

Foreign Direct Investment in the United States and U.S. Interests

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Foreign direct investment entered the United States at unprecedented rates during the second half of the 1980s. The result has been much higher levels of foreign ownership of U.S. economic activities than those to which the nation has been accustomed. The reasons for this investment include loss of competitiveness of U.S. firms compared to international rivals as well as attractions to foreign investors of the United States itself. The economic effects of greater levels of foreign ownership are generally positive, although some problems with levels of competition could ensue. National security considerations might cause the United States to place some restrictions on this investment, but other restrictions at the present time appear to be unwarranted.

LARGELY A NONISSUE UNTIL THE LATE 1980s, FOREIGN direct investment (FDI) in the United States, the acquisition of direct managerial control over U.S. real estate or business enterprises by foreign investors, has become the center of much political debate. Critics of FDI in the United States maintain that a large foreign presence in the U.S. economy results in loss of "economic sovereignty" and poses significant threats to national security (1). Proponents argue that FDI creates new and desirable jobs and brings into the nation new technologies that can improve the global competitiveness of domestic industries (2). Proponents also maintain that as long as the United States must finance a large balance of payments (BOP) deficit on current account, FDI is a more satisfactory means to finance the deficit than other alternatives.

On this last point, the BOP is in deficit whenever the sum of governmental fiscal deficits and domestic private savings is less than domestic private investment. Thus, the BOP deficit falls only if Americans save more, invest less, or local, state, and federal governments reduce their fiscal deficits. Otherwise, to finance the BOP deficit, the United States must sell to foreigners assets such as real estate, short-term instruments such as Treasury bills, or longer term instruments such as bonds or equity. Direct investment falls into this last category: The U.S. government defines direct investment as 10% or more ownership by a single foreign investor (a person or a firm) of a U.S. firm or a real property. The second category (real estate) is of relatively little importance. Most FDI in the United States consists of wholly or majority owned U.S. subsidiaries of foreign firms.

Direct investment is typically held for a much longer duration than other U.S. assets held by foreigners. Although shorter term assets conceivably could be liquidated en masse by foreign investors, likely triggering a precipitous fall of the dollar and an ensuing economic crisis, this is unlikely to happen with FDI. Thus, one case

for FDI is that as long as the United States continues to run BOP deficits, FDI is preferable to other forms of foreign investment as a means to finance these deficits.

Apart from this, what is the case for and against foreign direct investment in the United States? In this article I examine the size of FDI relative to the whole U.S. economy, why FDI has occurred, the economic consequences of FDI, national security implications, and finally whether the growing foreign stake in the United States is cause for worry.

How Much of America Do Foreigners Own?

The book value on balance of payments basis of the annual flow of FDI into the United States for recent years is shown in Fig. 1. As is readily apparent, FDI grew rapidly during the second half of the 1980s, but fell sharply during 1990 and 1991.

The reasons for the recent decline in FDI flows are not wholly clear. Changes in interfirm funds flows account for much of the decline (Fig. 2). The U.S. government counts as FDI the sum of equity held in U.S. affiliates by foreign parent firms, retained earnings of these affiliates, and net intra-firm borrowing between affiliates and parents. In 1990 flows of net lending from parents to affiliates declined sharply. Also, in the first half of 1990, the stock of retained earnings of U.S. affiliates of foreign firms declined sharply because these affiliates paid dividends to their parents in spite of negative net earnings. The decline in net lending (and perhaps the accelerated reduction in retained earnings) likely was caused by movements in interest rate differentials favoring borrowing in the

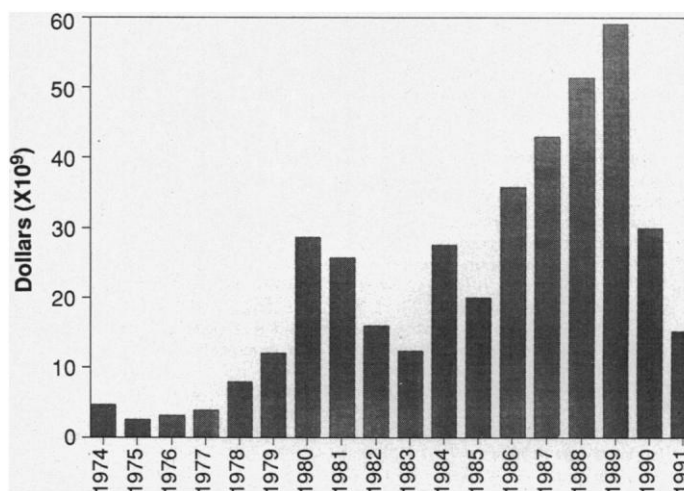


Fig. 1. Annual flow of FDI to the United States (balance of payments basis), 1974 to 1991. The 1991 figure is annualized from preliminary data for the first half of the year (13).

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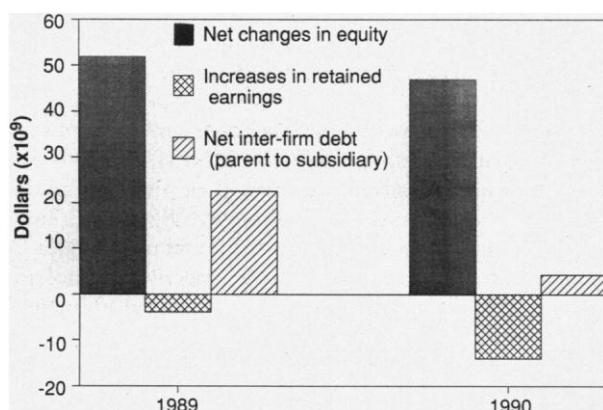


Fig. 2. Composition of FDI entering the United States during 1989 and 1990 (13).

United States, expectations of continuing dollar depreciation, or both.

New equity flows were also lower in 1990 than in 1989, but the change was small. Some of this decline was the result of the U.S. recession. But the rate of this decline accelerated in the last quarter of 1990 and the first quarter of 1991, and this acceleration is not easily explained by the recession. It might signal a trend break in new FDI coming into the United States, but it is too early to say this with assurance.

Table 1 details the stock of FDI by major source nation at year end 1986 and 1990. Although the United Kingdom is the largest source nation and Japan is in second place, the growth of FDI from Japan was significantly more rapid between 1986 and 1990 than from other nations. European nations account for almost two-thirds of FDI in the United States.

How large is FDI in the United States when compared to the whole economy? Table 2 presents various measures. By any of these, FDI accounts for a rather small portion of the economy. Alarmist views that foreign interests are buying out America, lock, stock, and barrel, simply are not supported by the facts.

When compared to figures for most other Organization for Economic Cooperation and Development (OECD) countries, the level of FDI in the United States is not high, adjusting for the size of the nation. Table 3 presents comparative figures for the "G-5" nations (the five largest industrialized nations) compiled by researchers at the Royal Institute for International Affairs in London. Although these figures date from the middle 1980s and suffer from some differences in definition, they do suggest that only in Japan is foreign control of the economy lower than in the United States. When compared with western Europe, foreign control of the U.S. economy is relatively low. Since the middle 1980s, the role of FDI has grown significantly in Europe as well as in the United States, but not so in Japan.

Table 1. Foreign direct investment in the United States by source nation (13).

Nation	Stock of FDI in the United States (dollars × 10 ⁹)	
	1986	1990
United Kingdom	55.9	108.1
Netherlands	40.7	64.3
Other European nations	47.5	84.1
Japan	26.8	83.5
Canada	20.3	27.7
All others	29.0	36.0
TOTAL	220.3	403.7

Much criticism of FDI in the United States is directed toward investment from Japan in particular. Although Japan is only the second largest source nation to FDI in the United States, Japanese FDI in the United States has surged in recent years. The rate of increase of Japanese FDI fell in 1990, but not by as much as the rates of increase of FDI from the other large investor nations. Until 1985, most Japanese direct investment in the United States was of the "greenfields" variety, that is, investment in newly established ventures. In 1986, this investment shifted toward takeovers. Even so, takeovers of U.S. firms by Japanese firms during 1987 through 1989 were neither as numerous nor on average as large as takeovers by British firms. But whereas large takeovers of U.S. firms by British firms virtually came to a halt after 1989, large Japanese investments such as the much publicized takeover by Matsushita of MCA have continued.

Indeed, throughout the 1980s and into 1990 the vast majority of foreign direct investment in the United States took place through acquisition rather than greenfields investment. Indicative figures are shown in Table 4. These acquisitions occurred concurrently with a mergers and acquisitions boom in the United States involving purely domestically owned firms. Takeovers of major U.S. firms by foreign investors peaked somewhat later than domestic mergers and acquisitions, and while the domestic boom ended somewhere around 1988, foreign acquisitions continued into 1990.

Japanese banks play a larger role in the U.S. economy than do Japanese investors overall. These banks control more than half of all banking assets in the United States under foreign control. Japanese firms also dominate the foreign-controlled portion of the U.S. automotive industry. There are other sectors, however, where foreign-controlled firms account for a substantial portion of domestic activity but where the Japanese presence is slight, such as the chemical and pharmaceutical industries.

There has been much concern about foreign purchases of real estate in recent years. Foreign holdings of U.S. real estate account for only about 1% of U.S. land and no more than 4% of all U.S. commercial properties by value in 1987, and the numbers are unlikely to have grown by much since. Thus, the foreign presence in

Table 2. Measures of FDI in the United States relative to the whole economy (13–15).

Measure	Measures (%) by	
	U.S. affiliates of all foreign investors	U.S. affiliates of Japanese firms
FDI stock as percentage of the total net worth of nonfinancial corporations (1990)*	10.5	2.17
Assets of foreign-controlled manufacturing affiliates as percentage of all assets of manufacturing corporations in United States (1989)	16.8	1.99
Employment of foreign affiliates as percentage of all U.S. employment (1989)	5.0	0.57
Employment of foreign manufacturing affiliates as percentage of all U.S. manufacturing employment (1989)	9.7	1.26
Value added by foreign affiliates as share of U.S. GNP (1987)	3.4	0.37

*Year in parentheses indicates last year for which base data are available.

Table 3. Measures of the role of FDI in the economies of five large industrial democracies for the year 1986 (16).

Nation	Sales*	Manufacturing employment*	Assets*
United States	10	7	9
Japan	1	1	1
France	27	21	
Germany	18	13	17
United Kingdom	20	14	14

*Foreign controlled as a percentage of total.

the real estate sector is much less than the overall foreign presence in the U.S. economy. The attention given real estate doubtlessly has resulted from a rather small number of acquisitions by foreigners (Japanese in particular) of highly visible properties such as New York's Rockefeller Center. In late 1989, the Japanese Ministry of Finance reportedly requested an end to such "showcase" purchases. Most Japanese investors have since sought "low profile" properties away from major city centers, although a few "showcase" purchases by Japanese investors have persisted. In some localities (Honolulu, for example), Japanese purchases of residential properties have bred resentment.

Economics of FDI in the United States

Why did FDI in the United States grow so rapidly? The answer most often given is that FDI in the United States is an inevitable by-product of the U.S. current account deficit, which requires an influx of foreign capital to finance it. But examination of the facts reveals that this is not so. A statistical test of the relation between annual changes in the net flows of FDI and the U.S. current account for the years 1973 to 1989 reveals a weakly negative relation. This is because during the years of rapid rise in the current account deficit, the deficit largely was financed by increased foreign purchases of short-term U.S. securities, whereas FDI as a percentage of total foreign investment fell sharply. But after 1986, as the BOP deficit began to shrink, the composition of foreign investment in the United States shifted from short-term securities toward longer term ones and direct investment. In 1989, inward FDI equalled about 52% of the BOP deficit and 56% of the increase in foreign assets in the United States, as opposed to 21% and 28%, respectively, in 1984.

Foreign direct investment is not well correlated with BOP deficits in a number of other countries as well. Japan's outward FDI grew during the late 1980s when her BOP surplus was declining. The United Kingdom has been a large net foreign direct investor in some recent years in spite of BOP deficits.

If the BOP—which measures the net flow of investment funds into or out of a country—is not the determinant of direct investment, what is? It is helpful to remind ourselves that direct investment occurs when foreign persons gain managerial control of a domestic business organization. But these "persons" typically are

Table 4. Sources of growth in foreign control of U.S. firms, 1982 to 1988 (13).

Mode of entry	Total investment (\$ billions)									
	1982	1983	1984	1985	1986	1987	1988	1989	1990	
Acquisitions	4.8	11.8	20.1	31.5	25.6	33.9	64.9	59.7	56.8	
New establishments	3.2	3.4	3.0	7.7	4.9	6.4	7.8	11.5	7.7	

business firms, not individuals. Unlike other forms of foreign investment, then, direct investment is not determined solely or even largely by financial considerations, but rather by considerations of corporate strategy.

FDI specialists thus have observed that direct investor firms (often termed "multinational enterprises", or MNEs) tend to possess firm-specific ownership advantages over their rivals (3). But the precise nature of the advantage varies from MNE to MNE. In some cases the advantage might be a recognized brand name (Coca-Cola, for example). In other cases, it may be superior technology or management skills. In natural resource industries the advantage can simply be control of low-cost sources of supply. For many MNEs, the advantage is some combination of the above.

Firms and industries are not static, and the nature of ownership advantage can change over time. In some instances, MNEs have long since lost the original advantage that enabled them to become multinational in the first place. Some of these firms may nonetheless be able to continue to operate multinationally because they have established barriers to entry in overseas market (for example, complex distribution networks) that are difficult for rivals to penetrate. Other MNEs that have lost their advantages relative to rivals will, however, over time, experience a shrinking share of global markets.

One interpretation of recent FDI in the United States thus is that non-U.S. firms have improved their status relative to U.S. rivals in terms of ownership advantage. This FDI can thus be seen as symptomatic of overall loss of competitiveness of U.S. firms. But it is unlikely that FDI is a cause of this loss, as some critics maintain. Possession of ownership advantages by foreign firms, implying a loss of competitiveness by U.S. firms, is a precondition for FDI to take place, and thus to the extent that FDI is indicative of loss of U.S. competitiveness, it is the loss that leads to FDI and not the other way around.

Ownership advantages explain why firms become multinational, but they do not explain why they choose to invest in some countries rather than others. To explain this, specialists refer to locational advantages possessed by countries which are sought by MNEs possessing ownership advantages. The large amounts of FDI that entered the United States during the 1980s testifies that non-U.S.-owned MNEs found considerable locational advantages to be had in the United States. These advantages included large market size, political stability, market growth potential, a generally well-educated labor force, a well-developed infrastructure, and a large R&D base. One can wonder, given the evident deterioration of some of these advantages, if these firms will continue to find the United States an attractive place to locate.

It is commonly accepted by FDI specialists that a firm must also possess economies of internalization as well as specific ownership advantages in order to become multinational (4). An economy of internalization exists if it is cheaper for a firm to work its ownership advantages internally within its own organization rather than, say, licensing these to overseas rival firms (5).

There also is evidence that rates of foreign direct investment in the United States have been affected by exchange rate movements and by tax policy changes. These effects however seem to be "at the margin." That is, they have caused short-term deviations in the growth of this investment; but the investment nonetheless is fundamentally driven by considerations of corporate strategies of the investing firms (6).

Finally, there is a body of literature that holds that at least some FDI is reactive: that firms become multinational because their rivals do. This could be one cause of FDI in the United States (7). Some implications of this possibility are discussed below.

The economic consequences of FDI in the United States. If FDI indeed is largely a consequence of firm specific advantages held by foreign

firms, one would expect the economic performance of U.S. subsidiaries of these firms to be at least as good as or better than that of rival domestically domiciled firms. Table 5 shows five measures of economic performance for the manufacturing sector. By most of these measures, the differences in economic performance of subsidiaries of foreign firms operating in the United States and domestic firms are slight. This certainly holds for value-added and compensation per worker employed, measures which many analysts say best summarize economic performance. Consistent with the hypothesis that the foreign-controlled firms hold advantages over their U.S. rivals, overall the former do slightly better than the latter by these two measures.

The same general result that performances of foreign subsidiaries and their U.S. counterparts are comparable holds for R&D expenditures per employee in the manufacturing sector as well. All U.S. affiliates of foreign investors in fact do slightly better by this measure than do all U.S. firms, but not U.S. affiliates of Japanese firms. It should be noted, however, that the figure in Table 5 for all U.S. firms is for company-funded R&D only. If government-funded R&D performed by U.S. manufacturing firms is added, this figure rises to \$4.6 thousand per employee. However, given that most R&D performed by U.S. affiliates of foreign firms is company-funded, it seems reasonable to use as comparison company-funded R&D by all U.S. firms.

Further bolstering the result that U.S. affiliates of foreign-controlled firms perform a share of R&D that is proportional to their size in the economy, one can divide the figure for R&D per worker by value added per worker to get the ratio of R&D to value added. This ratio can be interpreted as share of R&D relative to share of GNP. The figures are 5.6% for all U.S. affiliates of foreign firms, 5.8% for U.S. affiliates of Japanese firms, and 5.0% for all U.S. firms. Thus, by this measure, foreign-controlled firms in the United States more than "pull their oar" in terms of R&D contribution.

In spite of this, two things must be kept in mind. First, the total contribution of foreign-controlled firms to U.S. R&D is rather small, although proportional to the overall role of these firms in the U.S. economy. Second, for various reasons multinational firms historically have concentrated their R&D in their home countries (8). The propensity of multinationals to concentrate R&D in home countries is, however, declining with time (9). A growing foreign

presence in the United States thus probably does translate into some increased dependence upon foreign sources of technology. This is not necessarily wholly bad, because inward transfer of technology can benefit the U.S. economy irrespective of where the technology is originally generated. This transfer can even stimulate domestic rivals of foreign-controlled firms to upgrade their own technologies and, in doing so, these rivals might enable recapture by the U.S. economy of some of the externalities associated with the original development that otherwise would fall exclusively on the country where the R&D is performed. To the extent that this occurs, this is one pro-competitive consequence of FDI that acts to the nation's benefit.

Only in foreign trade (exports and imports per worker) do there seem to be significant differences between U.S.-domiciled firms and foreign-controlled U.S. subsidiaries. The figures in Table 5 are for U.S.-based multinational firms with imports and exports of U.S. affiliates of foreign firms in the manufacturing sector. Because the sectoral composition of the two sets of firms is not the same, there are problems of comparability between the two sets of figures. Unfortunately, data limitations prevent a more detailed comparison; figures broken down by industry are not available. The numbers show that the U.S. affiliates imported and exported more per worker than did U.S.-based multinational firms. The gap is especially great for imports per worker: These were about twice as high for U.S. affiliates as for U.S.-based multinationals.

What might have accounted for this difference, and of what consequence is it? There are at least two possible explanations. The first is that foreign firms operating in the United States are more "globally integrated" than are their U.S. counterparts and that they therefore ship more so-called "intermediate" goods (for example, parts and subassemblies) between their international subsidiaries than do the latter. If this explanation is correct, one would expect the differences in import propensities to persist over time.

An alternative explanation, however, is that the differences are largely "life cycle" effects. It is empirically verifiable that newly created subsidiaries tend to rely more on their parent organizations for inputs than do long-established subsidiaries but that as they mature, these subsidiaries substitute locally made inputs for imported ones. Because much FDI in the United States is of recent vintage, many U.S. subsidiaries of foreign firms would be expected to have high import propensities. This is especially true of Japanese-controlled subsidiaries.

To the extent that the "life cycle" explanation is correct, over time the imports per employee of foreign subsidiaries will come down. This indeed does seem to be happening. Whereas in 1982 for U.S. affiliates the ratio of imports per worker to exports per worker was 2.0, this ratio fell to 1.6 in 1988.

These ratios do not, however, clinch the "life cycle" hypothesis. Because much recent FDI in the United States has resulted from acquisition of U.S. firms, the narrowing ratio of imports to exports per worker might reflect nothing more than transfers of ownership of these firms to non-U.S. investors. The issue then is, once under foreign control, do these firms increase their imported inputs? At present, no data exist to address this issue directly.

If U.S. affiliates of foreign firms were to continue to have a higher propensity to import intermediate goods than comparable U.S.-controlled firms, what would be the costs to the U.S. economy? One way to measure these is to determine how far the dollar would have to depreciate to reduce net imports of the United States by an amount equal to the difference between levels of imports actually generated by foreign subsidiaries and levels that would be generated if the import propensities were identical to those of U.S.-owned firms. I calculate that the dollar would have to fall by 4% to achieve the required reductions. Such a percentage fall would be swamped in the short-term volatility of the dollar; during May 1991 alone, for example, the

Table 5. Measures of economic performance of U.S. affiliates of foreign firms operating in the United States compared with all U.S. firms (13, 14, 17).

Measure	Manufacturing sector (dollars $\times 10^3$)		All U.S. firms
	U.S. affiliates of foreign firms*	U.S. affiliates of Japanese firms*	
Exports per worker (1989)	14.73	15.6	17.8†
Imports per worker (1989)	18.47	41.2	11.3†
Value added per employee (1987)	48.1	49.8	46.0
Compensation per employee (1989)	35.2	36.4	33.9
R&D per worker (1989)	3.88	2.88‡	3.36

*All data are for industry of affiliate. †Data for "all U.S. firms" for imports and exports per worker are 1988 figures for U.S.-based multinational firms only, otherwise data for "U.S. firms" are for all firms in United States. ‡1987 data available only; 1989 figure is estimated to be about 4.0.

dollar appreciated on a trade-weighted basis by about 10%.

And so, overall, what are the economic consequences of foreign direct investment in the United States? One cannot help but conclude that this investment is on the whole favorable to the economy. Foreign direct investment creates good jobs at favorable wages. Technologies transferred into the United States help to invigorate the U.S. economy.

If FDI increases competition within the United States, any procompetitive effects must also be counted as benefits. In general, FDI does increase competition: As a result of FDI, more firms compete in any given market. This is generally true even if the mode of entry of the foreign firms is acquisition of an existing U.S. firm, because acquisition candidates are usually relatively weak firms whose competitive position stands to be strengthened under foreign ownership. FDI is not, however, always procompetitive. Under circumstances where FDI is "reactive" (made in response to previous FDI by rival firms), FDI can have anticompetitive effects (10). This is likely to happen in industries dominated by a small number of firms. Given the large number of foreign-owned MNEs that established U.S. subsidiaries during the 1980s, if there are industries in the United States where FDI has led to anticompetitive effects, they likely are small in number. But anticompetitive effects in some industries cannot be entirely ruled out.

Empirically, it is difficult to determine if and where anticompetitive effects might be found. Oligopoly industry structure, for instance, is often associated with high R&D intensity. This is especially true for FDI in the United States from Japan, and it is difficult to determine in many industries whether this FDI is the result of firm-specific Japanese advantages or an extension of Japanese oligopoly power (11).

National Security and FDI in the United States

If the economic consequences of FDI in the United States are largely favorable, are there any grounds for restricting it? One reason might be national security.

Almost surely there are U.S. firms that should not fall under foreign control—for example, such major defense contracting firms such as General Dynamics, Boeing, or Northrop. The Exon-Florio amendment to the Omnibus Trade and Competitiveness Act of 1988 does allow the president to block foreign takeovers, acquisitions, or mergers of U.S. firms on grounds of national security. This law is not precise with respect to what criteria are to be applied to foreign takeovers of U.S. firms, and the Bush Administration has chosen to implement the authority narrowly. Of upwards of 600 transactions notified to the Committee on Foreign Investment in the United States, the interagency group charged with working level implementation of Exon-Florio, less than a dozen cases have been fully investigated and only one transaction was actually blocked.

The president also has other means to deal with the foreign investor in times of national emergency. Under the International Emergency Economic Powers Act, for instance, the President can seize and administer foreign-controlled businesses.

But exactly what are the security threats posed by FDI? As will be argued, these often run counter to conventional wisdom.

We have noted, for example, that the very existence of FDI in the United States implies that foreign firms hold advantages, including technologies ones, over U.S. rivals. Many foreign-held technologies are of military relevance, including so-called "dual use" technologies having both military and civilian applications. Does a foreign advantage in such technologies have negative implications for U.S. national security and, if so, what should be done about it?

For certain very sensitive technologies the case can be made that the nation should subsidize domestically controlled enterprises to produce products embodying these technologies. Subsidization is costly and presumably the subsidized enterprise would not perform as well as foreign competitors (otherwise, it would not require a subsidy). In the extreme, poor performance of the domestic enterprise could actually consign the U.S. military to technological inferiority, the very opposite of the desired result. Thus, subsidized activities should be limited to ones where, in the absence of a domestic supplier, the nation would be so dependent on foreign sources that cutoff of supply would pose a clear, immediate, and credible threat to the national security.

Such instances are likely to be rare. For most activities, a better idea would be to follow the old adage, "If you cannot lick them, join them." That is, steps should be taken to ensure that foreign suppliers of needed technologies contribute positively to national security. This objective is typically better met if the foreign firm operates in the United States (through FDI) rather than exports the relevant products to the United States from the home country. Much the same point is made by the Defense Science Board.

Do U.S. policies currently encourage this? One can argue that current policies are overly restrictive. For example, the Defense Department currently places rather tight strictures on contractor firms under foreign ownership, control, or influence (FOCI). Generally, defense contracting operations of any firm subject to FOCI regulations must be structured so that the foreign owners do not have access to information deemed sensitive to national security. Under the most prevalent arrangement, the nonvoting trust, the foreign owners de facto lose managerial control over the defense contracting activities. The effect could be to discourage foreign firms holding proprietary technologies of use to the U.S. defense effort from participating in defense contracting. Intended originally to prevent leakage of militarily sensitive technologies, the regulations might now also encumber access of the U.S. military to desirable foreign-controlled technology. FOCI regulations are, it should be noted, currently being revised.

If the FOCI regulations are too stringent, one bill to "strengthen" Exon-Florio could be downright disastrous in terms of its likely effects. This is HR 2624, cosponsored by Representatives Richard Gephardt (D-MO), the House majority leader, and Cardiss Collins (D-IL). Intended to keep under U.S. ownership technology necessary for the defense industrial base, the bill likely would have the opposite effect by discouraging foreigners from investing in the United States in precisely those technologies where their contribution could be most beneficial (12).

This is not to say that FDI presents no threat whatsoever to national security. One threat, as noted, is excessive reliance on a single (or small number) of suppliers of critical technologies under foreign control. A useful prescription for dealing with this threat is embodied in another proposed bill to amend Exon-Florio, HR 2631, sponsored by Representative Phil Sharp (D-IN). This bill would link Exon-Florio to U.S. antitrust law by spelling out special new provisions for acquisitions of U.S. firms that meet national security criteria. The idea is that dependence on foreign firms becomes problematic when these firms hold monopoly power. But remedy of monopoly power is precisely what antitrust law is supposed to do. Such remedy is, of course, desirable even if no national security issues are present, and indeed, use of antitrust laws can be one remedy to any anticompetitive effects that might be induced by FDI. In some industries, however, problems of competition (or lack thereof) are not limited to the U.S. market, and one agenda for the future likely will be international approaches to competition policy. A model might be the new competition policy emerging in the European Community.

Foreign Direct Investment: Does It Threaten the United States?

Is the bottom line that there is no reason whatsoever for concern about foreign ownership of U.S. economic activities? The answer is "no." There is a level of foreign ownership above which few Americans would feel comfortable, where indeed "economic sovereignty" would become a real issue. There are specific activities which for defense reasons should be maintained under domestic ownership.

But whatever the level above which overall foreign ownership should not rise, actual levels of such ownership are surely now much below this threshold. Will FDI in the United States grow at a rate such that the threshold will soon be breached? Prediction is a risky business, but the best guess is "no." Flows of FDI into the United States have declined sharply from the high levels of the late 1980s, and earlier experiences of other advanced nations with surges of inward FDI (for example, Canada and the United Kingdom) suggest that these do not last forever.

Although there are some activities that should not be under foreign control for defense reasons, these are likely to be rather small in number. The United States has adequate laws and policies to deal with these cases. In fact, the danger is not so much that the U.S. government will fail to keep activities out of foreign control that should be retained under domestic ownership, but rather that the government's authority could be used overzealously so as to keep out of the nation activities that should be allowed in.

Some FDI might cause problems in the domain of competition

(that is, FDI might result in highly oligopolistic global industries) and, although unilateral application of antitrust law might be one remedy, a more international approach to the regulation of competition is likely to be one agenda for future discussion among nations.

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Population Genetics in Forensic DNA Typing

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Variable number of tandem repeat (VNTR) sequences are used to link defendants with crimes by matching DNA patterns. The probative value of a match is often calculated by multiplying together the estimated frequencies with which each particular VNTR pattern occurs in a reference database. However, this method is liable to potentially serious errors because ethnic subgroups within major racial

categories exhibit genetic differences that are maintained by endogamy. The multiplication procedure currently in use can be made scientifically valid only by extensive sampling of VNTR frequency distributions in a variety of ethnic groups, similar to the ethnic studies of various blood groups done in the past. Alternative approaches for dealing with subpopulation heterogeneity are discussed.

FORENSIC SCIENTISTS ARE CONSTANTLY SEARCHING FOR biological characteristics that are so variable among individuals that an observed match found in material left at the scene of the crime could be taken as conclusive proof linking a suspect with the crime. Fingerprints are the most famous and widely used example (1). However, the circumstances under which fingerprints are left and recovered in good condition are limited, so recourse is often made to other physical remains of a crime, like blood type or hair form. These properties, far from being unique, only narrow down

the identification to a group, and sometimes a very large group.

With the growth of DNA technology has come convincing evidence that each individual's DNA sequence is unique (2). Turning this theoretical principle into a reliable practical tool is the goal of forensic scientists. So far, the approach has been to try to find short stretches of DNA that differ from one individual to the next in ways that can be determined rapidly with high reliability and minimal cost by relatively inexperienced technicians using simple techniques. One form of DNA typing that has recently come into widespread forensic use is the variable number of tandem repeats, or VNTR (3). VNTRs are stretches of DNA in which a short nucleotide sequence is repeated tandemly 20 to 100 times. Different VNTR "alleles" are composed of different numbers of repeats, and

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