend on the market conditions in country 2, we have

$$(29) \quad \Pi_1(t_a, 0) - \Pi_1(0, 0) = \Pi_k^m(t_a, 0) - \Pi_k^m(0, 0) \quad \text{and}$$

$$(30) \quad \Pi_1(t_a, \tau_a) - \Pi_1(0, \tau_a) = \Pi_k^m(t_a, \tau_a) - \Pi_k^m(0, \tau_a).$$

From (29) and (30) it follows that (27) and (23) are identical. Hence (27) can be eliminated, as, by reason of symmetry, can (28), so leaving the four conditions (23) - (26).

Multinational firms' campaign contributions to the protectionist candidates are the same as those of local national enterprises which, like the multinationals, benefit from protection of the home market. Hence $A_k = A_1$ and $A_k^* = A_1^*$. Since zero campaign contributions cannot be an equilibrium, $A_1 (= A_k)$, F_1^* , $A_1^* (= A_k^*)$ and F_1 are all positive. The conditions for expected profit-maximizing choice of campaign contributions therefore hold with strict equality.

For our purposes, we do not now need to solve the four non-linear equations (23) - (26) for the equilibrium positive values of campaign contributions. Our interest is in the equilibrium probabilities of electoral success W and W^* ; to compute these probabilities, it suffices to establish values for the ratios of campaign contributions F^*/A and F/A^* .

B. Firms' Profits and Election Probabilities

Consider first the political contest in country 1. To compute the equilibrium value of the probabilities of success of the liberal trade-policy and protectionist candidates in this contest, we observe that $W/(1 - W) = F^*/A$, and hence dividing (23) by (26) we obtain the relationship between election probabilities and firms' state-contingent profits.

$$(31) \quad \frac{W}{1-W} = \frac{W^* (\pi_j^* (0,0) - \pi_j^* (t_a, 0)) + (1 - W^*) (\pi_j^* (0, \tau_a) - \pi_j^* (t_a, \tau_a))}{W^* (\pi_i (t_a, 0) - \pi_i (0, 0)) + (1 - W^*) (\pi_i (t_a, \tau_a) - \pi_i (0, \tau_a))}$$

Since the profits earned by any firm in one country do not depend on the market conditions in the other country we have

$$(32a) \quad \pi_j^* (0,0) - \pi_j^* (t_a, 0) = \pi_j^* (0, \tau_a) - \pi_j^* (t_a, \tau_a) \quad \text{and}$$

$$(32b) \quad \pi_i (t_a, 0) - \pi_i (0, 0) = \pi_i (t_a, \tau_a) - \pi_i (0, \tau_a)$$

Moreover,

$$(32c) \quad \pi_j^* (0, \tau_a) = \pi_j^* (t_a, \tau_a) + \pi_i (0, \tau_a)$$

Thus, we can reduce (31) to

$$(31') \quad \frac{W}{1-W} = \frac{\pi_j^*(0, \tau_a) - \pi_j^*(t_a, \tau_a)}{\pi_i(t_a, \tau_a) - \pi_i(0, \tau_a)} = \frac{\pi_i(0, \tau_a)}{\pi_i(t_a, \tau_a) - \pi_i(0, \tau_a)}$$

which, in turn, implies

$$(33) \quad W = \frac{\pi_i(0, \tau_a)}{\pi_i(t_a, \tau_a)} .$$

Now, evaluating the profit functions in (33) yields

$$(34) \quad \pi_i(0, \tau_a) = \frac{1}{b} \cdot \left[\frac{a-c}{z+1} \right]^2$$

$$(35) \quad \pi_i(t_a, \tau_a) = \frac{1}{b} \cdot \left[\frac{a-c}{n+1} \right]^2$$

and hence

$$(33') \quad W = \left[\frac{n+1}{z+1} \right]^2$$

where we recall that $z \equiv (n+v-s)$ is the total number of independent enterprises that exercise ownership over the $(n+v)$ production plants in the two economies.

Symmetrically, for the political contest in country 2,

$$(36) \quad W^* = \left[\frac{v+1}{z+1} \right]^2$$

We have thus established how the equilibrium probabilities of success of the candidates for electoral office - and thereby the probabilities of implementation of protectionist and free-trade policies in each policy jurisdiction - depend upon the number of production plants located in each economy and on the distribution of ownership of these plants between national firms and horizontally integrated multinational enterprises.

C. Multinational Ownership and Trade Policy

We have previously observed that, in terms of self-interest, the multinational enterprise is more protectionist than the national firm; for the multinational enterprise has an interest in protecting domestic import-competing production in two markets, whereas the national firm has an interest in free trade in its export market. We turn now to evaluate how these different self-interest positions of multinational and national firms are transformed by political competition into influence on equilibrium probabilities of protectionist and free-trade outcomes.

The equilibrium probabilities of electoral success W and W^* as given by (33') and (36) are functions of the number of multinational enterprises s . When s is increased, fewer national firms remain, but the total number of production plants $(n+v)$ remains constant. A change in s therefore reflects a change in ownership structure. It follows readily from (33') and (36) that

$$(41) \quad \frac{\delta W}{\delta s} = \frac{2W}{Z+1} > 0$$

$$(42) \quad \frac{\delta W^*}{\delta s} = \frac{2W^*}{Z+1} > 0.$$

That is, a change from national to multinational ownership of horizontally integrated production facilities increases the probability of free-trade policy outcomes in both economies wherein the multinational services the domestic market from local production.

We can therefore state our basic proposition:

The horizontally integrated multinational enterprise exerts a liberalizing influence on the determination via domestic political competition of countries' international trade policies.

4. Economic self-interest and political equilibrium

We thus have what may appear as elements of a paradox. The economic self-interest of the multinational corporation points to a quest for more protection that distinct national firms owning the same local production facilities would seek; yet the multinational ownership makes the political equilibrium more conducive to a liberal trade-policy outcome. The increased protectionist sentiment, stemming from protectionist self-interest of the multinational enterprise, is accordingly transformed via the process of political competition into a liberalizing influence on international trade policy. We can provide some insight into the manner whereby this transformation from increased protectionist sentiment to a liberalizing influence on trade policy takes place by disentangling the distinct consequences of the change from national to multinational ownership structure.

A. Change in coalition size

An immediate consequence of the substitution of multinational for domestic ownership of production facilities is a change in the size of the protectionist and free-trade coalitions in each economy. Members of these coalitions are not acting cooperatively; campaign contributions made to the candidates for political office by the various firms are Nash equilibria. But firms in the different groups do have a common objective, be it a protectionist or a liberal trade policy in a particular market. The common policy sought therefore has public-good characteristics, in that contributions made by one firm in seeking to influence the trade-policy outcome benefit other firms seeking the same objective. Because of this public-good characteristic, the equilibrium values of total contributions to the different candidates are, *ceteris paribus*, independent of the number of firms contributing in support of the common policy objective.

Consequently, holding constant total profits (respectively of country 1's national firms, country 2's national firms, and of multinational firms), the reduction in the number of national firms and increase in the number of multinational firms does not affect the equilibrium probabilities of free-trade and protectionist outcomes. Rather than coalition size, the source of the change in probabilities of policy outcomes associated with the multinational enterprise is to be found in the stakes that individual firms have in the outcome of political competition.⁷

B. The stake in the outcome

The stake in the outcome of political competition for an individual firm is the difference in profits associated with different policy outcomes. Such stakes are directly reflected in the values of W and W^* ; when the stakes in the outcome change, so then do the probabilities of free-trade or protectionist outcomes emerging from political competition.

The stakes associated with different trade policies change because the multinational enterprise's horizontally integrated production reduces the volume of international trade. With reduced import competition, national firms have less to gain from protectionist policies in their home markets, and conversely less to lose from a liberal trade policy at home. With multinational ownership of local production facilities, the incentives for national firms to make political outlays to secure protectionist policies at home are thus reduced.

At the same time, the gains to national firms from free trade abroad increase with multinational ownership. When a domestic production facility converts from national to multinational ownership, that part of the output of that facility which was previously exported ceases to compete with national firms' exports in the foreign market. National firms therefore have an incentive to increase their political outlays directed at seeking (or maintainig) free market access abroad.

The national firms are thus less protectionist at home and more inclined to support free-trade policies abroad when production facilities are multinationally rather than nationally owned. Pre-existing multinationals react as do national firms in their incentives to seek protection from import competition; for their stake

in securing protectionist outcomes in markets served by local production facilities likewise declines.

Thus, all firms, be they national or multinational, other than the enterprises involved in the change of ownership of production facilities at the margin, confront a change in the stakes associated with protectionist and liberal trade-policy outcomes, such that political contributions directed at providing political support for protectionist decrease and contributions directed at providing political support for liberal trade-policy candidates increase. These responses dominate the change from free-trade to protectionist sentiment which stems from the emergence of a multinational firm in place of prior independent national enterprises. Hence our basic proposition, which combines an increase in protectionist sentiment as a consequence of increased multinational ownership with a liberalizing influence on international trade policy.

5. Concluding remarks

It is evident enough that the horizontally integrated multinational firm displaces international trade by serving a local market from domestic production facilities rather than via exports from a foreign facility. Various general equilibrium models have developed formally the substitution between international trade in goods and international factor movements⁸ as might be entailed in the foreign investment underlying horizontally integrated multinational activity.⁹ However, in distinction from these formulations and in accord with recent developments that have advanced understanding of the multinational firm,¹⁰ we have not been concerned

with international capital movements per se. The change which we have considered from national to multinational activity involves in essence a change in the structure of ownership, which can occur without the real capital movements of the general equilibrium models portraying international trade in goods and factors. It is in our model this change in ownership which eliminates international trade. Equivalently, the change in ownership could be viewed as a merger between two national firms or a takeover by a foreign firm of a domestic enterprise to create a multinational firm, with again no international factor movements taking place.

Previous literature which has examined the relation between the multinational firm and trade policy has emphasized the reactive response of firms confronted with trade barriers in export markets. Firms are perceived as reacting to protectionist barriers by 'tariff hopping', so that protectionist policies evoke the emergence of multinational activity. We have in this paper taken the contrary perspective of the proactive relation between the multinational firm and the conduct of international trade policy. Thus, our question has not been how multinational firms react to or emerge as the consequence of trade barriers, but rather how trade barriers emerge from or are influenced by horizontally integrated multinational production. Our results complement the presumption which we observed can be associated with vertically integrated international production, that multinational activity exerts a liberalizing influence on the conduct of countries' international trade. The mechanism underlying this result has been political competition. In itself, a change from national to multinational owner-

ship increases protectionist sentiment, but the force of this change in economic self-interest is reversed as other firms in the industry serving the various national markets accomodate the change in ownership structure with their own revised political outlays. Our result on the liberalizing trade-policy influence of the multinational firm demonstrates how economic self-interest expressed via political mechanisms can moderate or alter - and here reverse - the impact of economic change.

Footnotes.

1. Theories of multinational activity stress both activities. For a review and model which develops a theory of the multinational firm based on the incentives to internalize economic activity, see Wilfred Ethier (1986).
2. The setting is thus of policy determination under representative democracy. For similar models which portray international trade policies determined by political competition, see Young and Magee (1986) and Hillman and Ursprung (1988). For a survey of approaches to endogenizing the determination of international trade policy in settings which acknowledge political discretion in policy choice, see Hillman (1989).
3. The assumption of equal constant costs in each plant is clearly a simplification which subsumes the complexities of cost structures that can underly horizontally integrated multinational activity. For models which explain multinational organization of production in terms of multiplant cost characteristics and interdependencies, see James Markusen (1984) and Elhanan Helpman (1985). We do not seek in this paper to explain why the multinational organization form exists. Such explanations are offered by Markusen and Helpman in terms of multiplant cost interdependencies and Ethier in terms of the internalization decision. We take the existence of multinational ownership of production facilities as given, and shall be concerned with the consequences changes in ownership structure for international

trade policy. Our focus is on the implications of ownership, rather than the source of cost advantage of the multinational firm that provides the counter to national firms' inherent advantage in their home markets.

4. We shall assume that international trade restrictions exclusively take the form of a tariff, the traditional form of protectionist instrument. For a review of considerations underlying political choice of the means of protection, see Hillman (1989), chapter 7.
5. This same setting of political competition, albeit confined to one political contest in the one national jurisdiction, is employed in Hillman and Ursprung (1988) to investigate the emergence of voluntary export restraints as alternatives to tariffs as the means whereby countries formulate protectionist policies.
Here the structure of the model is somewhat different, with dual political contests and multinational ownership of firms; and of course a fundamentally different question is addressed.
6. For proof of a similar proposition that when choosing levels of protective tariffs candidates diverge rather than converge in their policy pronouncements, see Hillman and Ursprung (1988).
7. The fact that the political outcome is independent of the number of firms involved in the political process if the firms' profits are held constant can easily be seen from equation (33); W depends only on n , v and s insofar as n_1 is a function of these variables.

8. Although substitution is not necessary.
See for example Markusen (1983).
9. See for example Gene Grossman's analysis (Grossman, 1984) of the welfare consequences of international capital movements in conjunction with different trade policies entailing free or restricted international trade in goods.
- 10 James Markusen (1984), Elhanan Helpman (1984, 1985), Wilfred Ethier (1986).

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Appendix

Let t_F and t_P denote the trade-policy platforms of the liberal and the protectionist candidates in country 1, and τ_F and τ_P the respective platforms in country 2. Analogous to the procedure presented in section 3, one can derive the relationship between election probabilities' and firms' state-contingent profits (=stakes):

$$R \equiv \frac{W}{1-W} = \frac{\pi_j^*(t_F, \tau_P) - \pi_j^*(t_P, \tau_P)}{\pi_i(t_P, \tau_P) - \pi_i(t_F, \tau_P)} \quad (A1)$$

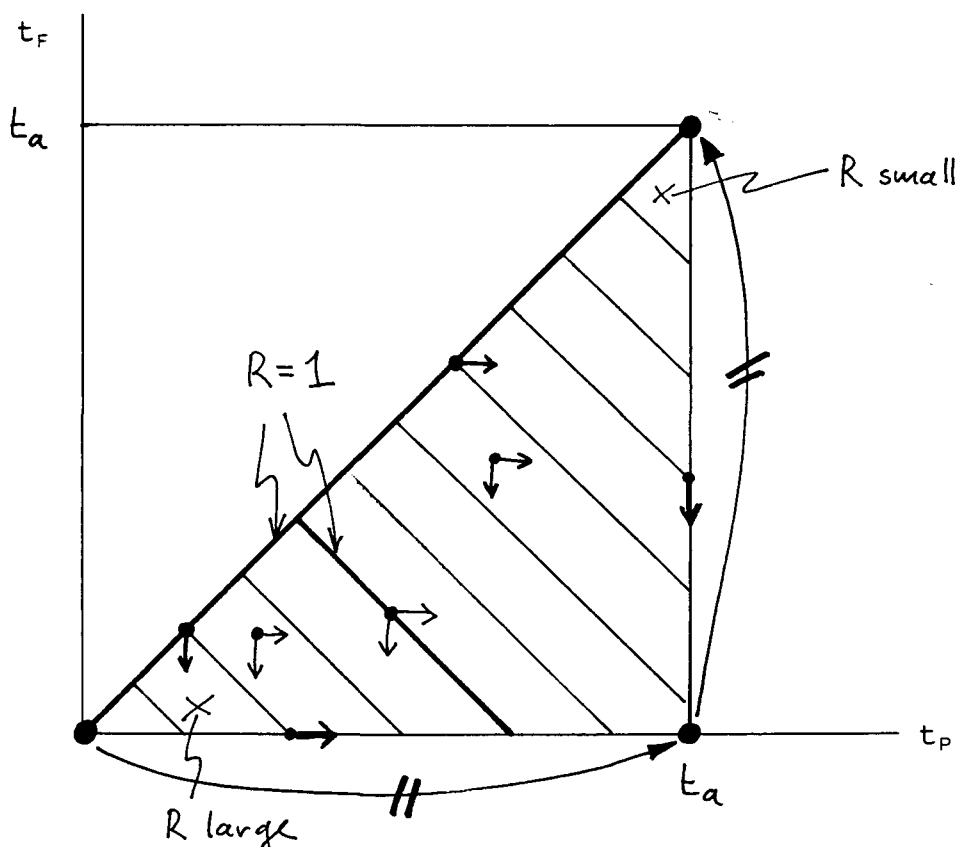
Notice the similarity to equation (31'). Calculating the stakes in the numerator and denominator of (A1) with the help of the profit functions (3) and (4), the equilibrium outputs (13), (13'), (14) and (14'), and the demand functions (1) and (2), we arrive at

$$R = \frac{n+1}{v-s} \frac{2(a-c) - (n+1)(t_P + t_F)}{2(a-c) + (v-s)(t_P + t_F)} \quad (A2)$$

Differentiating (A2) yields

$$\frac{\delta R}{\delta t_P} = \frac{\delta R}{\delta t_F} < 0.$$

In the t_F/t_P -plane, the iso-R curves thus have a slope of minus unity and we obtain the following graphical representation of $R=R(t_F, t_P)$ as given (A2).



Notice that for $t_F = t_P$ no campaign contributions will be made which leaves W in equation (7) undefined. We therefore define $W(t_F = t_P) = \frac{1}{2}$ which implies $R(t_F = t_P) = 1$.

The liberal candidate's objective is to maximize her probability of winning (i.e. W) which is equivalent to maximizing $R = W/(1-W)$. Her instrument variable is $t_F \leq t_P$. The protectionist candidate, on the other hand, minimizes R using her instrument variable $t_P \geq t_F$. The arrows in the above figure indicate how the two competing candidates use their instrument variables to maximize their respective objectives. As can easily be seen, there are three points in the triangular policy space which can be considered candidates for equilibrium constellations, namely the vertices $(t_P, t_F) = (0, 0)$, $(t_a, 0)$ and (t_a, t_a) . We single out the point $(t_P, t_F) = (t_a, 0)$ as the equilibrium because this is

the point that will be reached in a set-up where the candidates continuously make marginal policy adjustments to maximize their probability of being elected. Thus we do not consider discrete policy changes (i.e. jumps); in particular we rule out that in the situation $(t_P, t_F) = (t_a, 0)$ the candidate who has the smaller probability of being elected - in the above figure this is the liberal candidate - jumps to the policy pronouncement of his opponent to obtain at least an even chance of being elected.