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STRATEGIC TRADE POLICIES IN A TRIPOLAR WORLD

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Strategic Trade Policies in a Tripolar World *

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Abstract

The Single European Act of 1985 and the United States-Canadian Free Trade Agreement may have signaled the beginning of a sea-change in international trade policies. The emergence of a fortress Europe and fortress North America, could lead to global trade warfare. In this paper we study the incentives for protectionism when large trading blocks form. We find that block formation leads to a greater temptation to protect block-wide domestic markets, especially in industries with increasing returns. However, this temptation can be offset by foreign direct investment, which restricts governments' ability to use trade protection for the sole benefit of domestic firms.

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1. Introduction

The Single European Act of 1985 and the United States-Canadian Free Trade Agreement may have signaled the beginning of a sea-change in international trade policies. Government decisions to form larger trading blocks in the mid-1980s have been construed by many as a precursor to the return of trade warfare which dominated international trade in the 1930s. Just as the absence of international leadership in the inter-war period produced trade rivalry among nations and intense competition for markets, so too have there been fears that the tripolar world of the 1990s will be too unstable to promote freer trade. The momentum created by Europe's 1992 program, North America's free-trade zone, and Japan's fear of isolation may produce multiple fortresses, where each region attempts to become more autarkic.

There is a political as well as an economic logic for believing that the 1990s will produce fortress Europe, fortress North America, and fortress Japan. On the political front, the declining competitiveness of the United States and many European nations have produced increasing pressure to protect industry and employment. In the absence of a hegemon, the countervailing forces for free trade may be difficult to find. These political arguments become reinforced by the economics of block formation. Medium and small-size countries have never made a pretense of becoming self-sufficient: it makes little sense for Luxembourg or Canada to produce their own brands of airplanes and cars. However, once small countries become part of a larger economic block, domestic production in many industries becomes more feasible. Therefore, it is often argued that as trading blocks grow larger, the potential benefits of protectionism rise. And if protectionism rises in Europe and North America, Japan would have no alternative but to reverse her slow liberalization of the past two decades.

Aggravating the danger of isolated trading blocks is the reality of wide-spread industry-specific trade policies, especially in high technology and other industries characterized by increasing returns to scale. While Japan and some European countries, notably France, have always used sectoral policies with varying degrees of success, the practice of sectoral intervention has spread to North America and to the European Community at large. We have witnessed in the 1980s the United States, Europe, and Japan engaging in trilateral trade warfare in sectors such semiconductors and high definition television, with numerous bilateral conflicts in sectors such as aircraft (between the U.S. and Europe), VCRs (between Europe and Japan), and telecommunications (between the United States and Japan).[1]

Yet will the emerging trade blocks produce fortresses? Will sectoral intervention in increasing returns industries lead trade conflict to spread? Does the movement towards larger blocks increase or decrease the likelihood of sectoral intervention? To answer these questions, one must build a better understanding of the underlying incentives for protectionism in a tripolar world. While we believe that economic blocks will stimulate demand for trade barriers, the simple arguments about fortress formation are not correct. In this paper we will argue that the emergence of regional trading blocks is more likely to produce an increase in trade restrictions in certain types of industries (such as aircraft and telecommunications) which are characterized by large fixed costs in R&D, manufacturing scale economies, and/or steep learning curves. For these industries, there is not only a coherent case for import protection (to help promote exports as well as preserve the domestic market), but a case for a greater degree of protection as trading blocks emerge and grow.

[1] See Milner and Yoffie (1989).

In traditional sectors not characterized by increasing returns, however, protectionism need not become more appealing with large trading blocks. We will suggest that over time, as the world settles into a tripolar world, trade barriers may fall in heavy industries such as cars and construction equipment, light industries, such as footwear, and services such as banking and insurance. Our logic is that factors of production, especially capital, are increasingly mobile in North America, Europe and Japan. In industries without strong increasing returns, efficient production is possible in a variety of locations. As a consequence, any effort by one region to raise taxes will lead firms to establish operations abroad. As long as barriers to exit for capital are low, firms will seek to exploit lower cost locations that take advantage of other large markets. Exit by domestic firms (as well as the possibility of cross investment by foreign firms) weaken the political case and the political coalition for protection in the long run.

The paper is organized into four sections. Following this introduction we construct a simple model of trade in industries that do not exhibit global economies of scale. In that section, we will show how static and dynamic forces for and against protectionism can interact. We conclude that the long-run outlook is optimistic for free trade in these sectors in a tripolar world. Next, we extend the model to "battlefield" sectors like semiconductors, where increasing returns are critical. Here we will argue that the temptation to use strategic trade policies will grow along with trading-block size. Because the critical factors of production are not as mobile in industries with increasing returns, direct investment will not have the same effects, at least in the medium term. Only over the very long run, will direct investment produce the similar results. At the end of each of these sections, we use brief illustrations of trade in footwear and semiconductors to illuminate the model.

Finally, we draw some implications from the model. One of the strongest findings is that there is a disjuncture between trade and investment policies in both academic models and the real world. The mobility of capital undermines many of our precious assumptions about how trade policy and trade politics are suppose to work. Moreover, if our arguments are robust, they suggest some significant dangers for the future. While cross-investments among the tripolar world should undermine many of the forces of isolationism and protectionism, it will only occur if cross-investment is symmetric: i.e., if firms from each region invest in each others' territory. To date, however, cross-investment has been extremely asymmetric: European and Japanese firms have invested heavily in America; American and Japanese firms have invested heavily in Europe; but no significant American and European investment has gone to Japan. If the capital stock located in Japan, implicitly or explicitly, remains under exclusive Japanese control, Japanese incentives for strategic trade policy will continue, creating further stresses on the world trading system and international economic cooperation.

2. A model of protection among trading blocs

Here we study how the formation of trading blocks affects strategic trade incentives for goods not subject to increasing returns in production. For these purposes, we adapt a simple model used first by Gros (1989) and developed in more detail by Krugman (1989).

Imagine that the world is comprised of N countries or distinct economic regions. Each of the N regions has its own variety of indigenous good, which is produced locally (and potentially abroad) and which may be sold to other regions. These regions are divided among B trading blocks. We assume that each block represents a "common" market within which goods and factors move freely. For simplicity we assume that all B blocks are symmetric, that is, that they are each comprised of N/B regions.

The consumers of all regions are exactly alike, in that they share the same preferences for goods produced locally as well as those produced in other regions. Again, for simplicity, we assume that their utility is of the form:

$$U = \Big(\sum_{i=1}^{N}(C_i^{\theta})\Big)^{1/\theta}, \tag{1}$$

where C_i is an individual's consumption of region i's good. The symmetry of the model implies that the elasticity of substitution between any two goods is given by $\sigma = 1/(1-\theta)$, with $0 \leq \theta < 1$. The higher is σ the greater is the substitutability of goods in consumption.

We will also assume that, while goods move freely within the confines of each trading block, the domestic (intra-block) market may be protected by levying import tariffs or export taxes. As long as goods are not perfect substitutes in consumption (which would be the case were $\theta = 1$), blocks will favor some type of protection at their common border. In our model, this protection takes the form of

an optimal export tax. From the optimal tariff literature, we know that the optimal (ad-valorem) export tax is given by:

$$\tau^* = \frac{1}{\epsilon - 1}, \tag{2}$$

where ϵ is the elasticity of the rest-of-the-world's demand for a block's exports. We will assume that each block sets is own external taxes or tariffs in isolation, treating other blocks' tax rates as fixed; that is, we assume that tariffs are set in a Nash bargaining process.

There is a great deal of literature on the desirability of trading blocks – typically called "customs unions" in the parlance of international trade. Much of this literature is concerned with the question of whether such blocks could ever be in participating countries' interests. After all, by eliminating trade restrictions with one set of countries, but maintaining restrictions with others, some of the newly created intra-block trade is welfare-improving because it involves the expansion of efficient producers, but some of the new trade is welfare-reducing because it expands the production of firms that are inefficient by international standards. However, the positive effects of "trade creation" must dominate the negative effects of "trade diversion" as long as the trading block as a whole sets its external barriers optimally.[2] Thus, the emergence of trading blocks in the model above is natural, since block-formation is in the interest of participating countries.

There are two difficulties with the relevance of a custom union's welfare-improving protection. The first (and easiest to dismiss) is that, in the present model, export taxes do not seem very relevant for actual protectionist policies – most protectionism takes the form of import restrictions, the most common of which are tariffs. However, if trade is balanced and production is not subject to locally increasing

[2] See Kemp and Wan (1972) for a rigorous derivation.

returns, export taxes are equivalent to import tariffs. In general equilibrium, tariffs which discourage imports must also discourage exports; both raise domestic prices of goods and factors relative to those on the world market.

A second, more telling objection to this model concerns the motivation for imposing protection in the first place. Here the assumption is that protection can improve a country's terms of trade: tariffs lower the world price of its imports and export taxes raise the world price of its exports. Yet in the real world, these kinds of optimal-tariff arguments are rarely the true motivation for erecting trade barriers. Occasionally, countries impose trade barriers to capture gains from increasing returns to scale – the subject of the model in section 2.1.[3] In most cases, governments use protection as an (inferior) means of transferring resources to factors that have become less productive. A charitable interpretation would say this is at best a second- or third-best solution for coping with unproductive factors, and at worst a policy that actually lowers welfare by subsidizing an already inefficient use of factors.

Despite these caveats, we believe that this model is relevant to the political economy of protection when economic blocks form. The real concerns about fortress Europe and fortress North America are not so much rising trade barriers in declining industries as the possibility of rising protectionism in the more competitive sectors. The real fear is that "fortress Europe" will emerge because some export- oriented producers, like Italian footwear firms, makers of Belgian chocolate, and British banks would prefer to have a larger Europe to themselves. Whether or not protection for such sectors can be justified on the basis of increasing returns or the principles of optimal taxation is unclear. But it is clear that much of the 1992 debate is about making the benefits of the customs union available exclusively to

[3] See also Milner and Yoffie (1989).

local factors. And this is just another way of phrasing the optimal tariff argument.

The absence of globally increasing returns is important in the model of this section because the model implies that protection *hurts* competitiveness, i.e., that protection leads to a diminution, not an expansion, of trade. The way that the domestic block benefits from imposing common external trade barriers is to limit its sales on international markets. This need no longer be true if the trade barriers are put in place to protect firms with globally increasing returns to scale. If, for example, the marginal costs of an import-competing firm fall fast enough as output increases, then tariffs may actually enhance international competitiveness: by protecting domestic production and assuring a domestic market base, the domestic producer may end up with lower costs in world prices, so that its exports become more competitive.[4] The implicit guarantee of domestic market share may lower total costs even though import protection tends to raise factor prices. We investigate the implications of increasing returns in the next subsection.

Government taxation of imports or exports may, directly or indirectly, give domestic exporters an incentive to locate production elsewhere. Consider the case of an import tariff. Its presence tends to draw factors of production into import-competing industries, driving up the factor costs of production in export sectors. The corresponding erosion in international competitiveness may be offset through relocating production of exports abroad. The argument for producing abroad is even more direct in the case of an explicit export tax. Either way, optimal protection may lead firms to reconsider their production-location decisions.

Firm location decisions are usually moot in models of trade policy. Domestic firms produce only locally. Firms do not consider relocation, and as a result, governments do not need to take relocation decisions into account in determining desired

[4] For a series of models demonstrating this proposition, see Krugman (1990).

trade barriers. These assumptions are probably not very accurate – few Fortune 500 firms produce exclusively in the U.S., and many have more than half of their labor force employed outside that country. Economists usually do not worry so much about the accuracy of the domestic-production assumption, but here we might expect firm location decisions to interact with the level of protection, especially when the world becomes dominated by a few trading blocks.

When blocks levy taxes on their own exports, exporting firms may find that they have a greater incentive to locate abroad. To be more precise, note that on units to be sold abroad, each unit that is also produced abroad does not have to pay the export tax. Firms therefore receive $1 + \tau$ times as much on foreign sales produced abroad as they do on exported sales, where τ is the ad-valorem export tax. As a consequence, domestic firms have an incentive to move production abroad as long as the marginal cost of production abroad is less than $1 + \tau$ times as great as the marginal cost of domestic production. This leads to an equilibrium condition:

$$\frac{MC_a(q_a)}{MC_h(q_h)} = 1 + \tau, \tag{3}$$

where MC_a and MC_h are marginal cost of production at home and abroad, and q_a and q_h are the quantities produced at home and abroad, respectively. We assume that q_a is less than the quantity consumed by foreign residents, i.e., that some domestic production for export always takes place. If equation (3) holds, it yields a condition on the share of firm production that is done overseas.

Equation (3) holds only for "interior" levels of production. That is, it may be that marginal costs of production at home are much lower than those abroad, in which case all production will take place domestically, and equation (3) will not be satisfied. It could also be that there are fixed costs to starting up a foreign

productive facility, so that even if marginal costs make overseas production attractive, firms may not produce abroad. Nevertheless, in what follows we presume that equation (3) holds, that we are not at a "corner" equilibrium.

Equation (3) should be thought of as applying to each productive location abroad. To simplify matters, suppose that firms treat production within each trading block as an offset for exports to that block. This rules out locating in one foreign block as a means of exporting to others. In any case, such third-country export policies would be economically inefficient in the equilibrium of our model. If a firm were to do this, the exports would be subject to the foreign block's export tax, which would remove the incentive for overseas production in the first place.

In order for equation (3) to be operationally useful, we need to make some assumption about how the ratio of marginal costs on the left-hand side behaves. In order to satisfy equation (3) the left-hand side must be locally increasing in q_a or decreasing in q_h; we cannot have an equilibrium in location of production if by exporting one unit fewer and producing it abroad, a company could lower its total costs of production and increase its incentive to produce even more units abroad. Perhaps the simplest assumption is that marginal costs of home production are a constant (represented by $\alpha > 0$), and that foreign marginal costs increase above the home level as output rises (represented by $\alpha + \beta q_a$, with $\beta > 0$). Equation (3) then has the form:

$$\frac{MC_a(q_a)}{MC_h(q_h)} = \frac{\alpha + \beta q_a}{\alpha} = 1 + \tau, \tag{4}$$

which implies that production in each of the $B-1$ foreign blocks is $q_a = \tau/b$, where $b = \beta/\alpha$. It follows that total production abroad is given by $Q_a = (B-1)q_a = (B-1)\tau/b$.

This expression for production abroad is useful in several ways. First, it assumes that the marginal cost of production at home is always less than that abroad.

This means that firms locate abroad only to avoid domestic taxation (relaxing this assumption is likely to strengthen the results below), and otherwise have a preference for domestic production. Second, by letting the parameter b vary with the number of blocks we have an easy way of incorporating scale effects into the model, even while retaining local decreasing returns. For example, when the world trading system is fragmented into many blocks of small size, blocks may be too small to merit firms establishing separate operations in each. In such a case we might expect relatively little (and perhaps no) production in each small foreign block (i.e., b is large). Alternatively, when there are few blocks, each of large size, marginal costs for large foreign operations might be expected to be close to those for home production (i.e., b is small).

To incorporate this latter notion simply, we let $b = B - 1$, so that overseas production of each region's product is simply given by $Q_a = \tau$. (If the incentives to produce abroad are stronger as block size grows, then we could let $b = (B-1)^2$, so that overseas production is increasing in the size of blocks, $Q_a = \tau/(B-1)$.) Since there are N/B regions in each block, the total amount of a given block's product that is produced locally in rest of the world is:

$$L^{row} = \frac{NQ_a}{B} = \frac{\tau N}{B}. \tag{5}$$

Next we need to determine the optimal tax for each block. Following Krugman (1990) we normalize each region's volume of output to equal 1. This implies that a representative block's output is $Y = N/B$ and that output in the rest the world is $Y^{row} = N(1 - B^{-1})$. If trade is balanced, then rest-of-world demand must equal rest-of-world output. Rest-of-world demand is spent on goods produced domestically, D^{row}, goods exported from our block, M^{row}, and overseas production of our

goods, L^{row}. Therefore:

$$Y^{row} = D^{row} + p(M^{row} + L^{row}), \tag{6}$$

where p is the relative price (in rest-of-world prices) of goods from our block.

In this setting, unlike in standard models, the "optimal" export tax is, in a sense, a question of political economy. Usually it is assumed that both production and ownership of the domestic firm are entirely domestic. This leads to the presumption that an improvement in the terms of trade will be reaped only by domestic residents, workers, and capital providers. Even if this presumption is not realistic, it is consistent with the structure of the traditional model.

However, once the foreign firm employs foreign factors of production, it is no longer immediately clear that domestic factors will receive all of the benefits of protection. There is likely to be some leakage to foreign factors. That is, these foreign factors may be able to extract some of the benefits of the domestic good's higher price on world markets. Clearly, domestic residents cannot benefit from a tax or tariff to the extent that its proceeds are transferred to foreigners. And if the government is concerned only with domestic residents' welfare, then leakage to foreigners will affect its choice of an optimal tax or tariff. In our model, the portion of production that is located abroad avoids the export tax. Therefore the firm, not the domestic government, must distribute some of the tax revenues, both in the form of higher marginal costs and in the form of profits.

To keep things simple, we will consider two types of revenue distribution by the firm. The first is the traditional case in which all tax-generated revenues (that is, the additional firm revenues earned by moving production abroad) are returned to *domestic* factors. This assumption is probably not very reasonable in a world in which firms have international work forces and equity holders. But it is useful

because it parallels the assumption in the standard model that all revenue gains accrue to domestic residents. This case might also be thought of as a kind of "short-run" optimal tax. When first moving abroad, domestic firms may be able to keep most of the excess revenues for domestic residents. But over time, as the firm becomes more international in character, foreign factors of production may become more able to extract excess revenues from their employers.[5] Thus, our "short-run" optimal tariff treats the leakage to foreigners as unimportant.

The other case – which we will call the "long-run" optimal tariff – is where the government considers only those revenues that are actually collected at the border as benefiting domestic residents. This would occur if the lost tax revenues accrue entirely to foreigners, which as mentioned above is more likely to occur over time. The distinction we are drawing here between short- and long-run is obviously extreme; neither is very realistic. But our goal here is to strike a balance between positive and normative theories of commercial policy. Thus, while governments' actual commercial-policy objectives may remain unclear, the optimal tariff may nevertheless be changing over time, as the benefits of protection are increasingly lost to foreign factors of production.

Once we accept this distinction between short- and long-run taxes, it is straightforward to derive their optimal levels. Since in the short run we assume that governments ignore the distinction between L^{row} and M^{row}, we can simply take logs and then derivatives of the terms in equation (6):

$$(1-f)\hat{D}^{row} + f(\hat{p} + \hat{F}^{row}) = \hat{Y} = 0, \tag{7}$$

where $F^{row} = L^{row} + M^{row}$ is total sales to foreigners, hats over the variables denote log derivatives, $\hat{D}^{row} = d\ln(D^{row}) = \frac{dD^{row}}{D^{row}}$, and $f = \frac{L^{row}+M^{row}}{Y^{row}}$ is the share of our

[5] Porter (1990) suggests that workers ultimately are able to extract compensation gains from successful companies. That is, even if a firm can succeed in raising the price at which its product sells, over time it may not be able to raise its markup over costs.

block's goods in rest-of-world consumption. Equation (7) tells us that the elasticity of foreign demand for our block's goods is:

$$\frac{\hat{F}^{row}}{\hat{P}^{row}} = -\Big(f + (1-f)\sigma\Big). \tag{8}$$

Using (8) and (2), the optimal short-run tax is given by:

$$\tau^{sr} = \frac{1}{(1-f)(\sigma-1)}. \tag{9}$$

Equation (9) says that the optimal tariff is a function of the substitutability of domestic and foreign goods, and of the share of domestic goods in rest-of-world expenditure. The more substitutable are the goods (the higher is σ), the less is the room to extract rents, and the lower is the optimal tariff. Also, the tariff becomes smaller as share of domestic goods in foreigners' consumption falls. Note, however, that even if the domestic block is "small" (i.e., if $f = 0$) the optimal tariff is positive: there is still some monopoly power created by the imperfect substitutability among goods.

In the longer-run, the government's perceived elasticity of substitution between domestic and foreign goods is not given by equation (9). The government recognizes that a tax increase stimulates additional overseas production, eroding the export-tax base. Thus equation (6) becomes:

$$(1-f)\hat{D}^{row} + f\Big(\hat{p} + l\hat{L}^{row} + (1-l)\hat{M}^{row}\Big) = \hat{Y} = 0, \tag{10}$$

where $l = \frac{L^{row}}{L^{row}+M^{row}}$ is the share of overseas production in rest-of-world consumption of our block's goods.

Next we need to know how overseas production is affected by a change in relative prices. First, note that since $p = 1 + \tau$, it follows that percentage changes in prices and tariffs are related by

$$\hat{\tau} = \frac{(1+\tau)\hat{p}}{\tau}. \tag{11}$$

Second, from (5) and (11) the percentage change in overseas production for a given percentage change in relative prices is given by:

$$\hat{L}^{row} = \hat{\tau} = \hat{p}\Big(\frac{1+\tau}{\tau}\Big). \tag{12}$$

Combining (10) and (12) we have that the long-run elasticity of substitution is:

$$\frac{\hat{M}^{row}}{\hat{p}^{row}} = -\Big(\frac{f+(1-f)\sigma + l(1+\tau)/\tau}{1-l}\Big) = \epsilon^{lr}. \tag{13}$$

A little algebra yields that the optimal long-run tax is given by:

$$\tau^{lr} = \frac{1-l}{(1-f)(\sigma-1)+2l}. \tag{14}$$

Equation (14) is similar to (9), except that (14) is a decreasing function of l. This says that as the foreign-produced share of the domestic good rises, the optimal long-run tariff falls. If l reaches 1, so that all of the domestic good is produced abroad, the optimal tariff falls to zero.

In order to understand how these taxes move in equilibrium, we must first determine the consumption and production shares, f and l. Following Krugman (1989), we note that, at world prices, a representative block's expenditure must equal its output,

$$D + M + L = Y, \tag{15}$$

and the representative block's output is in turn

$$Y = \frac{N}{B}. \tag{16}$$

Each of the other $B-1$ blocks sells a total volume of $(M+L)/(B-1)$ (expressed in world prices) to the representative block; the ratio of these expenditures to the representative block's expenditures on its own good is $\frac{M+L}{D(B-1)}$. The CES utility

function then implies that this ratio is equal to the relative price of foreign to domestic goods, adjusted for the elasticity of substitution, $\frac{M+L}{D(B-1)} = p^{-\sigma}$. Substituting, this yields:

$$\frac{M+L}{D} = (1+\tau)^{-\sigma}(B-1). \tag{17}$$

Using (17) and the definition of f, we have that the share of rest-of-world expenditure that falls on domestic goods is,

$$f = \frac{1}{(1+\tau)^{-\sigma} + B - 1}. \tag{18}$$

To determine the foreign-produced share of domestic goods consumed by foreigners, note that l can be written:

$$l = \frac{L^{row}/Y^{row}}{(M^{row}+L^{row})/Y^{row}} = \frac{\tau}{f(B-1)}, \tag{19}$$

where we have used equations (5) and (16) to get the last expression on the right-hand side.

Equations (18) and (19) together with an expression for the optimal tariff (either (9) or (14)) allow us to understand how taxes are affected by changes in the number of trading blocks. Let us begin with the short-run tax, τ^{sr}. Here equations (9) and (18) are all that matter (the fraction of output produced abroad, l, has no effect on either equation). Figure 1 shows the equilibrium. On the vertical axis is the level of the tax, τ^{sr}, and on the horizontal axis is f, the fraction of the domestic block's goods in rest-of-world expenditure. The curve marked TT shows the tradeoff between f and τ given by equation (9). The curve is an increasing function of f: as the expenditure share of domestic goods increases, the domestic block's monopoly power also increases. The other curve, marked FF, is given by equation (18). It shows that, all else equal, an increase in the tax encourages foreigners to substitute consumption away from domestic products, leading to a decline in f.

Figure 2 shows what happens to the optimal tariff as the number of blocks falls. The TT curve does not shift, since the optimal tax is a function only of a block' importance in foreigners' consumption, f, and not of the number of blocks, B. However, the FF curve in equation (18) shifts outward as the number of blocks falls: with fewer blocks, each block has a greater share in others' consumption at the preexisting tax rate. In equilibrium, the optimal short-run tax increases to reflect this higher degree of monopoly power. This simple model therefore suggests that protectionism rises as trading blocks become larger.

To see what is driving this result, ask why it is that, for any given number of trading blocks, governments are unwilling to raise taxes to even higher levels. The model's answer is that foreigners shift their consumption away from the domestic block's goods, reducing exports. That is, substitution in foreign consumption disciplines a block's ability to tax its own industries.

Now let us turn to the long-run tariff. The equilibrium here is described by three equations: (14), (18) and (19). These three equations are graphed in Figure 3. The top panel of Figure 3 shows the tradeoff between f, the share of domestic goods in rest-of-world expenditure, and the long-run tax, τ. These two curves are similar to those shown in Figures 1 and 2. In the bottom panel of Figure 3, the relationship between l, the share of sales to the rest-of-world that is produced abroad, and τ is depicted. Note that the TT curve here is *downward* sloping: an increase in the share of overseas production reduces the domestic government's tax base, and limits the effectiveness of an export tax. At the margin this makes export taxes less worthwhile. On the other hand, the l schedule is upward sloping: an increase in the domestic tax induces domestic producers to locate more of their production abroad. The optimal long-run tax is determined both by the short-run substitutability of consumption of foreigners and by the long-run substitutability of where production

is located.

What happens to the optimal long-run tax as the size of the representative trading block increases? To clarify the effect that production-location decisions have on optimal taxes, consider the case in which goods are not very close substitutes, $\sigma = 1$. (This implies that preferences are Cobb-Douglas, so that given B a fixed share of income is spent on each region's good.) Figure 4 demonstrates what happens. With $\sigma = 1$, equation (14) becomes

$$\tau^{lr} = \frac{1-l}{2l}, \tag{14'}$$

which is a function only of l. By setting $\sigma = 1$, the sole cost of raising export taxes is that production moves abroad. Thus, when the number of trading blocks falls, the TT curve in the bottom panel of Figure 4 does not shift.

When $\sigma = 1$ we also have that equation (18) becomes:

$$f = \frac{1}{\tau + B}, \tag{18'}$$

which implies that (19) can written:

$$l = \frac{\tau(\tau + B)}{B - 1}. \tag{19'}$$

Equation (19') says that a decrease in the number of blocks makes firms more willing to establish production abroad, which in turn makes the domestic government less willing to levy export taxes. This effect is captured by a shift outward in the LL curve in the bottom panel of Figure 4. Thus, as the Figure shows, the optimal long-run tax *falls* as the representative block increases in size.

Why is it that bigger block size implies a lower optimal long-run tax, but a higher optimal short-run tax? Recall that the short-run tax increases because when domestic goods are a larger share of foreign consumption, it becomes possible for

the domestic government to extract more monopoly rents from foreign consumers. In the case of the long-run tax, we can for the moment suppress this effect: setting $\sigma = 1$ neutralizes the effect of block size on the monopoly power that a block's government has. Once we have suppressed the effects of substitution in consumption, the sole long-run effect is that created by substitution in production location. In the long-run, firms have a greater incentive to locate abroad when foreign blocks are big, since bigger block size permits overseas production on a more efficient scale. The greater is the elasticity of substitution in production location, the lower is the tax that the government is willing to levy.

Of course, if we allow goods to be better substitutes for one another (by setting $\sigma > 1$), then the long-run tax will be determined by both forces: substitutability in consumption as well as substitutability in production. If bigger blocks lead to greater monopoly power in consumption, but to smaller monopoly power in firm-location choice, then the ultimate effect of bigger blocks on protection is ambiguous. However, the long-run tax will consistently be lower than the short-run tax.

This model therefore suggests that there are conflicting forces at work when trading blocks form or increase their size. On the one hand, there is a temptation to protect domestic producers from charging "too low" a price for their exports. This tends to keep external taxes high. On the other hand, the possibility of foreign direct investment helps to minimize how much the government gives in to protectionist temptations. Government interference in the best interest of the country (or of the export industry) is not necessarily in the best interest of each firm. Firms have a private incentive to avoid direct and indirect costs of protection. When firms can respond to this incentive, effective taxation remains low as trading-block governments compete with one another to attract domestic production.

Despite its simplicity, this model may be helpful for thinking about for trade

in certain industries. For example, the history of protectionism in the footwear industry in the United States and Europe is suggestive of how some of the short-run and long-run dynamics might play out in the real world. Although the motivation for providing footwear protectionism was clearly different from the motivations described in our model, this illustration helps to demonstrate how the mobility of capital can undermine protectionist coalitions in fairly short periods of time.

Between 1975 and the mid-1980s, virtually every European country as well as the United States protected its domestic footwear industry.[6] (See Table 1.) Footwear, however, is a classic sector where capital is a highly mobile factor of production, with virtually zero transaction costs associated with relocating manufacturing to lower cost sources. When domestic costs rise, firms rapidly locate in lower cost production bases. In the United States, for instance, at the time protectionism was granted, imports accounted for 50 percent of consumption, but a large percentage of those imports were produced and/or distributed by U.S. headquartered firms. By the early 1980s, despite higher trade barriers, imports had risen and more–not less–of those imports were produced or distributed by U.S.-controlled firms. Although one might have predicted that protectionism would raise the return to local factors, American firms found it more profitable to expand their outsourcing of products. In effect, highly mobile capital continued to search out lower cost sources of production. A careful study of footwear protectionism in France found the same result.[7]

As firms employed fewer and fewer workers in the footwear industry of the industrial countries, the demand for protectionism in those countries diminished. By the mid-1980s, Hamilton found, protectionism had virtually disappeared in the footwear industry in the U.S, Europe and other industrial countries. One of the

[6] See Carl Hamilton (1988).
[7] See Milner (1988).

causes, we argued elsewhere (Aggarwal, Keohane, and Yoffie, 1987), was that once foreign factors and multinational firms begin to appropriate some of the rents from higher prices in the local market, the political case for protection weakens and trade barriers disappear.

While some of the factors which drive footwear firms abroad are not identical to those described above, the underlying logic of the footwear case is very similar to the factors driving weakening incentives for protection in our model. The more mobile capital becomes, the faster capital adjusts to protectionist policies, and the weaker the coalition in favor of trade barriers. If we were then to apply to model to a more current example, we might speculate how the same process would work. In financial services, for instance, most firms in the European Community are located in the U.K. The U.K. (along with Switzerland) export financial services to the rest of the world as well as to the rest of Europe. Would it be wise for the EC to protect the financial services sector after 1992? Protection would certainly ensure that these regions enjoy a relatively high market share within the EC. But as protection leads to increases in costs, these regions will find that their EC-based operations are less competitive outside of the EC. There will be a temptation to move some operations overseas, to regions where demand is high but costs are not. Ultimately, the flight of domestic financial services firms might weaken the political support for protection, and lead to lower import barriers.

As always, it is best to think of the results from this model as suggestive. The forces that determine the optimal levels of protection discussed above do not provide a satisfactory description of many commercial policies. In practice, governments that impose protection (as well as industries that lobby for it) often do so in the name of *promoting* international competitiveness, not *discouraging* competitiveness as standard optimal tariff arguments would have it.

The economics of industries with increasing returns suggests a different rationale for protection, which may represent a closer parallel to the real world. Through protection, firms may realize lower costs of production, and therefore become more internationally competitive. We therefore turn to the effects of tripolarity on protection of increasing-returns sectors.

2.1. Increasing returns and trading blocks

Politicians and businessmen have long argued that a protected domestic market enhances international competitiveness. Traditionally, they based their arguments on the "infant industry" notion, which says that domestic market imperfections lower private (but not social) returns in new industries, and that these imperfections are best dealt with through trade restrictions. Among economists, however, the infant industry argument receives little support. While many economists accept the existence of market imperfections (incomplete capital markets, lack of complete appropriability of R&D, externalities in production, etc.), nearly all reject the idea that trade restrictions can be a first-best means of correction.

More recently, strategic trade theory has offered a better rationale for using protection as a means of helping domestic industries. With imperfect competition among firms, protectionist policies can alter foreign competitors' beliefs about the domestic firm's strategic behavior. Sometimes (though not always) it is possible to use government policies – trade restrictions in particular – to tip the equilibrium outcome not only in favor of domestic firms, but also in favor of the domestic economy as a whole. Trade policies may be a device for conveying credibly the future aggressiveness of domestic firms, which in turn may make foreign firms less aggressive.

For the whole economy to benefit, trade restrictions must create sufficient improvements in the efficiency of the productive sector to offset what would otherwise

be an increase in the price paid by domestic consumers. Thus, it is necessary that some kind of economies of scale, either static or dynamic, are present. We show below that larger domestic markets help leverage the effects of increasing returns. That is, a larger domestic market can enhance the domestic government's ability to capitalize on the benefits from import protection. These forces suggest that protectionism should be even greater in these sectors when blocks are large compared to when the national markets are small.

Imagine that there are N firms which share the world market for a product, say RAM chips. The demand for the product is given by:

$$p = a - \sum_{i=1}^{N} q_i = a - Q, \tag{20}$$

where p is the price of chips and q_i is the output of the ith firm. Suppose that each firm chooses its output in order to maximize profits, setting marginal revenues equal to marginal costs. This implies the standard equilibrium condition for profit maximization:

$$p\left(1 - \frac{s_i}{\epsilon}\right) = MC_i, \tag{21}$$

where $s_i = q_i/Q$ is the ith firm's share of the total market for chips, $\epsilon = \frac{pdQ}{Qdp}$ is the elasticity of demand for chips, and MC_i is the ith firm's marginal costs of production. From this setup it is straightforward to show that the ith firm's output is given by:

$$q_i = (N+1)^{-1}\left(a - nMC_i + \sum_{j \neq i} MC_j\right). \tag{22}$$

What happens if the domestic market is protected so that only the domestic firm can sell there? If there are no increasing returns (so that marginal costs remain the same once the protection is put in place), then the domestic firm's foreign market share remains the same in the short run. All that changes is its share of the domestic

market. Under these circumstances, protection is likely to be bad for the domestic block as a whole: the domestic market for chips becomes less competitive, which hurts domestic consumers more than it helps domestic producers.

However, if there are increasing returns to scale, the domestic economy can benefit from protection. Increasing returns may take several forms, including dynamic effects such as learning by doing and the proliferation of new techniques. For our purposes, however, static increasing returns (in the form of decreasing marginal costs) have the same overall impact as these more complex dynamic effects.

Suppose, then, that marginal costs decline as output increases. This implies that as the domestic market for chips becomes more efficient, domestic firms expand their foreign market share. In this situation protection is much more likely to make the domestic block better off. To see the effects on output, take equation (22) as a description of the domestic firm's foreign sales. When the domestic market is protected, the domestic firm's output rises and so its marginal costs fall (i.e., MC_i declines). This has a direct, positive effect on the domestic firm's foreign sales, raising its foreign market share.

There are also several strategic effects of the protectionist policy, which may be even more powerful than the direct effects. First, other firms reduce the absolute amount of their output in foreign markets, in deference to the lower costs achieved by the home firm. To see this in equation (22), note that q_i falls as MC_j, $j \neq i$ declines. But a foreign output reduction further spills over into *higher foreign* marginal costs, reducing foreign output even further. Finally, as equation (22) shows, higher foreign marginal costs directly raises the domestic firm's output. This then begins the cycle again, further raising domestic marginal costs and output, and lowering further foreign marginal costs and output. Once we arrive at a new equilibrium – at which point equation (22) is satisfied for all N firms – protection of the domestic market

will have been translated into a competitive advantage for the domestic firm in its foreign markets as well. The greater the increasing returns, the greater is the spill over effect onto export competitiveness.

Clearly, these strategic effects are important beyond the large size of a domestic block. In larger blocks, domestic protectionist policies have a greater impact on the strategic outcomes abroad. Indeed, the domestic welfare consequences of protection depend importantly on how much marginal costs fall. All else equal, a larger domestic market makes it more likely that marginal costs fall substantially, and that the domestic firm gains a large strategic advantage in overseas markets. The greater the decrease in marginal costs, the greater the chance that the domestic block as a whole will benefit from the protection. The implication is that larger blocks have greater incentives to initiate strategic protectionism designed to take advantage of increasing returns.

Is the possibility of foreign direct investment likely to reverse this tendency toward greater protectionism, as it did in the previous subsection? The answer partly lies in whether firms are willing to transfer abroad that part of the operations which is subject to increasing returns. Activities such as R&D, product development and design, and the actual production of new generation products may have the greatest increasing returns associated with them. Yet these activities may be the least likely candidates to be moved abroad–at least in the short to medium run. Production activities which are not associated with important increasing returns are probably better candidates for overseas production, to which the model of the previous section applies.

The modern semiconductor industry provides a good illustration of how this model might work in the real world. Semiconductors is a relatively new industry, begun in 1959 with the invention of the integrated circuit (IC). Initially the

industry had relatively low entry costs and only moderate scale economies (Intel Corporation built a state-of-the-art fabrication facility in 1972 for $3.2 million). Even R&D scale was modest: it was common for a few engineers with a good idea to design a new product). Most firms in the U.S., Japan, and Europe built their manufacturing fabrication facilities in their home bases, but since transportation costs were insignificant, assembly and test operations were often moved to low cost labor locations.

In the mid-1970s several changes occurred in the economics and technology of the industry. Perhaps most important was that production and of chips moved from large scale integration (LSI) to very large scale integration (VLSI). A result of this change was that microelectronics became much more capital intensive. Estimates for building a world-class production facility varied, but most analysts concurred that the cost had risen some ten to twenty fold from 1975 to 1985. By 1990, every step in the production process became more capital intensive, expensive, and intricate. A high volume plant cost approximately $400 million and would take almost two years to build and qualify the products for sale. Learning effects were also significant, with costs decline about 30- 40 percent for every doubling of production. One estimate suggested that a firm had to achieve 6 percent of the world market (up from 3 percent a decade earlier) from each new plant in order to justify the capital costs. R&D expenses also rose during this period, averaging as much as 15 percent of sales in some years. As product life cycles in the industry shortened on some high volume products (like DRAMs) from five to three years, the advantage was won by firms that introduced early and had the capacity to fill demand.[8]

These features of the semiconductor industry make it an ideal-typical candidate

[8] See Yoffie (1988).

for strategic trade policy, especially in the context of growing economic blocks. The majority of demand for semiconductors is in the United States and Japan (approximately 39 percent and 51 percent, respectively, in 1989), with Europe consuming approximately 10 percent. No individual country in Europe had adequate demand to justify new plant capacity. However, once Europe becomes a larger block, the incentives for more semiconductor production are obvious. A European government could hypothetically intervene in its semiconductor industry, reduce imports and build local scale economies. Europe might then receive a disproportionate share of the benefits from the profits or spill overs generated by the semiconductor industry. And while capital mobility allows firms to move abroad easily in industries such as footwear, the capital-intensive and especially the R&D-intensive nature of semiconductors makes it much harder for firms to escape from a high cost national base in the short-to-medium run, or for firms to invest directly in a foreign market to avoid import tariffs.

The incentive to protect semiconductors in Europe becomes even more compelling if one looks at the history of this industry. In the early 1970s, America dominated production and consumption–controlling over 60 percent of both. To build a competitive industry, the Japanese government explicitly and implicitly restricted foreign entry until the late 1970s. Even though many studies suggested that protectionism led to initially higher costs for Japanese producers, by the end of the period, Japanese firms successfully built scale economies, moved down the learning curve, and had become the lowest cost producers in the world of certain leading edge chips. The temptation for any individual country in Europe to replicate the Japanese experience should be low because even Germany and France have tiny markets for chips compared to Japan and the United States. But collectively, Europe's market in the 1990s is only marginally smaller for chips than Japan's market

in the early 1970s.

Not only does larger market size increase incentives for protectionism in semiconductors, but the high fixed cost structure of manufacturing and the scale-intensity of R&D make it difficult for firms to adapt to protectionism. Trade conflict between the United States and Japan in semiconductors has been intense since the mid-1980s. In other industries with comparable trade conflict, like TVs in the 1970s and autos in the 1980s, many Japanese firms invested heavily in the United States within a few years. But direct investment in semiconductors has been much slower: most firms in Japan (and the United States) have considered the cost penalties too great to move either the high value-added portion of manufacturing (i.e., wafer fabrication vs. assembly and test) or large R&D facilities (many firms have small design centers in other countries where marginal changes in made in the home country designs). Even though protectionism was a reality in Japan throughout the 1970s and became a real threat in America and Europe in the mid 1980s, few plants actually moved overseas. Most companies that have announced their intentions to pursue direct investment will not be opening facilities in other countries until the mid-1990s. (See Table 2.) Furthermore, most of the planned facilities are only manufacturing operations, without fully integrated R&D. Most firms continue to do the significant R&D at home and transfer designs to foreign plants.

While we do not yet know how trade, investment, and protectionism in semiconductors will evolve, experience to date is suggestive of several issues posed in our model. First, the Europeans have already showed signs of creating a fortress in semiconductors, even before the 1992 program is complete. Recent changes in anti-dumping laws (which had previously defined local content in chips as low value added assembly and test, but now defines local content as "diffusion" or fabrication) have been widely interpreted within the industry as a sign that Europe wants to

safeguard European chip demand for European companies. Second, the high cost of direct investment in an industry like semiconductors makes it harder for firms to adjust. The very slow pace of direct investment is evidence of this trend. But third, even if domestic firms do not like to move abroad their increasing returns activities, one should expect capital to move if it becomes a necessity for being competitive. It may take a much longer time, and not all of the increasing returns activities may relocate, but ultimately, capital remains mobile. If firms penetrate each others' markets, and assuming that investment is not a perfect substitute for trade, the domestic incentives for protection could decline.

3. Implications

Thus far we have argued that strategic trade policies in a tripolar world will differ greatly across sectors. Incentives for protection will be greater and last longer in industries with increasing returns in production compared to industries that lack significant scale economies. For those goods which are not subject to increasing returns, the formation of large trading blocks may ultimately help lower tariffs, as firms quickly move production abroad. However, for those goods which are subject to increasing returns, firms may actually become more efficient producers by locating production exclusively within the protected domestic market. Since the presence of increasing returns can lead the domestic economy as a whole to benefit from protection, the incentives to raise trade barriers increase in a world dominated by large trading blocks.

Yet over time, capital remains mobile, even in sectors with increasing returns. And to the extent that foreign direct investment occurs, and as long as it is an imperfect substitute for trade, it should diminish the force of increasing-returns-based arguments for domestic protection. Foreign firms with local production (and local employment) will advocate liberalization. Moreover, one of the most important strategic advantages of protection to domestic firms disappears – the guarantee that a large domestic market base on which efficient production can be realized. If foreign producers invest in – and ultimately share – the domestic market, trade protection may not be a fully credible guarantee of market share. Without credibility, many of the strategic advantages to protection are lost. While strategic protection may provide some local employment, it may or may not provide the type of employment (e.g., semiconductor R&D) or spill-overs that would be generated by domestically-headquartered firms.[9]

[9] See Tyson (1991) and Porter (1990).

To reap the strategic advantages associated with increasing returns, governments would need to insulate their economies both from foreign direct investment as well as from foreign trade. Yet many countries (or blocks) actively protect certain sectors from imports, but do not discourage foreign direct investment in those sectors. This suggests that either the motivation for protection is different than the assumptions underlying our model, or that trade and investment policies in many countries are not in harmony with one another.

One could draw an optimistic conclusion about the world economy from this disjunction between direct investment and trade. On the one hand, we have argued that growing economic blocks will produce more economic conflict in the short run, but as foreign investment grows in response to protectionism, countries will have incentives to liberalize trade. Even in increasing returns sectors, the mobility of capital will make it difficult for the European block or American block to preserve its domestic market for local firms. Over time, multinational companies will invest in each others' markets undermining the effectiveness of strategic protectionism.

In reality, much of this process is already underway. In traditional sectors, such as autos, significant foreign investment has already taken place. A Honda produced in Ohio is difficult to distinguish between a Honda produced in Japan; one suspects the same will be true in Europe when Japanese firms bring their announced investments on stream. In the absence of restrictions on local investments, it becomes increasingly difficult for governments in Europe or North America to preserve the local market for local companies.[10] The level of cross investment among industrial

[10] If there are going to be political consequences of direct investment, it is important that investment is not a perfect substitute for trade. In the extreme case, where trade and investments are substitutes, there is no reason to believe that the foreign firm will lobby for liberalization. Once established, the multinational might prefer to continue operating behind closed barriers. However, in reality, much of the investment among industrial countries has been to promote incremental sales without displacing all exports from the home country. Therefore, many foreign investors are likely to advocate freer trade.

markets has reached historic proportions, partly in response to existing protectionism, and partly in anticipation of the short-run protectionism our model suggests.

The same process is occurring in battlefield sectors outside of semiconductors. The public switch market in telecommunications, for instance, exhibits many of the same features as the semiconductor industry: scale economies in manufacturing, and especially software design (average $300-$500 million per year in on-going development costs, with a next generation switch expected to cost approximately $1.5 billion) have become so great in the 1980s, that most analysts believe that the global market cannot support more than five or six players.[11] As firms from Japan, North America, and Europe invest heavily into each others' protected market, strategic trade policy will become more difficult: will political authorities be able to distinguish between an NEC product manufactured in Texas and a Siemens switch manufactured in Florida from an AT&T switch manufactured in Arkansas, even though AT&T is the only firm of the three with a fully integrated domestic R&D operation? As Robert Reich (1989) has posed the question: "Who is Us?"

Heavy cross-investment is even making it difficult to formulate policies in new, emerging technologies with increasing returns, such as high definition television. Since European and Japanese firms had long established presence in North America in the mature TV business, those same facilities provide platforms for manufacturing new, related businesses, like HDTV. The governments in the European and Japanese blocks have each strategically intervened in their domestic industries by setting of local standards which don't conform to the standards of others. In the meantime, Japanese and European firms are lobbying against American owned firms to set the standard in the United States. (See Figure 5) The conundrum for the U.S. government is who is more American: Zenith with production of TVs in Mexico,

[11] Cowhey (1990).

Thomson of France, who own's RCA's production in the U.S., or Matsushita of Japan with factories in Chicago?

If the cross-investment described above was symmetrical (i.e., each block invested roughly equally in each others' territory), one might predict that protectionism and strategic trade policy in a tripolar world might eventually disappear. Each block would have so much of each other's investment, that it would be politically difficult to distinguish national origins of firms. However, while the outflow of investment has been fairly symmetrical across the three blocks (see Figures 6 and 7), it has been highly asymmetrical on the inflow side. Japan appears to be the only major industrialized country whose domestic market remains effectively protected from foreign investment as well as trade in some increasing-returns sectors. While there are no formal barriers to foreign direct investment into Japan (restrictions were removed in the 1970s), Japan permits far less access to foreign ownership than it does even to its goods markets.[12] Figure 6 shows the outflows and inflows of foreign direct investment out of and in to major countries, including Japan. Even in a era in which foreign direct investment around the world has mushroomed, inflows into Japan remain nil.

If increasing returns are important, Japan may be the only country that has pursued policies that are consistent with maximizing domestic welfare (either on purpose or by happenstance). In the presence of increasing returns, these policies also lower the rest of the world's welfare. Nevertheless, viewed in this way, Japanese policies are not hard to understand. Rather it is the policies of the U.S. and Europe that seem contradictory: why promote trade protection in high technology, increasing-returns sectors, yet allow foreign firms free access to domestic markets through FDI? Perhaps the political economy of trade policy forces a parochial

[12] See Froot (1990) for an analysis of Japanese foreign direct investment.

emphasis on improving domestic welfare, especially the interests of local capital, whereas the political economy of FDI policy in Europe and North America is more concerned with the short-run employment effects. In any case, we are left with an unstable long-run equilibrium: If Japan can follow coherent strategic policies, while the other blocks are politically confounded by cross-investment, the outlook for a tripolar world economy is uncomfortable, to say the least.

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Figure 1
The Optimal Short-Run Export Tax

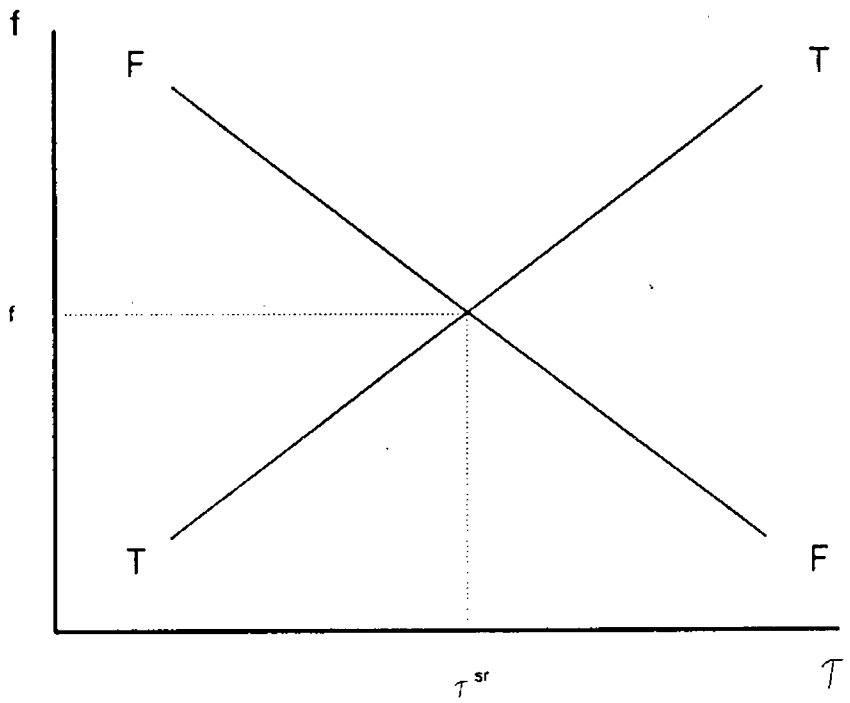


Figure 2
The Effect of an Increase in Block Size
On The Optimal Short-Run Export Tax

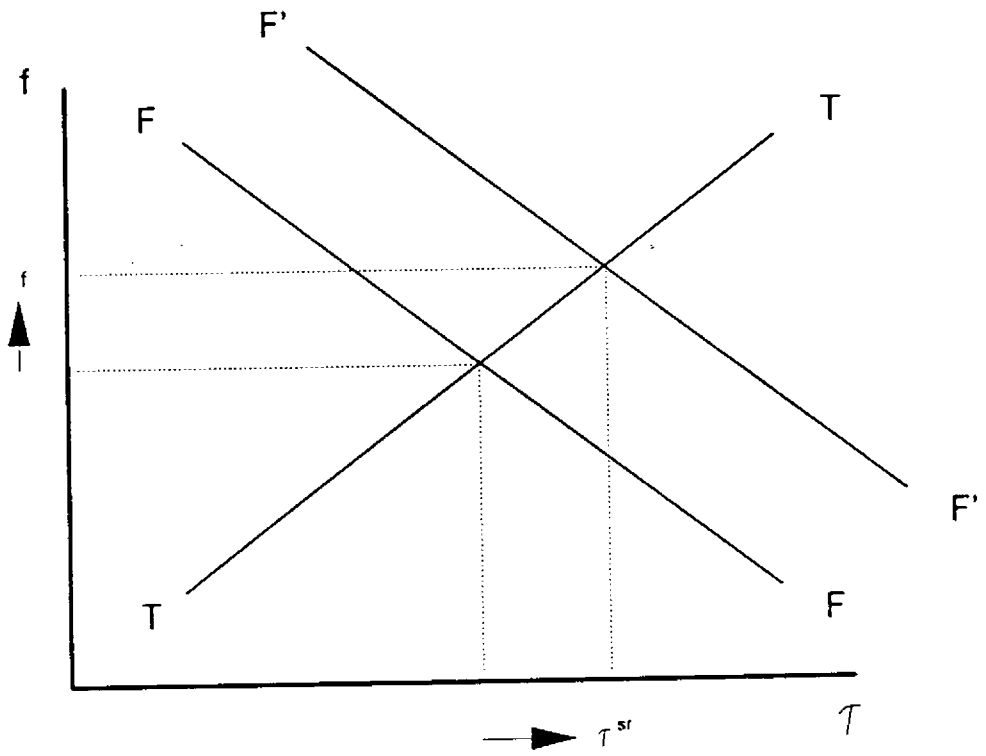


Figure 3
The Optimal Long-Run Export Tax

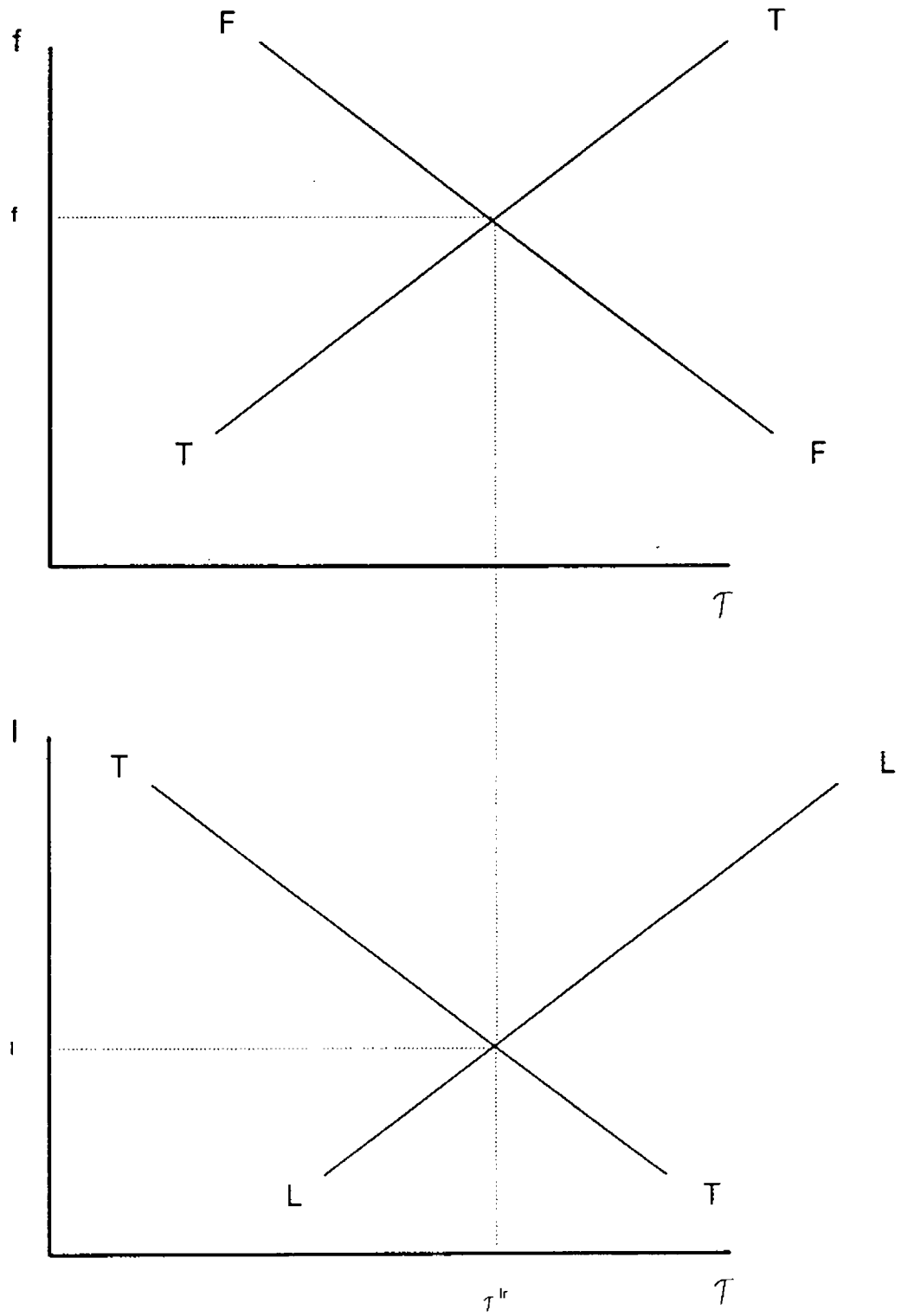


Figure 4
The Effect of an Increase in Block Size
On The Optimal Long-Run Export Tax

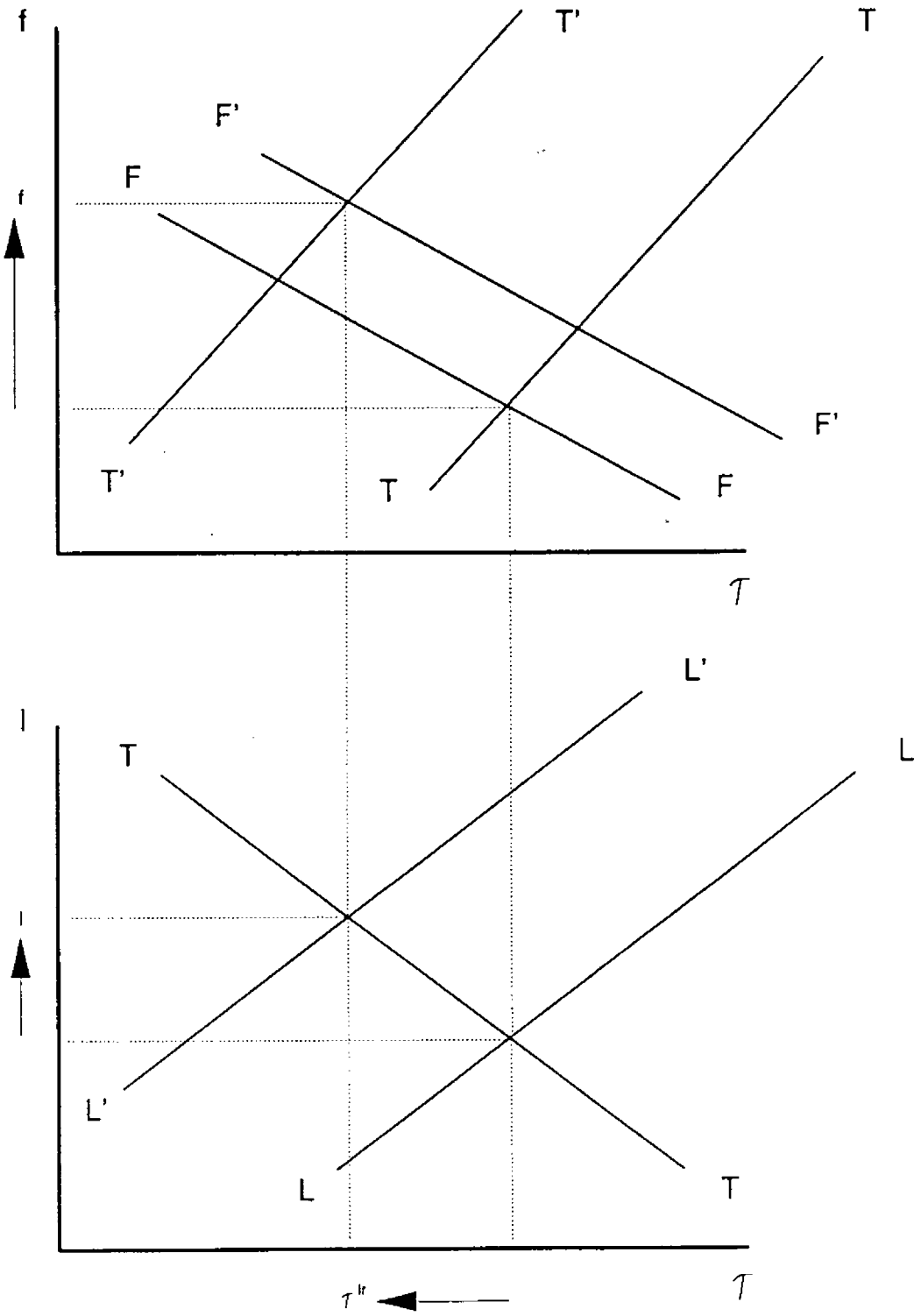
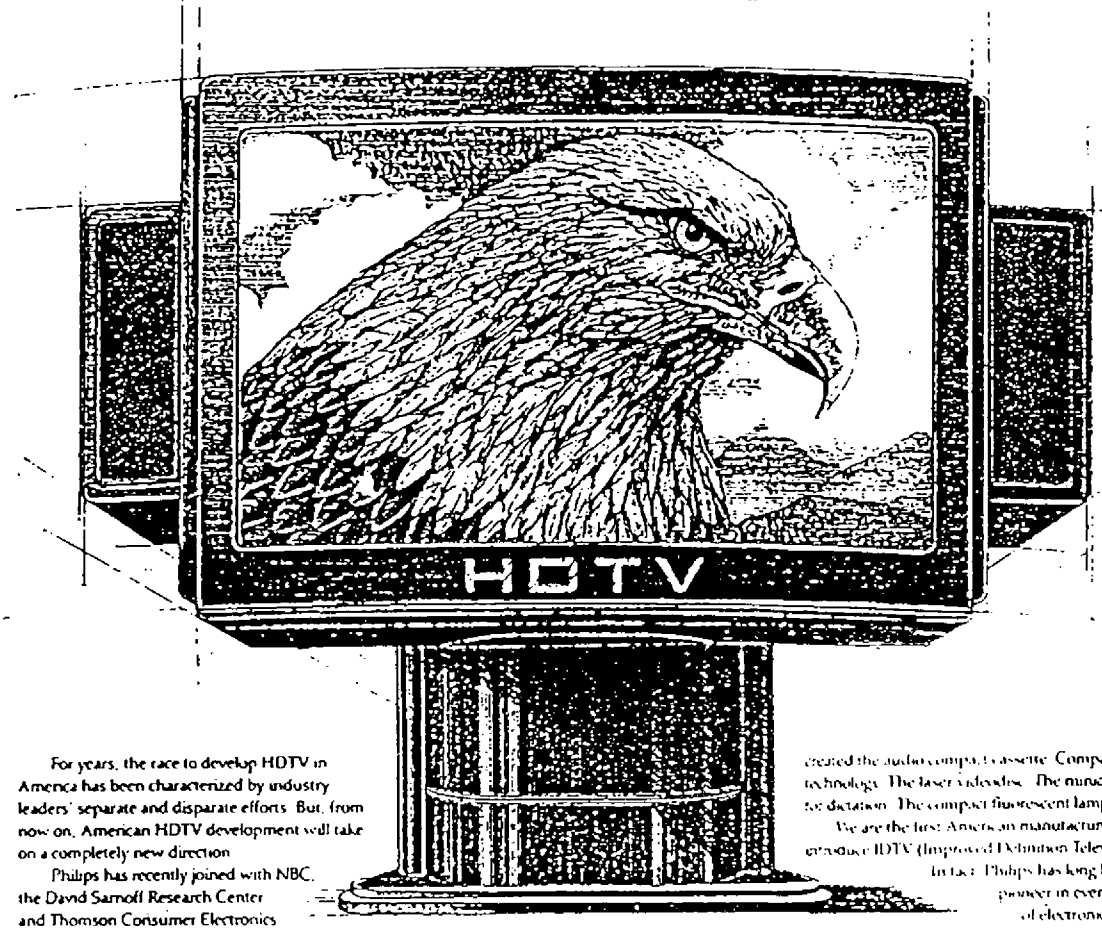


Figure 5

HDTV. WE'RE GOING TO MAKE IT IN AMERICA.



For years, the race to develop HDTV in America has been characterized by industry leaders' separate and disparate efforts. But, from now on, American HDTV development will take on a completely new direction.

Philips has recently joined with NBC, the David Sarnoff Research Center and Thomson Consumer Electronics Inc. in forming the Advanced Television Research Consortium. This precedent-setting consortium will harness the resources of the two most prominent U.S. research centers for video technology (Philips and Sarnoff), the two largest U.S. television manufacturers (Philips and Thomson-RCA) and the leading television network (NBC). We are unequivocally dedicated to ensuring that *American* technology will set the standards for TV's next milestone.

By producing a video image previously only available on film, HDTV will benefit the entire viewing public. But far more than enhanced picture quality is at stake. HDTV represents a potential benefit to the entire U.S. electronics industry. For the first time in many years, a large and dynamic market for new television sets will be created. HDTV technology will also provide a myriad of applications in related technologies such as semiconductors, medical imaging and defense systems.

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In fact, Philips has long been a pioneer in every phase of electronics, from lighting to medical technology, from navigation to video advancements.

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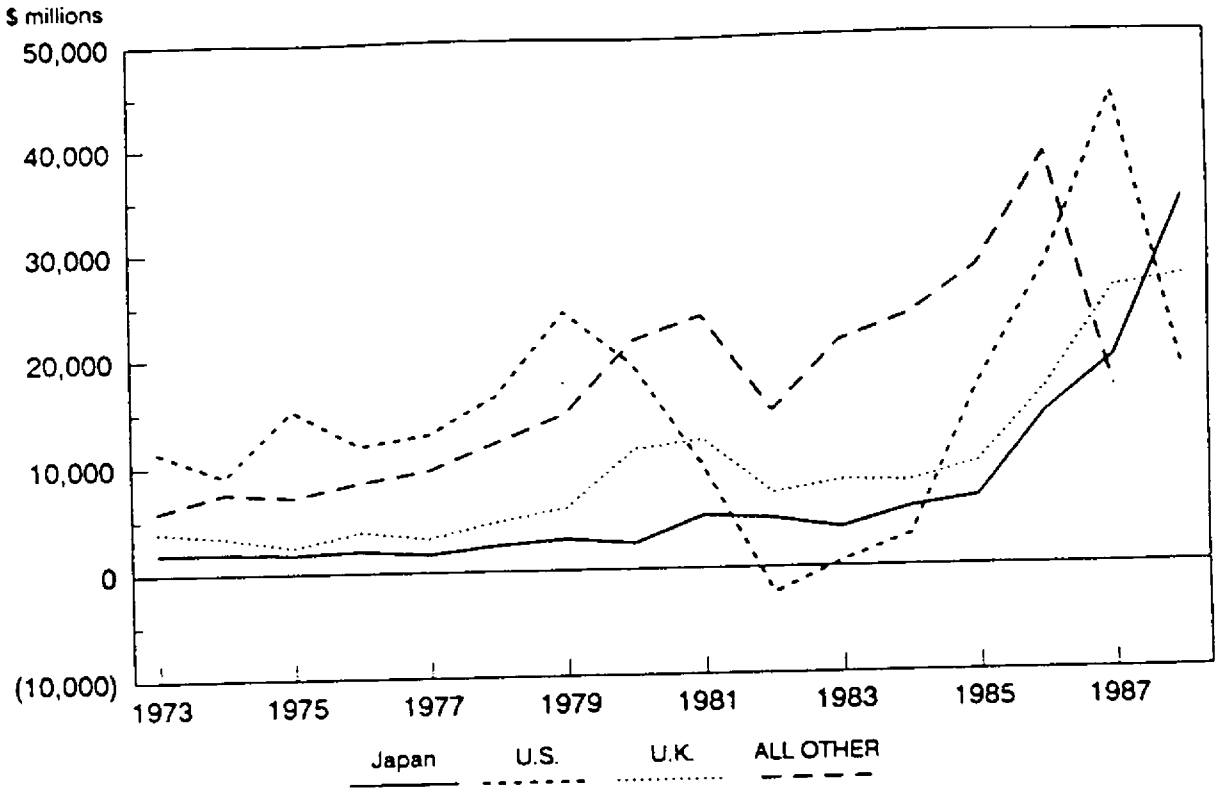
PHILIPS

North American Philips Corporation

Figure 6

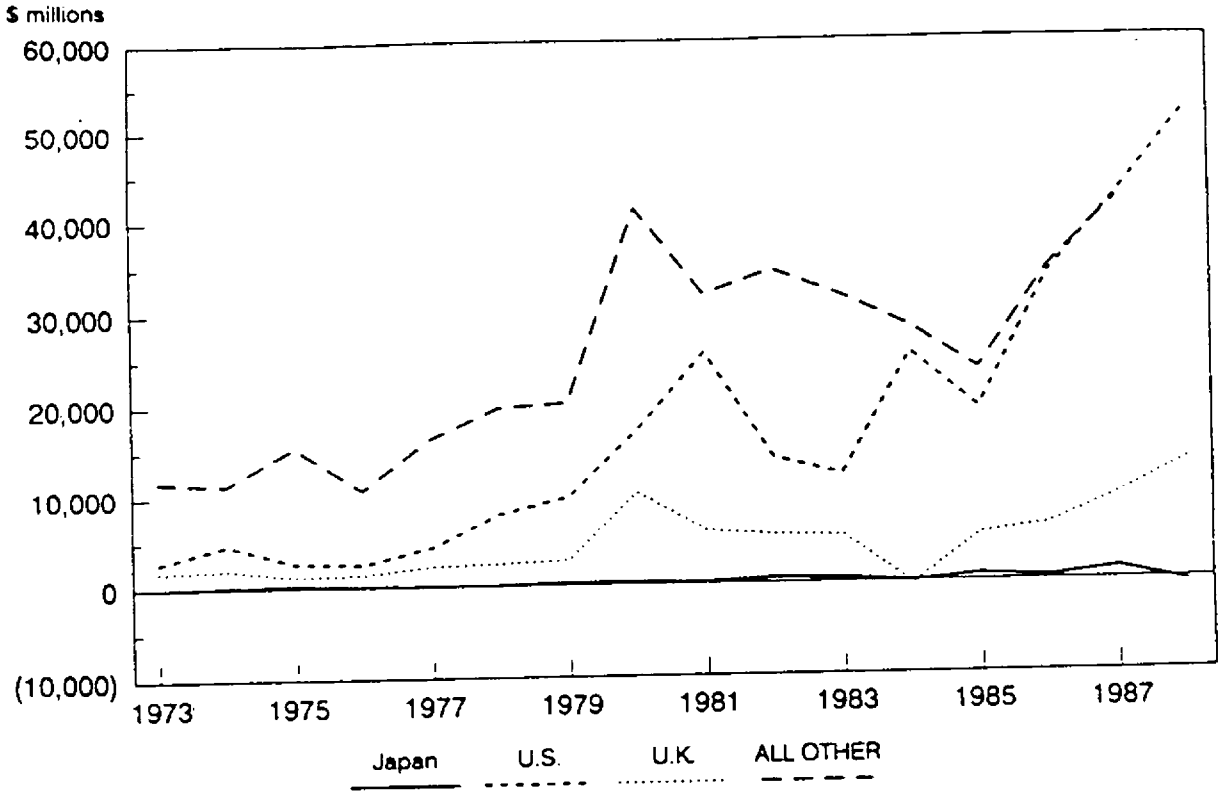
FOREIGN DIRECT INVESTMENT OUTFLOWS



SOURCE: IMF, Survey of Current Business, Bank of England, Bank of Japan

Figure 7

FOREIGN DIRECT INVESTMENT INFLOWS



SOURCE: IMF,Survey of Current Business,
Bank of England, Bank of Japan

TABLE 1

FOOTWEAR PROTECTIONISM AGAINST MARKET ECONOMIES

(Protectionism disappears in all large industrial economies)

COUNTRY	FOOTWEAR TYPE	EXPORTER	NTM	TARIFF DUTY RATES (1983)	PERIOD OF NTM
Sweden	Rubber boots	S. Korea Taiwan Malaysia	Quota and VER Non-MFN	15.4	1970-1984 1975-1977
	Leather and plastic	All	Quota		
USA	Non-rubber	S. Korea Taiwan	VER Voluntary VER	11.4	1977-1981 1981-1982
	Non-rubber	India Argentina Spain Brazil	Countervailing duties and countervailing duty		1979-1983 1979-1983 1974-1983 1974-1983
EC	Leather	All	"Retrospective control of imports"		1975-1978
Canada	Leather Non-Leather Leather + Non-Leather	All All All	MFN Quota MFN Quota MFN Quota	23.4	1977-1981 1981-1982 1982-1985
UK	Non-Leather All	Taiwan Taiwan	Quota Ind-to-ind VER Difficult/impossible to enforce	See EC	1977-1980 1981-1984
	All	S. Korea	Ind-to-ind VER		1978-1987
France	Leather and Rubber Slippers and Espadrillos	Taiwan S. Korea	Ind.-to-ind. VER, unfilled since 1982 Ind.-to-ind. VER	See EC	1981-1982 1981-1984
Italy	Leather	S. Korea	VER		1981-1985

Notes

a) USA excluded starting early 1980s.
b) Quota size not publicly released. Quotas were distributed to 26 importers mostly affiliated with Japanese footwear manufacturers.
c) Imports beyond prespecified quantity at penalty tariff rate.
d) Two-tier quota allocation system to importers: 70% on past performance; 30% for sale by tender once a year (1986).
e) Informal pressures to restrain put on Brazil, Hong Kong, S. Korea, Malaysia, Pakistan, Taiwan, China.
f) Supplemented 1982 to 1984 by "bilateral private, agreements" between the European Confederation of Footwear Industries and The Korean Footwear Exporters Association.

Source: Excerpted from Hamilton, 1988.

TABLE 2

OVERSEAS SEMICONDUCTOR FABRICATION FACILITIES

MEMORY AND MICROPROCESSORS

COMPANY	DATE	LOCATION	PRODUCT	CAPACITY (PER MONTH)
MITSUBISHI	1989	DURHAM, NORTH CAROLINA	1M-DRAM, ARRAYS, MCU	8500
	1989	TAIWAN	1M, 4M-DRAMS	
	1989	ALSDORF, W. GERMANY	4M DRAM, MCU, MPU ARRAYS	22000
SONY	1991	SAN ANTONIO, TEXAS	1M SRAM	12800
	1996	SAN ANTONIO, TEXAS	SRAM	NA
	1992	SCOTLAND	1M SRAM	22000
NMB	1992	NEW MEXICO	4M-DRAM	20000
NEC	1984	ROSEVILLE, CALIFORNIA	256K DRAM, ARRAYS	27900
	1987	LIVINGSTON, SCOTLAND	1M DRAM	12000
	1991	ROSEVILLE, CALIFORNIA	4M DRAM	16000
	1994	HILLSBORO, OREGON	16M DRAM	16000
	1991	LIVINGSTON, SCOTLAND	4M DRAM	10000
MOTOROLA	1970s	AIZU, JAPAN	LOG	365210
		AIZU, JAPAN	MCU, SRAM, POWER ICs	304341
		E. KILBRIDE, SCOTLAND	MCU, MEM, LOGIC	
		E. KILBRIDE, SCOTLAND	1M DRAM, SRAM, MPU	NA
		E. KILBRIDE, SCOTLAND	FET, AMPS, LED	NA
		TOULOUSE, FRANCE	BIPOLAR, POWER TRANS	12000
		SEREMBAN, MALAYSIA	SMALL SIGNAL	NA
	1991	AIZU, JAPAN	CONSUMER ICs	NA
	1992	SENDAI, JAPAN	4M DRAM, MPU, CUSTOM	25000
NATIONAL	1975	GREENOCK, SCOTLAND	NMOS, XMOS, BIPOLAR	40000
		GREENOCK, SCOTLAND	LOG	NA
		GREENOCK, SCOTLAND	LOG CUSTOM	7000
		LIVINGSTON, SCOTLAND	1M DRAM, 4M DRAM	12000
		HA-EMEK, ISRAEL	32 BIT MPU	6400
INTEL	1987?	JERUSALEM, ISRAEL	386 MPU	21000
	1993	KILDARE, IRELAND	NA	NA
TI	1960s & 1970s	ENGLAND	PWR, DISCRETE	20000
		W. GERMANY	LOG, LIN	15000
		HATOGAYA, JAPAN	MCU, LOGIC	15000
		HATOGAYA, JAPAN	NA	28000
		HATOGAYA, JAPAN	NA	18000
		HIJI, JAPAN	ARRAYS, LOGIC, LINEAR	50000
		HIJI, JAPAN	ARRAYS, LISP, MPU	20000
		HIJI, JAPAN	4M DRAM	7000
		MIJO, JAPAN	64K DRAM	20000
		MIJO, JAPAN	256K-DRAM, 1M-DRAM	
		MIJO, JAPAN	256K SRAM	23750
		IBARAGI, JAPAN	256K-DRAM	20000
	1991	ITALY	16M, 64M DRAM	NA
	1990	W. GERMANY	4M DRAM	30000
	1990	ITALY	LOGIC	3000
	1992	TAIWAN	16M DRAM	20000
	1991	TAIWAN	1M DRAM	30000
	1995		4M, 16M DRAM	NA