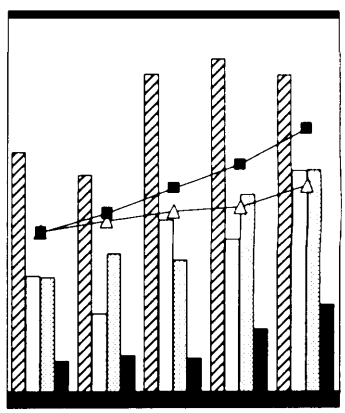
U.S. Technology Policy in International Economic Perspective 2

The first report of this assessment, *Mulitnationals and the National Interest: Playing by Different Rules,* identified broad asymmetries in the policy regimes of the major trading nations+ specially market access, foreign direct investment, financial, and industrial policies related to the activities of multinationals. [1]These asymmetries, it suggested, might have adverse consequences for the health of the U.S. technology base. The report discussed a range of informal barriers to international trade and investment, particularly in Japan but also in Europe, that have inhibited the full realization of an open, comprehensive multilateral trade regime that is transparent and mutually advantageous to trading partners. OTA thus raised the concern that widely divergent policy systems and business practices among states in the Triad might disrupt trade and investment relations among the major economic powers.

THE POLICY CONTEXT

In the past year, significant progress was made at multilateral, regional, and bilateral levels in negotiating formal trade agreements. In December 1993, the Uruguay Round of multilateral trade negotiations was concluded under the General Agreement on Tariffs and Trade (GATT). The new GATT agreement establishes a World Trade Organization (WTO), which, if ratified by all member states, would greatly strengthen multilateral provisions



[1] U.S. Congress, Office of Technology Assessment, *Multinationals and the National Interest: Playing by Different* Rules, OTA-ITE-569 (Washington, DC: U.S. Government Printing Office, September 1993). The report is summarized in appendix B.

for dispute resolution.[2] In an effort to expand regional trade, supplemental agreements on labor and the environment were negotiated for the North American Free Trade Agreement (NAFTA), and Congress ratified implementing legislation for NAFTA, which entered into force on January 1, 1994. Progress toward expanded trade and investment in the Pacific Region was also achieved in the context of the Asian Pacific Economic Cooperation (APEC), where high-level meetings were held and a Committee on Trade and Investment was established.

In addition, considerable progress was made in a variety of bilateral market access agreements, including the eliminat ion of duties affecting approximately $1 billion in U.S. trade with Canada, dramatic reduction in tariffs on a variety of goods with China, and elimination of discrimination by European Union (EU) member states against foreign heavy electrical equipment. The United States and the European Union were, however, unable to resolve disputes over the sale of telecommunications network equipment in Europe and, accordingly, the United States imposed sanctions against the European Union in this areas Nevertheless, as the data presented in chapter 1 and in Part 111 indicate, the United States and Europe have achieved in the aggregate a relatively balanced relationship with regard to investment and trade—including intrafirm trade conducted by [J. S.- and European-based multinational enterprises (MNEs).

U.S.-Japan Economic Relations

In contrast to these successes, the U.S.-Japan economic relationship continued to deteriorate during the past year. The U.S. merchandise trade deficit with Japan expanded despite a steady devaluation of the dollar against the yen, partly in response to the rapid U.S. recovery from the recession of the early 1990s and sustained recession in Japan, which reduced import demand. U.S.-based MNEs made limited headway in investing in Japan, despite partial correction of overvalued land prices in Tokyo. The U.S. direct investment deficit with Japan remained substantial, albeit somewhat reduced from the previous year. Moreover, the Framework for a New Economic Relationship talks between the United States and Japan collapsed in February 1994, confirming a long-standing pattern of disappointing bilateral trade negotiations.[4] Several weeks later, the President reinstated the Super 301 provisions of the 1988 Omnibus Trade and Competitiveness Act by Executive Order.[5] Although the Framework negotiations resumed in May, it was still unclear whether a common understanding of the objectives of the talks was achieved.

Japan poses a special problem not only for the United States, but also for other nations with chronic bilateral trade deficits with Japan,[6] and whose MNEs still face stiff resistance to entering the Japanese market through direct investment. But beyond these bilateral imbalances and the ris-

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[2] There is, however, considerable debate as to whether the WTO will lead to increased international trade and a reduction of informal trade barriers. For example, see the debate between C. Barfield and K. van Wolferen in "Will the New World Trade Organization Work?", *The Washington Post*, p. C3, June 26, 1994.

[3] Office of th, United States Trade Representative, *1994 Trade Policy Agenda and 1993 Annual Report of the President of the United States on the Trade Agreements Program* (Wash ington, DC: U.S. Government Printing Office, 1994), pp. 14-15 and passim.

[4] In particular, the Marlwt-oriented Sector-Specific (MOSS) talks of the middle 1980s and the Structural Impediments Initiative (S11) of 1989 and 1990 largely failed to produce the Intended results. See ibid., p. 61.

[5] W.J. Cl inton, President, United States, "Executive Order 12891—Identification of Trade Expansion Priorities," Weekly *('on) ipilation of Presidential Documents* 30(9)422-423, March 3, 1994.

[6] According to the Japanese Ministry of Finance, Japan's trade surplus in 1993 was higher with other Asian countries than it was with the United States. "Japan's surplus with Asia on a customs-cleared hasis in fiscal 1993 through March 31 jumped 25.1 percent from the previous year to S55.948 billion The surplus with the United States grew 1 I.8 percent to $51. 14 billion. . . . With the European Union, the surplus fell to $24.24 billion, down 21.8 percent from fiscal 1 992." *The Nikkei Weekly*, p. 1 April 25, 1994.

ing trade frictions associated with them, Japan presents a significant challenge to the post-WWII system of international trade and investment. The challenge is to integrate all nations, including Japan, more fully into the world system—which means convincing them to open their economies both to imports and to foreign direct investment, in a way that is comparable to the openness of the United States and the European Union. Failure to do so will almost certainly generate economic dislocation and severe pressure on the maintenance of a global economic order based on the principles of free and open markets, national treatment, and multilateralism.[7]

Although underlying macroeconomic factors drive aggregatc trade and investment balances, their composition and character can have microeconomic roots. Chronic bilateral trade and investment deficits between advanced industrial nations matter. In part, deficits reflect competitive disadvantages of firms based in deficit countries; but they can also reinforce those disadvantages. Where comparable market access is effectively blocked, many U.S. business leaders. for example, reluctantly conclude the odds are rigged against them and lower their expectations accordingly. In such circumstances, some settle for a minority equity position in a joint venture company. others feel compelled to license their technology, even when experience teaches it may ultimately be used to compete against them in their own or third-country markets. Foreign-based MNEs face few comparable restraints to investment and trade in the United States. In the case of Japanese MN Es, this has often translated into head-to-head competition with U.S. companies in America from a sanctuary base at home.

Building on the analysis of the first report of this assessment, in the chapters that follow, OTA present a comprehensive array of macroeconomic data, detailed trade and investment statistics, and information based on extensive staff interviews in Japan, the European Union and the United States. These data confirm that globalization has proceeded at different rates, both in terms of the kinds of MNEs that have emerged (see table 1 -1), and in terms of sectors of the international economy. In addition, industries of different nations have globalized at different times and in different ways. Taken together, the data presented in this report characterize trade and investment relations in the Triad, and also indicate the extent to which Japan has become an outlier in the global economic system.

Comparable Market Access

In addition, this analysis moves beyond identifying asymmetries among the policy regimes of the United States, the European Union, and Japan. It describes the nexus between trade and investment--demonstrating the importance of intrafirm trade among affiliated companies, which is circumscribed when direct investment is limited. *The central issue is comparable market access,* that is, the expectation that U.S.-based MNEs will be afforded the same access to foreign markets that foreign MNEs enjoy in the United States. Here it is critical to distinguish between *formal* national treatment and *effective* national treatment. When foreign companies meet sustained resistance to their imports and investment, even where legal and regulatory restraints have been removed, equality of competitive opportunity has not been achieved. The test is whether actual market access is comparable, both for trade and investment. especially in industries based on critically important technologies. "

Several members of the advisory panel associated with this study suggested that market

[7] The increase in trade friction in the Triad is now chronicled in yearly editions of government publications such as Office of the United States Trade Representative, *1994 National Trade Estimate Report on Foreign Trade Barriers* (Washington, DC: 1994); Services of the European Commission, *Report on United States Barriers to Trade and Investment*, Doc No. I/194/94 (Brussels, Belgium: Services of the European Commission, 1994); and Ministry of International Trade and Industry, *1994 Report on Unfair Trade Policies by Major Trading Partners* (Tokyo: Ministry of International Trade and Industry, 1994).

access problems are not limited to Japan, but may also extend to a number of newly industrialized and advanced developing countries in Asia, most notably China, Indonesia, Malaysia, the Republic of Korea, and Taiwan, all of which run trade surpluses with the United States and have placed conditions on investments by U.S.-based firms.[8] Similar views were expressed to OTA in industry interviews. These observations imply that there may be fundamental differences in the organization of capital and the conduct of business from one region to another, compounding the difficulty of finding multilateral solutions to a widening array of disputes associated with international trade and investment.[9]

OTA conducted very limited research on this point, primarily because the activities of MNEs in these countries are still very small when compared to the advanced industrial nations. U.S. direct investment in most East Asian economies is an order of magnitude smaller than it is in Japan: in 1993, for example, it was $3.0 billion for the Republic of Korea, $3.1 billion for Taiwan, and $0.9 billion for China. In addition, U.S. direct investment in these countries exceeds their investment in the United States by approximately 3 to 1.'O Finally, in interviews conducted by OTA, U. S.-based MNEs reported they are generally less concerned about restrictions on their ability to invest in other Asian countries than in Japan.

Multilateralism Beyond Trade

Large-scale trade and investment imbalances across the advanced industrial nations must be addressed. The Japanese economy, for example, has become too powerful to be ignored without detriment to U.S.-based MNEs and, ultimately, to the U.S. technology base. Moreover, for Japanese MNEs to continue to benefit from relatively open trade and investment regimes in the United States and Europe without Japan reciprocating constitutes a threat to the long-term viability of the multilateral system itself. To the extent that other nations are unable or unwilling to extend reciprocal market access to foreign-based firms, the problem is that much more critical. The United States has pursued a post-WWII policy wedded to the principle of national treatment, which has been applied in the areas of trade, investment, taxation, and (with important exceptions) to technology promotion funding.[11] For this reason, many analysts argue that exceptions to the principle of national treatment should be made only with great circumspection, if at all.

From this perspective, the answer to Japanese exceptionalism is to create the normative and legal conditions for a convergence of differing national trade *and* investment practices toward a global standard, exemplified by the relative openness of the U.S. economy. There is a considerable body of opinion that identifies institutions like the WTO as the long-term solution to broad asymmetries in market access policies and diverging business practices among nations in the Triad. In this view, what the Uruguay Round of GAIT negotiations has done for trade, the next round could do for investment, i.e., establish a minimum code of conduct that would prohibit policies that discourage foreign direct investment. As the analysis in Part III of this report indicates, trade and investment are so interdependent in the 1990s, it is unlikely that a solution to unfair trade conditions can

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[8] The OTA Advisory Panel on Multinationals and the U.S. Technology Base is listed in the front of this report.

[9] For a discussion of how different historical patterns and institutional structures have resulted in different kinds Of capitalism and different rates of economic development, see J. Zysman, "How Institutions Create Historically Rooted Trajectories of Growth," in *Industrial and Corporate Change* 3(1): forthcoming, 1994.

[10] In 1993, direct investment in the United States was $0.8 billion for the Republic of Korea, $1.3 billion for Taiwan, and for China it was negligible. U.S. Department of Commerce, Economics and Statistics Administration, Bureau of Economic Analysis, *United States Department of Commerce News* (Washington, DC: June 28, 1994), tables 2 and 3. All figures are on a historical cost basis at year end.

[11] The question of eligibility for foreign-based MNEs in U.S. technology programs is discussed in the next section.

be crafted without also addressing imbalances in FDI among major trading nations. But as Part IV suggests, convergence toward international norms may be less important than recognizing the differences between the U. S., European, and Asian economic systems, and learning how to live with them.

For these reasons, some observers now advocate a two-tiered foreign economic policy: one policy for countries that practice effective national treatment and extend a high degree of market access to foreign merchandise, services, and investment; and another policy for countries that do not. (Presumably, developing nations could be held to a different standard, in view of their need to develop indigenous industrial bases.) Atone tier, policy would be geared to recognize, promote, and expand the benefits of the post-WWII open system of international economic relations to additional countries. At the other, it would recognize the challenge posed to that system by nations that do not offer comparable market access, and take steps to limit potential damage to U.S.-based MNEs and, more broadly, the U.S. technology base. This approach would place conditions on national treatment, and meet infractions of international trade and investment treaties with specific measures designed to counter them. (Conditional national treatment is discussed in the next section.)

Other voices suggest a middle ground, that is, a U.S. approach that continues its commitment to multilateralism and national treatment but, at the same time, crafts specific bilateral and domestic policies to offset persistent imbalances in trade and investment with some of our trading partners. This might entail compensation at the national level to make sure, for example, that technological resources and competencies are retained within the United States at levels sufficient to ensure the long-term viability of the U.S. economy and the technology base on which it depends. Such a policy would require, for example, highly effective coordination and implementation of a range of U.S. technology promotion programs. (U.S. government support for technology development is discussed in the section on policy issues and options below.)

Still others contend that a special policy for Japan is unnecessary and ill-advised. They point out that Japan has removed most tariffs and other formal and legal barriers that had hitherto blocked access to the Japanese economy. The increase in the U.S. trade deficit with Japan over the past year, they suggest, resulted largely because the United States economy recovered from the 1991-92 recession more quickly, thus increasing the U.S. appetite for foreign-made goods and services. They also argue that exchange rate changes have made it more difficult for U.S. MNEs to invest in Japan, just at a time when land prices have been adjusted downward and the Japanese Government has instituted reforms to promote foreign investment in Japan.

Conditional National Treatment

As Parts III and IV of this report demonstrate, there is, at best, only limited convergence toward global norms regarding foreign direct investment, corporate governance, and the long-term financing of MNEs. Globalization of production and information systems has not led to harmonization of rules across nations, with the possible exception of international trade. Countries deviate from national treatment and comparable market access when national interests are believed to be at risk, such as national security and areas of strategic significance for economic development and competitiveness. [12]

12 "Areas in which foreign-owned companies are often treated differently include ownership of domestic firms, participation in national R&D and technology programmed and public procurement contracts. In addition, liberalising measures may be accompanied by reciprocity conditions under which foreign-owned companies are treated as domestic ones, only if other countries do the same. Such conditions are justified on grounds of increasing the openness of countries to foreign investment and creating a 'level playing field'. " R. Brainard, "Globalisation and Corporate Nationality," S7/ *Review (13):* 179, December 1993.

Proponents of conditional national treatment (CNT) contend that unilateral application of national treatment will not ensure the long-term vitality of the U.S. technology base and the industrial sectors that depend on it. When many global industries are characterized by increasing price competition, consolidation, and short-lived technological leadership, it is difficult to sustain competitive advantage in the face of large-scale asymmetries in market access, both for trade and investment. As one prominent analyst has suggested, foreign firms "may actually displace or deter the entry or expansion of American companies that might normally be expected to locate more of their production in the United States, thereby generating better jobs, more R&D, closer linkages with local suppliers, and more technical spill-overs." If a foreign firm "knocks out one or more domestic competitors . . . the final result may be a more oligopolized industry, where the remaining firms exercise significant market power."] [3]

Another aspect of CNT focuses on the principle of specific reciprocity. It stresses that MNEs must have the capacity to compete equitably across national borders. In this approach, U.S. government policies would condition the treatment of foreign companies in the United States on whether U.S. MNEs are treated comparably in the relevant countries with regard to imports and inward direct investment. Proponents of CNT point out that while the Trade Related Investment Measures under the new GAIT treaty, as well as the guidelines on investment issued by the Organisation for Economic Co-Operation and Development (OECD), are first steps toward an international investment regime, they are limited. Moreover, there are no multilateral agreements respecting other important areas such as corporate governance, finance, and competition policy.

In practice, this means that if foreign investors are to have the right to invest in the U.S. economy, then U.S.-based MNEs should also have the right to comparable access abroad. Reforms throughout Europe suggest that access for foreign investors to EU markets and research projects has improved significantly in recent years, although counter-examples still exist. The evidence, however, does not point to the same conclusion for Japan.[14]

Advocates of the CNT approach believe that if the United States continues to provide unfettered access to foreign-based MNEs despite foreign restrictions on U.S. firms, then U.S. policy favors foreign investors over domestic ones. In this view, asymmetric FDI can create an uneven playing field: foreign-based MNEs enjoy access to financing, technology, and markets that is denied to many U.S.-based MNEs. They argue that CNT is a highly flexible policy approach that can deploy a large number of instruments, such as performance requirements for investment, domestic content and export requirements, and program requirements for participation in publicly funded technology projects.

Congress has written the principle of CNT into a variety of laws over the past several years, and a large number of legislative proposals in the 103rd Congress contained similar provisions (see box 2-1). The CNT approach can be applied broadly as, for example, in the American Technology Preeminence Act, which permits participation in the Advanced Technology Program (ATP) only when the Secretary of Commerce finds "that the company's participation in the program would be in the economic interest of the United States, as evidenced by investments in the United States in research, development. . . ." It further provides either that:

> (i) the company is a United States-owned company: or (ii) the Secretary finds that the company is incorporated in the United States and has a parent company which is incorporated in a country which affords to United States-owned companies opportunities, comparable to those afforded to any other company, to participate in

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[13] L. D. Tyson, 'Why They Are Not US. Why American Ownership Still Matters," *The American Prospect* (4):37-49, winter 1991.

[14] For details see U.S. Congress, OTA, *Multinationals and the National Interest: Playing By Different Rules*, *op. cit.*, footnote 1.

BOX 2-1: Laws and Legislation Based on a Conditional National Treatment Framework

Conditional National Treatment Laws

1 "American Technology Preeminence Act," P.L. 102-245, including the "Technology Administration Authorization Act of 1991." H.R. 1989/S. 1034; 42 U.S.C., § 13525.
2 Defense Authorization Legislation, P.L. 102-484. H.R. 5006/S. 3114; 10 U.S.C., § 2491.
3 Defense Authorization Legislation, P.L. 102-190, comprised of the "National Critical Technologies Act of 1991" (S. 1327) and the "Advanced Manufacturing Technology Act of 1991" (S. 1328). 10 U.S.C., § 2491.
4 "National Cooperative Production Amendments of 1993," P.L. 103-42. H.R. 1313/S. 574; 15 U.S.C., § 4306.
5 "Stevenson-Wydler Technology Innovation Act of 1980," as amended (15 U.S.C., § 3710a).
6 "Bayh-Dole Act of 1980"; 35 U.S.C. Chapter 18, § 204.
7 "Energy Policy Act of 1992"; 42 U.S.C., § 13525.
8 Defense Appropriations, P.L. 103-139. H.R. 3116.

Conditional National Treatment Legislation being considered in the 103d Congress

1 "Aeronautical Technology Consortium Act of 1993," S. 419/H.R. 1675.
2 "National Environmental Technology Act of 1993," S. 978.
3 "National Competitiveness Act of 1993," H.R. 820.
4 "Defense Authorization Legislation;" H.R. 2401/S. 1298.
5 "Hydrogen Future Act of 1993," H.R. 1479.
6 "National Aeronautics and Space Administration Authorization Act;" H.R. 2200.
7 "Omnibus Space Commercialization Act of 1993;" H.R. 2731.
8. H.R. 249.
9. "Fair Trade in Financial Services Act of 1993;" S. 1527.
10. Authorizations for the "Earthquake Hazards Reduction Act of 1977;" H.R. 3485.

> any joint venture similar to those authorized under this Act; affords to United States-owned companies local investment opportunities comparable to those afforded to any other company; and affords adequate and effective protection for the intellectual property rights of United States-owned companies.

Consistent with this language, H.R. 1675, section (b), of the "Aeronautical Technology Consortium Act of 1993" defines an eligible firm as one that "conducts a significant level of its research, development, engineering, design, and manufacturing activities in the United States."[16]

Another bill, H.R. 820, goes beyond these requirements. It would amend the Stevenson-Wydler Technology Innovation Act of 1980 to define an eligible company as one that maintains substantial employment in the United States, agrees to manufacture resulting products here, and agrees to procure parts and materials from U.S. suppliers. In addition, it contains specific reciprocity provisions, requiring that the home country must afford U.S.-based MNEs comparable treatment to that found in the United States on a variety of terms. These include access to participation in publicly

15 American Technology Preeminence Act of 1991 (Public Law 102-245).

16 See U.S. Congress, House of Representatives, H.R. 1675, and Senate, S.419, *Aeronautical Technology Consortium Act of 1993* (Washington, DC: U.S. Government Printing office, 1993).

funded technology programs and to other national resources, the employment of transparent standards of regulation, provision of local investment opportunities, and the protection of intellectual property rights—all to same degree as found in the United States. [17]

Similarly, U.S. defense authorization legislation requires a participating foreign-based company to conduct a "significant level of its research, development, engineering and manufacturing activities in the United States" and have a foreign government that encourages the participation of U.S. companies in government-funded R&D consortia. [18] These kinds of policies emphasize performance standards, measures of reciprocity based on multilateral rules and, potentially, domestic content requirements for manufacturing. Those who favor a CNT approach would, accordingly, look critically at the R&D activities of foreign investors seeking to participate in publicly funded projects, rather than assuming positive spillover effects from their activities.

Some opponents of CNT legislation point out that this approach risks unintended consequences for American firms abroad. To the extent that U.S.-based firms are not currently constrained by comparable foreign regulation, CNT provisions in U.S. law increase the risk of retaliation. As an alternative, they suggest that ambitious new multilateral codes---covering, for example, investment, market access in key sectors, and acceptable business practice—be negotiated by countries willing to accept greater and measurable liberalization obligations. The codes themselves could then be opened to other countries, who would accept those obligations, and receive attendant reciprocal benefits, when they are ready to do so. (CNT is discussed further under the subheading, "Eligibility Requirements" below.)

POLICY ISSUES AND OPTIONS

The discussion of policy options that follows is the product both of the policy context addressed in the previous section and the major findings presented in chapter 1. It proceeds from a record of solid but limited progress in both bilateral and multilateral trade relations, interpreted against a backdrop of enduring asymmetries in market access, direct investment, and the way in which MNEs of different nations are financed and governed across the Triad. Chapter 1 describes three principal findings of this OTA assessment, which can be summarized as follows:

- MNEs develop core technology at home.
- Trade follows investment in the 1990s.
- Corporate governance and long-term financing diverge across the Triad.

Taken together, these findings suggest that the United States has a direct interest in the global success of U.S.-based MNEs, to the extent that such prosperity translates into more innovation and technology development in the United States. In this respect, all Americans stand to gain or to lose from the achievements of U.S.-based firms, particularly in the high-technology sectors that promise the greatest returns and the best jobs of the future. As suggested earlier, however, the definition of an American firm would not necessarily have to be based on a firm's country of origin or ownership. The nature of the contribution that the firm makes to the U.S. technology base and, ultimately, to the U.S. economy and standard of living, might turn out to be of greater importance.

Additional data and analysis on which these findings are based are presented in Parts II, III, and IV. Each of the findings suggests policy issues and options that Congress may wish to consider. These are presented below in separate sections.

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17 See U.S. Congress, House of Representatives, H.R. 820, *National Competitiveness Act of 1993* (Washington, DC: U.S. Government Printing Office, 1993), sec. 206, subsection 20, parts A, B, C, and D.

18 Department of Defense Authorization" Act (Public Law 102-484); National Defense Authorization Act for Fiscal Year 1992 and 1993 (Public Law 102- 190); and National Defense Authorization Act for Fiscal Year 1993 (Public Law 102-484).

MNEs Develop Core Technology at Home (Policy Implications)

Part II of this report analyzes the national innovation systems of the United States, Japan, and the European Union (chapter 3). It then assesses the contribution that MNEs make to those systems, focusing on where technology is developed and the extent to which it is diffused across national borders by MNEs (chapter 4). A key finding is that the technology innovation activities of MNEs remain highly centralized compared with their international production networks.

Government Promotion of Indigenous Technology

OTA's findings are consistent with efforts by the Congress over the past several years to support and maintain the U.S. technology base. U.S. policymakers have recently reemphasized what other countries have long recognized: to a very large extent, the health of the economy and its competitiveness rests on the strength of the national technology base. While this view is not new in the United States, it seemed less important during the quarter century following WWII, when U.S. technology led the world and U.S. military technology was in a class by itself.

The debate on the need for government support of the U.S. technology base stemmed largely from congressional concerns in the late 1980s about the relative decline of U.S. technology leadership, and the apparent inability of the executive branch to coordinate technology development funding in an efficient and effective manner. Beginning in the military field, in 1989 and 1990, Congress mandated that the Department of Defense produce a "Critical Technologies Plan" to identify and foster the development of key technologies that underpin U.S. national security and economic prosperity, and specifically to ensure the long-term superiority of U.S. weapon systems.] [9] At that time, the U.S. military budget associated with research and technology development amounted to approximately $10 billion.[20]

Although the initial emphasis focused on coordination of Department of Defense technology base programs, this approach was soon applied to broader economic concerns as reflected in another congressionally mandated review, this time a Department of Commerce study of ● 'Emerging Technologies" in 1990. Z In 1992, Congress created a National Critical Technologies Panel associated with the Office of Science and Technol - ogy Policy (OSTP). It was charged with identifying areas of technological development essential for the long-term economic prosperity and national security of the United States. Later that year, Congress established a National Critical Technologies Institute to support the Panel de] iterations and to coordinate its recommended actions.

In this way, a level of agreement was achieved not only on the need for technology promotion and coordination of U.S. government technology funding, but also on the technology areas in need of support.[22] By late 1993, the critical technologies perspective had worked its way into the White House and was endorsed by the President.[23] Further, the OSTP issued a plan to begin

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[19] Department of Defense, *Critical Technologies Plan for the Committees on Armed Services United States Congress* (Washington, DC: Department of Defense, March 15, 1990).

[20] This figure includes Department of Defense budget categories 6.1 through 6.3A. U.S. Congress, Office of Technology Assessment, *The Defense Technology Base: Introduction and Overview—A Special Report*, OTA-ISC-374 (Washington, DC: U.S. Government Printing Office, March 1988), p. 34.

[21] U.S. Department of Commerce, Technology Administration, *Emerging Technologies: A Survey of Technical and Economic Opportunities*, Spring 1990.

[22] National Critical Technologies Panel, *Report of the National Critical Technologies Panel* (Washington, DC: U.S. Government Printing Office, 1991). The National Critical Technologies Panel was appointed by the Director of the Office of Science and Technology Policy, Executive Office of the President.

[23] The White House, *Technology for Economic Growth: President's Progress Report* (Washington, DC: November 1993).

coordination of a large number of government-funded technology programs, including the Technology Reinvestment Project, the Advanced Technology Program, the Partnership for a New Generation of Vehicles (PNGV), the National Flat Panel Display Initiative, SEMATECH, Energy Department cooperative R&D agreements (CRADAs), and the Manufacturing Extension Partnerships, among others.[24]

Technology Funding and Foreign Economic Policy

Programs to promote the development of new technologies could constitute a strategic domestic response to long-term trade and investment deficits with some U.S. trading partners. But to do so, the range and focus of present programs would have to be changed in two ways. First, it would be important to ensure that they contributed to the national interest, while still extending national treatment to foreign-based MNEs; and second, they would have to be coordinated a good deal more efficiently than they are at present. These issues are, of course, intertwined, and each is addressed below.

With regard to the public interest, it is appropriate to ensure that technology benefits arising from participation in programs funded in part by government ultimately accrue to the U.S. taxpayer, who will be asked to foot part of the bill. The connection may not be easily measured, but it should be cast in terms of a contribution to the indigenous American technology base. In most cases, the recipients of public technology promotion funds will be corporations that match public funds on a 50-50 basis, bring extensive technology assets to the table, and help define the research to be undertaken. They have a right to benefit as well. However, the question of eligibility of U.S. affiliates of foreign-owned MNEs arises. Foreign affiliates argue that they provide jobs for hundreds of thousands of Americans and so should be eligible for participation. Conversely, a displaced auto worker from Michigan, whose job may not be restored, might not agree that his or her taxes should support foreign auto companies, for example, even if those companies employ thousands of Americans in other locations.

Eligibility Requirements

In recent years, Congress and the Administration have experimented with a variety of approaches to the question of eligibility. In the PNGV, participation is restricted to the Big Three U.S. auto makers, without the possibility of Japanese or European participation. In the ATP, Congress legislated a broad array of conditions, including reciprocal access for U.S. companies to similar programs abroad. In other programs the requirements are far less restrictive, and the question of foreign ownership is less prominent. In short, different programs take different approaches. As a result, an ad hoc and inconsistent body of law, executive orders, and administrative practices has built up over time, with little consensus among policy makers about who should be eligible for U.S. government technology funding.

In the interests of fairness and administrative consistency, Congress may wish to enunciate a single set of eligibility requirements that would apply to all U.S. technology promotion programs, with some few exceptions, perhaps requiring a presidential finding when national security interests are at stake. This could involve a national benefits test, with several constituent elements. Perhaps the most important element would be a requirement that companies receiving U.S. technology funds demonstrate a clear prior commitment to the U.S. technology base. Companies that could not point to existing R&D facilities and technology infrastructure in the United States, sufficient at a minimum to support the project in question, would not be eligible. It would be unnecessary to make national ownership a criterion for inclusion or exclusion for funding. Some foreign-based MNEs might be persuaded to develop

24 Ibid.

more technology in the United States if they thought they could benefit from participation in U.S. technology promotion programs.

As OTA suggested in the first report of this assessment, the answer to the policy question of what should constitute an American company is tied not so much to the ownership or home base of particular MNEs, but rather to how a firm affects the economy and standard of living where it operates. The purpose of a benefits test would be to ensure that firms receiving public funds contributed to the national interest. In this view, MNEs should be considered American, and therefore eligible, if and when they contribute in a meaningful way to technology innovation in the United States. Even though this approach stems from unilateral or national concerns, eligibility requirements could be written to be both consistent with the principle of national treatment, and legal under the terms of the new GATT Treaty and other international agreements.

The following criteria could form the basis of a test to determine the eligibility of both foreign-based *and* U.S.-based firms for all publicly funded R&D programs. No distinction based on national ownership would be necessary or appropriate, but each funding authority might employ the following conditions :[25]

1. A measure of R&D presence in the United States, perhaps as a percentage of U.S. sales, of global sales, or of the company's overall technology development budget;
2. A set of specific technological and financial contributions the company would make to the project;
3. An agreement on the part of the company to conduct all of the R&D funded under the project (or a negotiated percentage) in the United States;
4. A requirement that the country of origin of the MNE applying for funds afford reciprocal access to U.S.-based firms;
5. An agreement on the part of the company to manufacture a negotiated percentage of the final product(s) in the United States; and
6. In retum for proprietary rights, an agreement by the company not to license the technology abroad, but to pursue export of products resulting from the technology in lieu of licensing.

Should Congress decide to incorporate some or all of these points into legislation applicable to U.S. technology promotion programs, it would be important to do so in a way that did not discriminate unfairly against any firm, foreign or domestic. The test is whether the United States would be willing to see identical conditions applied to affiliates of U.S.-based companies by foreign governments. In addition, Congress might wish to grant limited waiver authority with respect to point number 1 (above) in cases where a company with insufficient R&D presence in the United States nevertheless proposed the development of a technology with extraordinary or unique potential. In that case, participation by the company could be made contingent on its agreement to develop the new technology jointly with at least one eligible U.S. partner.

Some analysts oppose reciprocity provisions (point 4 above), which typically require reciprocal access for U.S. firms to technology programs in the country of origin of the foreign-based applicant in question. While this approach is already contained in H.R. 820 and the authorizing legislation for the ATP, among others, it may present problems. First, technology innovation systems of the major trading nations in the Triad are configured very differently (see chapter 3), so much so that requiring equivalent reciprocal access may

[25] These criteria are ranked in ascending order of probable difficulty of implementation. Some analysts believe that item 5 would he inconsistent with U.S. treaty obligations under the NAFTA and GATT agreements. In addition, item 6 might expose some U.S. patents to compulsory licensing abroad.

not be feasible in practice, or might not achieve the intended result. In Japan, for example, comparatively little technology development is funded directly through government programs.

Second, if the approach was extended beyond eligibility for technology programs to include reciprocal opportunity for trade or investment abroad, some analysts believe there would be unintended consequences that outweigh any possible benefits. This might take the form of increased tensions in international economic relations, leading to a variety of retaliatory actions on the part of our trading partners. Congress nevertheless may wish to consider making participation by foreign-based MNEs contingent on comparable access by U.S.-based MNEs to foreign technology promotion programs. This would be only one of a range of policy instruments that could be deployed to rectify persistent trade and investment imbalances that built up during the 1980s and show little sign of receding in the 1990s. (These and other options are discussed below in the section on trade and investment.)

Coordination of Federal Technology Programs

If technology programs are to function, in part, to offset some of the trade and investment asymmetries that characterize economic relations in the Triad, they will have to be strategically coordinated. This fundamental insight lies at the heart of now long-standing congressional concerns referred to above as the critical technologies approach. But even after years of congressional prodding, the Department of Defense, for example, was unable to come up with a credible long-term plan to maximize the effectiveness of its technology base programs.[26] In 1991, when Congress mandated a review of critical technologies within the Executive Office of the President and created the Critical Technologies Institute, it sought to enhance the capability to coordinate technology promotion programs into a single strategic approach.

As OTA reported in early 1994, with respect to the $1.8 billion in federal energy and environmental technology programs, only a small portion is directed at commercial applications. In addition, although several agencies have mission-oriented programs, there has been little strategic direction, and funding agencies have seldom worked closely together to identify critical environmental problems or common technology priorities .27 With the exception of agriculture, federal expenditures on both military and civilian research and technology development have devoted scant attention to the commercialization of new technologies.[28]

Over the past 18 months, there has been an intense effort to coordinate federal R&D programs, emanating largely from a new National Science and Technology Council (NSTC). The Council was created by executive order to function as a government-wide coordinating body, to create visibility for technology policy, and to establish a single set of goals, priorities, and criteria to shape federal R&D programs. If successful, the NSTC would encourage greater centralization of the R&D funding process, and could help focus the

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[26] "The [Senate Armed Services] committee is deeply disappointed in the Defense Department's inability to provide a comprehensive plan addressing the development of technologies critical to the national defense. . . The continued inability of the Administration to rationalize the national science and technology investment program, and to prioritize technology base activities, detracts both from national security and, in a broader sense, from global economic competitiveness." United States Senate, Committee on Armed Services, "National Defense Authorization Act for Fiscal Year 1991 ," report 101-884 (Washington, DC: U.S. Government Printing Office, 1990), p. 179.

[27] United States Congress, Office of Technology Assessment, *Industry, Technology, and the Environment: Competitive Challenges and Business Opportunities*, OTA-ITE-586 (Washington, DC: U.S. Government Printing Office, January 1994), p. 291.

[28] See D.C. Mowery, '-The Challenges of international Trade to U.S. Technology Policy," in M.C. Hams and G.E. Moore (eds.), *Linking Trade and Technology Policies* (Washington, DC: National Academy Press, 1992), p. 124.

heretofore disparate funding priorities of a large number of agencies on a small number of nationally oriented policies and goals.[29] If, however, the budget priorities of the Council are significantly different from those of the historically separate funding authorities, then the Council is likely to encounter resistance that cannot be overcome within the Council alone.

Moreover, this effort alone does not constitute an effective national technology strategy. Rather, it is an important initial step to achieve greater cooperation among the various agencies of the U.S. Government that undertake R&D programs. As a creation of the executive branch, the Council lacks a clear legislative mandate. For that reason, any successes—whether in organization or in the implementation of an actual R&D strategy—achieved by this Administration could be easily abandoned by the next. Nevertheless, Congress may wish to pay close attention to the progress of the NSTC, chronicling its strengths and weaknesses. If it brings a greater degree of internal coherence and purpose to U.S. technology promotion programs, Congress may wish to consider legislation to give it greater institutional staying power. If, on the other hand, it does not yield results, there is much that can be learned in terms of the kinds of efforts to undertake next.

Many analysts argue that the most successful government-sponsored R&D occurs when the goals are clear, such as in the Apollo projector in the decades-long effort to design ever more sophisticated and powerful nuclear weapons at the national laboratories. Both programs achieved their stated objectives. These lessons suggest that efforts by government programs to increase U.S. competitiveness or push up national productivity will succeed to the extent they can be tied to clearly articulated national missions. They also would have to be embedded in a stable institutional structure, insulated from patronage and partisan forces.

This is not the first time that OTA has assessed the need for a strategic technology policy and the institutions required to sustain it. In 1990, OTA analyzed options to coordinate strategic technology policy and to set up a Civilian Technology Agency. Legislation was proposed to that end in both the 100th and 101st Congresses.[30] If Congress wishes to make technology promotion programs an instrument of economic strategy, it will have to provide both leadership and legislative impetus. Otherwise, the history of critical technologies suggests that individual government agencies are likely to direct their portion of technology funding in ways that make sense at the level of departmental priorities, but which do not cumulate into a national technology strategy.

Trade Follows Investment in the 1990s (Policy Implications)

As Part III of this report indicates, international trade and direct investment have become highly interdependent over the past decade, so much so that trade among affiliated companies now accounts for at least one-third of all U.S. merchandise trade. In our most important bilateral trade relationships, the balance of trade is highly correlated with the balance of investment. That is, where U.S. MNEs have been able to invest freely abroad, there is a rough balance in both IFT and merchandise trade; where the balance of investment has been highly skewed, there are large trade deficits. At a minimum, these findings suggest that U.S. foreign economic policy is too focused on trade and should give greater weight to issues associated with foreign direct investment. For example, steady devaluation of the dollar against

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[29] J.H. Gibbons and L.E. Panetta, Executive Office of the President, Memorandum for the Heads of Executive Departments and Agencies, "FY 19% Research and Development (R&D) priorities," May 6, 1994.

[30] For a comprehensive evaluation of these options, see U.S. Congress, Office of Technology Assessment, *Making Things Better: Competing in Manufacturing*, OTA-ITE-443 (Washington, DC: U.S. Government Printing Office, February 1990), pp. 32-35 and 71-89.

major foreign currencies should increase exports of U.S. merchandise goods. But it also reduces the ability of U.S.-based MNEs to make investments abroad, investments that may prove indispensable to opening foreign markets and selling U.S. products.

U.S. *Policy on Foreign Direct Investment*

As currently constituted, U.S. government policy does not recognize the strategic linkage between trade and investment. Minimal government attention and resources are devoted to foreign direct investment. The Committee on Foreign Investment in the United States (CFIUS) is the major government organization responsible for FDI. It is an interdepartmental committee that reviews prospective investments on military security grounds alone. There is no formal U.S. government review of the effect of FDI on U.S. trade, the U.S. technology base, U.S. industry, or other economic concerns. Accordingly, U.S. policy has not moved to increase the benefits of foreign investment for the U.S. technology base, either in terms of inducements to encourage FDIUS in research and technology development, or in terms of measures to discourage less desirable forms of direct investment.

Not all forms of investment by foreign-based MNEs are equally beneficial to the U.S. economy and technology base. OTA research suggests a hierarchy:

1. very beneficial investment in high-technology industries with substantial R&D and manufacturing operations in the United States;
2. intermediate investment in assembly operations using some U.S.-made parts and components;
3. **less** beneficial FDI in pure assembly or screwdriver operations, with less domestic value--added; and
4. least beneficial FDI in wholesale distributors for foreign-made components and finished products.

OTA interviews with managers of MNEs and analysis of macro-level economic data suggest that much of the surge in FDIUS in the late 1980s was concentrated in the last two categories. Given the increasing magnitude and importance of FDI, Congress may wish to reconsider U.S. policy. Several options follow.

Sustaining Unrestricted FDIUS

The analysis contained in Part 111 of this report (and in chapter 3 of the first report of this assessment) indicates that FDIUS offers indisputable benefits to the U.S. economy, both in terms of augmenting investment capital, and to a lesser extent by providing technology and jobs.[31] Those who favor this approach argue that the benefits are so great as to outweigh any costs. In the absence of foreign direct investment, they suggest, the same products would be imported to meet consumer demand, with the difference that the foreign capital and associated jobs would remain abroad. They are also concerned that any restrictions on FDIUS might risk adverse consequences, such as reciprocal restrictions on U.S. investment abroad or, in the extreme, disinvestment by foreign affiliates in the United States.

For these reasons, they advocate that the principles of national treatment and unrestricted FDIUS be sustained, even in the absence of comparable access for U.S. direct investment abroad. They point to ongoing efforts by foreign governments, notably Japan, to provide investment capital and temporary office space to U.S. companies seeking to establish a local presence. And they note that governments across Europe have made substantial progress in liberalizing their investment regimes in recent years. In this view, it

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[31] On the capital aspect, see E.M. Graham, "Foreign Direct Investment in the United States and U.S. Interests," *Science* 254(39): 1740-1745, Dec. 20, 1991.

would be counterproductive for the United States to send any signal regarding FDIUS that might reverse recent progress abroad. Instead, these analysts would minimize the application of the Exon-Florio provision, reducing executive discretion that they suspect may exert a chilling effect on potential foreign investors.[32] With respect to Japan, moreover, they advocate taking no action on the assumption that Japan is already slowly opening to investment, and market forces, particularly exchange rate fluctuations, will eventually redress the imbalance.

Multilateral Approaches

In the long term, it may be possible to seek comparable market access for investment through regional or multilateral investment codes. The recent conclusion of the GATT Uruguay Round included agreements on Trade Related Investment Measures (TRIMs). But FDI was not treated in a comprehensive manner, and multilateral rules respecting the conduct of FDI have not been established. Similarly, the NAFTA agreement involved extensive discussion about trade issues, but largely ignored investment. The same is true of the 1992 European economic integration initiative, where national governments retain competency over investment matters. The United States could seek first a North American regional agreement for investment, then mutual harmonization with other regional organizations such as the European Union.

Many observers conclude, however, that reaching multilateral agreements governing foreign direct investment will be a formidable task, particularly if extended to developing countries. However, at the beginning of the Uruguay Round of GAIT talks in 1986, agreement on trade-related aspects of intellectual property (TRIPs) was thought to be a distant possibility at best. And yet the TRIPs agreements were included in the GATT treaty signed in December 1993.

Addressing the Trade/Investment Deficit

A third policy approach focuses on the linkage between the U.S. trade deficit and the lack of equality of investment opportunity abroad. In a world where more than one-third of all trade is conducted among affiliated companies, exports and direct investment are intrinsically related. Advocates of this position point to the logical necessity of setting up a foreign subsidiary before conducting intrafirm trade (IFT) with it. The implication: in order to increase exports, and the high-quality jobs associated with them, U.S.-based MNEs will also have to increase investments abroad. In this view, the U.S. government should press Japan to improve investment opportunities for U.S. companies, and to that end, support the value of the dollar against the yen.

As the Japanese economy has demonstrated, Japanese FDI in the United States and East Asia has increased exports from Japan of high-quality parts, components, and finished goods. This has expanded employment, both in export-oriented Japanese firms and in their overseas affiliates. Some observers distinguish between low and high value-added jobs. The former, they contend, will inevitably shift to lower-wage areas due to the downward pressure on prices associated with overcapacity and global competition in a range of industries. It is therefore critical that U.S. policy reflect the strategic importance of keeping high value-added jobs at home, even if it becomes more difficult to retain those with low value-added.[33]

If the policy goal is to increase U.S. investment abroad in order to support U.S. exports and jobs, Congress and the executive branch might consider

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[32] Exon-Florio, a provision of the U.S. Omnibus Trade and Competitiveness Act of 1988, amended Title VII of the Defense Production Act of 1950 to provide the President with the authority to investigate and determine the national security impact of proposed or pending mergers, acquisitions, and takeovers by or with foreign persons.

[33] For a summary article on the effect of this problem on the German economy see F. Protzman, "Rewriting the Contract for Germany's Vaunted Workers," in *New York Times*, p. F5, Feb. 13, 1994.

measures to achieve comparable investment opportunities for U.S.-based MNEs. Such an objective at first requires a designation of countries in which barriers to investment exist, and then a plan for the most appropriate remedy. There are several distinct approaches among those who seek greater market openness for U.S. direct investment abroad, including monitoring developments in FDIUS and using policy instruments based on specific reciprocity (see below). Others believe that the requisite instruments are already available, such as Section 301 and Sections 1106 of the Omnibus Trade and Competitiveness Act.[34] Proponents advocate continued executive discretion to apply such instruments in a flexible and prudent manner; they oppose automatic or more assertive legislative measures. They are concerned that U.S. bilateral investment treaties with developing nations will be more difficult to negotiate if the United States imposes any form of investment strictures, even if directed only at advanced industrial nations within the OECD.

Monitoring Developments in FDIUS

Making informed policy choices and conducting successful negotiations in the complex fields of trade and investment require extensive data and analytic capabilities. However, U.S. government units broadly responsible for international trade and investment policy lack sufficient data and analytical capability to evaluate fully the contemporary trade and investment patterns of MNEs. Several of the executive offices with front-line responsibilities in this area told OTA they are unable to analyze interrelated flows of trade and investment around the world and, accordingly, cannot use that analysis to further U.S. interests. The Office of the United States Trade Representative (USTR), for example, employs only one full-time economist in these critical areas.

In addition, no executive agency performs a comprehensive analysis of FDIUS, except for purposes of military security, and none is charged with formulating a strategy to maximize the value of FDI to the United States. The United States does not collect systematic data on global FDI or global technology transfer. U.S. embassies abroad undertake only limited activities in this area. The Department of Commerce, Bureau of Economic Analysis (BEA), does conduct extensive surveys of foreign direct investment in the United States and U.S. direct investment abroad. These were indispensable in conducting the analysis for this report. But these surveys are not designed to assess a range of important trends in trade, investment, and technology transfer, or to analyze the implications of foreign direct investment in the United States.

In recent years, funding for BEA and other economic data resources within the U.S. government has not reflected the increasingly global character of the economy and the corresponding surge in international trade and direct investment. This has diminished the ability of the United States to conduct analysis to support sound foreign economic policy. If Congress wishes to put U.S. negotiators on a more equal footing with their European and Japanese counterparts, it could increase funding for economic analysis and data collection, specifically related to assessing trends in global trade, direct investment, and the transfer of technology.

Congress may also wish to consider reorienting the data collection priorities of the BEA and related offices. It would, however, be unwise to diminish or to increase significantly the funding of existing U.S. government data resources without first examining their mandates for relevancy to the more global economy of the 1990s. For this reason, Congress may wish to mandate a study of U.S. government offices that collect trade and investment-related data; it would assess their missions, methodologies, cross-agency coherence, and the adequacy of their funding to support U.S. negotiations and policy makers.

As trade among MNEs comes to dominate the international economy, understanding the patterns and purposes behind global FDI becomes

34 Omnibus Trade and competitiveness Act of 1988 (Public Law 100-418).

more important. As noted earlier, since 1980, world stock of FDI has increased by over a factor of four to reach $2.0 trillion (in nominal dollars) in 1990. This has transformed economic relations among the advanced industrial nations and has profound implications for the developing world as well.

Because the phenomenon of FDI is here to stay, and will continue to influence our economic well-being, Congress may wish to consider creating an Office of Foreign Direct Investment, perhaps reporting to the National Economic Council or within the Department of Commerce. Such an office could assess trends in FDI on a global basis and recommend U.S. policy based on trends and forecasts. It might also recommend policies to induce favorable forms of FDI in the United States.

As an interim step, Congress might consider commissioning a study to make recommendations concerning the scope and powers of such an Office. This study could specifically address the following issues: whether the Office of Foreign Direct Investment would combine existing resources for data collection and analysis with new ones; whether it would conduct systematic monitoring of FDIUS; the extent to which it would also monitor U.S. direct investment abroad and investment by foreign-based MNEs in third countries (i.e., not the United States and not the country of origin); and whether it should be charged to adjudicate FDIUS cases, based on their contribution to or adverse impact on the U.S. technology base and economy.

Specific Reciprocity

Yet another approach appeals to the principle of obtaining compliance with the terms of bilateral or multilateral agreements though the implicit threat of reciprocal action. Proponents believe such a policy could be used to condition continued national treatment on the ability of U.S.-based MNEs to obtain comparable access abroad for trade, investment, and/or participation in government-funded technology promotion programs. A number of bills containing elements of specific reciprocity have been passed or proposed in recent Congresses. (For examples, see box 2-1 above in the section on conditional national treatment.) If Congress wished to take an even more aggressive stance in this area, legislation could be written to:

1. Make foreign MNEs eligible to participate in U.S. technology promotion programs only on the condition that U.S.-based MNEs receive reciprocal treatment abroad, on a country-by-country basis;
2. Require that U.S. companies be afforded adequate and effective protection in the area of intellectual property rights abroad, and apply sanctions in cases where they are not;
3. Require access to equity markets and trade associations for U.S.-based MNEs abroad, comparable to those available to foreign affiliates in the United States.

If bilateral and sectoral imbalances persist despite these and related policy measures, Congress may wish to consider other options. For instance, Congress could mandate screening of FDIUS from an economic security perspective, or it could condition new investments by foreign companies in the United States on reciprocal and comparable investment opportunities (or levels of U.S. investment) abroad for U.S.-based MNEs. However, many analysts believe that these options would lead to unforeseen and probably undesirable political and economic consequences.

In its strongest form, legislation could be designed to empower U.S. firms to bring claims against nonconforming nations (or firms) before the International Trade Commission or another designated adjudicatory body, similar to the process now employed with antidumping suits against foreign imports. Failure to cooperate or implement settlements could, in the extreme case, lead to a variety of retaliatory measures, such as applying a tax or other sanctions to foreign affiliates already operating in the United States, until U.S. firms achieved comparable investment access in the country in question. Few analysts endorse this approach because of its highly coercive and unilateral elements.

I Corporate Governance and Finance Diverge Across the Triad (Policy Implications)

As chapters 7 and 8 suggest, structural differences in corporate governance and corporate finance are likely to persist across the Triad. Structural convergence—the unspoken assumption behind the traditional American approach to trade and investment frictions—is a long-run prospect at best. Japanese and German forms of corporate governance in their purest forms are probably not suitable for the United States, even if current policy impediments were not present. In addition, even a cursory review of American corporate history indicates that American business is unlikely to conform to the Japanese model and adopt a broadly shared sense of the national interest.[35] Nor is American business culture likely to adapt to a German-style system that depends upon a mutual sense of intimacy and trust among key stakeholders, including employees. To a considerable extent, the success of such systems depends upon social mores that sometimes render acceptable the subordination of consumer interests, executive salaries, and immediate shareholder returns. Similarly, the prospects for Germany or Japan moving toward the American model are limited.

American Corporate Governance in a Global Business Environment

The system of American corporate governance developed mainly in reaction to the need for stable contracting arrangements in uniquely decentralized markets, as well as in response to actual or perceived abuses of power by corporate managers, bankers, and shareholders.[36] The consequences are reflected not only in our system of corporate governance, but in such policy areas as antitrust, which differs in both overt and subtle ways from its analog in Japan or from what Europeans call competition policy (see appendix C).

In a world where core technological competencies often remain close to the headquarters of leading MNEs, systems of corporate governance that encourage long-term thinking and enable the pursuit of strategies that subordinate immediate returns to long-term market position can have vitally important national implications. In fields where American corporations have ceded markets to competitors based in other nations, for example in parts of the electronics sector, the task of building the critical mass required to regain a place at the frontier of innovation will be daunting.

Such observations are part of the background now, as national debates continue over the organization of American business, the time-horizons and salaries of American executives, and the international competitiveness of the U.S. technology base. Many of the inadequacies identified and agreed upon may imply domestic adjustments.[37] Given historical patterns, however, it would be surprising if internal changes in the American system happened quickly or predictably.

Responding to Different Systems of Corporate Governance

Our basic system of corporate governance must itself be competitive. But to the extent that enduring differences in corporate governance systems and competition policy effectively subsidize foreign MNEs or protect them from competition in their home markets, American trade and investment policies may need to be reconfigured to enable compensatory responses. Because objective judgments are required in this regard, and because uni -

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35 On the Japanese case see R.J. Samuels, *"Rich Nation, Strong Army": National Security and the Technological Transformation of Japan* (Ithaca, NY: Cornell University Press, 1994).

36 See M. Roe, "A Political Theory Of American Corporate Finance," *Columbia Law Journal 91 (I): 10-67,* Jan. 1991. Also see O.E. Williamson, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting (New* York, NY: Free Press, 1985); and W. Adams, *The Structure of American Industry* (London, UK: Macmillan, 1982).

37 The Competitiveness Policy Council, created by Congress in 1988, has commissioned a task force to examine particular aspects of the American system of capital allocation. A report is expected by early 1995.

lateral responses would risk disproportionate retaliation, many analysts believe that a multilateral approach to such policy reconfiguration would be preferable. To prepare the groundwork for multilateral negotiations on corporate governance or competition policy arrangements that impede comparable market access across the Triad, Congress may wish to consider mandating the Office of the United States Trade Representative or the Commerce Department to examine the issue in more depth. Such an examination could concentrate on critical technology industries. It might look, for example, at the effects of stable cross-shareholding arrangements and other aspects of corporate governance or competition policy that create sanctuary markets and effective cartels in specific industries.

Competitive advantages that may result more from enduring national traditions than from artificial governmental manipulation may have the effect of subsidizing overly aggressive corporate strategies. This might occur when the world market share of firms based in one country increases rapidly in a competitive, technologically intensive sector. To reverse such a development, companies must be able to compete in the home markets of such firms. To the extent this is precluded by unique systems of corporate governance that make it problematic to investor acquire critical mass in those markets, those systems could be defined as implicit trade barriers or implicit subsidies. A reasoned estimate of the value of such practices might provide the basis for negotiating offsetting trade and investment rules. If, for example, corporate governance structures in Japan make it too costly for foreign-based MNEs to invest in production and distribution facilities in Japan, but their Japanese competitors can readily establish or acquire their own facilities abroad, and if trade and technological innovation now follow investment, those structures themselves become legitimate issues for multilateral negotiation. The analytical foundations for such negotiation require much more work.

Improving Transparency

Congress may wish to consider measures to increase the transparency of the underlying governance structures of foreign corporations operating in the United States. The Internal Revenue Service (IRS) tries to understand the financial effects of governance structures when foreign firms begin to generate income in the United States. Likewise, the Securities and Exchange Commission requires that foreign firms listing their stocks on American exchanges meet disclosure requirements that approximate those for public companies in the United States. The right of publicly held foreign firms to conduct operations in the United States, for example, might be made conditional on meeting standards of financial disclosure comparable to those of publicly held U.S. firms.

Harmonizing Divergent Accounting Rules

Accounting standards could work in a similar fashion. Mindful of the impact on competitiveness of the interaction between traditions of corporate governance and national accounting rules, governments and professional bodies around the world have pursued the complex challenge of accounting rule harmonization. Aside from the substantive issues involved and the plausible arguments used to justify specific national rules, the harmonization agenda is complicated by the fact that government agencies do not always establish accounting standards.

In the United States, the Financial Accounting Standards Board established in 1973 by the American Institute of Certified Public Accountants, sets the standards. The SEC, IRS, and other agencies of the government certainly have critical impact on the work of the Board, but it is most often indirect. In Germany and Japan, government offices play the key role in standard setting. Consequently, international work on accounting harmonization has been pursued in a number of public and private arenas, the most important being the United Nations, the OECD, the European Com-

munity, and the (private) International Accounting Standards Committee. The SEC has been active for many years in promoting international harmonization.

The comparative analysis presented in Chapter 7, however, suggests that institutional differences are not the only impediment to true harmonization. Accounting differences are rooted in idiosyncratic systems of corporate governance, which themselves reflect diverse social and cultural priorities. OTA research in Germany and Japan bears out the view that hidden reserves, the lack of balance sheet transparency, the treatment of R&D expenditures, and other practices that can create competitive advantages for firms, continue to be perceived as quite functional and even necessary-especially during periods of recession or slow growth. Once again, such issues will come under scrutiny as multilateral rules governing trade and investment are reshaped in the years ahead.

In considering the public policy environment within which MNEs compete, a key issue centers on our inadequate knowledge of the competitive consequences of national accounting systems. Both inside and outside government, policy-relevant research is still at an early stage. Congress may want to accelerate that research by providing the SEC with a mandate to assess the competitive consequences of such differences. In addition, because accounting principles and corporate tax issues are closely related, Congress may wish to link such research to ongoing work by the IRS on the taxation of foreign and U.S.-based MNEs.

Harmonizing Financial Rules

As in the field of corporate governance, differences in underlying national financial structures become more important when MNEs compete directly in one another's home market. To the extent that competitive problems occur in particular industrial sectors, Congress may again want to reconsider efforts to promote convergence in those structures.

With convergence in mind, one option may be to revisit the issue of expanding the powers of American financial institutions to match the powers held by leading competitors abroad. When Congress next reviews the Glass-Steagall provisions of the Banking Act of 1933, for example, it might reconsider the barriers between commercial and investment banking in the United States. Those barriers have been allowed to erode somewhat in recent years, but they continue to have an important impact on the structure of American financial markets. It is timely to complement traditional and enduring concerns about the safety and soundness of those markets with consideration of the impact of that structure on the international competitiveness of critical technology industries. Universal banking, whereby individual banks combine commercial and investment banking capabilities, may not fill the financing gaps often noted in the development and commercialization of new technologies in the United States. Nevertheless, since many of' our major trading partners either have universal banking systems in place (Germany, Switzerland, Austria) or are now moving in the direction of universal-type systems (Canada, Britain, France, Japan, Italy), structural differences between American financial markets and others are likely to become more pronounced in the years ahead. We need abetter understanding of the effects of such differences on the international competitiveness of promising industries.

In a similar vein, Congress may wish to reconsider the issue of ownership linkages between banks and commercial enterprises. Like the Banking Act of 1933, the Bank Holding Company Act of 1956 might be reviewed in a global context. Since the 1930s, concerns about the safety and soundness of the banking system have limited the scope for American banks, and later bank holding companies, to take significant equity positions in nonfinancial corporations. Constraints having a similar effect do not exist in either Japan or Germany. This policy asymmetry matters now when some German and Japanese MNEs are world leaders in important technology-intensive sectors. To the extent that stable bank shareholders give them an advantage over American-based rivals, a case may be made for relaxing traditional legal

constraints. The issue requires further analysis on a sectoral basis. (See chapter 8 of this report for additional background.)

If adequate convergence across national financial systems in the near term is not feasible, Congress may want to develop new multilateral approaches to competitive problems at the level of the firm. Once again, this may depend upon bringing investment issues to the fore in trade negotiations. Enduring financial structures that either provide long-run advantages for particular firms or constrain fair competition do so primarily through their effect on inward investment. New rules aimed at comparable market access across the Triad may be needed to counter such effects. For example, accession to future multilateral investment and market access agreements could be conditioned upon conformity to common standards of financial disclosure and other business practices. Congress may wish to ensure that the negotiation of such rules is a key objective on the nation's trade policy agenda.