

Chapter 8

U.S. Policy Choices



Photo credit: Eric Basques

A fisherman on the Li River near Guilin looks out over some of the most spectacular scenery in the world.

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U.S. Policy Choices

This chapter analyzes what the U.S. Government, and Congress in particular, might do to maximize the gains and minimize the risks associated with transferring technology to China. The first part examines major themes in current U.S. policies affecting technology transfer to China, highlighting areas where new initiatives may be needed to achieve policy goals.¹ Specific issues that Congress and

¹See OTA, *Energy Technology Transfer to China—A Technical Memorandum*, OTA-TM-1 SC-30 (Washington, DC: Government Printing Office, September 1985), for a discussion of the risks and benefits to the U.S. national security of transferring energy technologies, and for a review of pending issues in U.S. policies affecting control and promotion of technology transfers.

the executive branch may want to address, regardless of overall directions in China policy, are then addressed. The chapter concludes by identifying actions that Congress may wish to consider.

THEMES IN U.S. POLICY

Since the United States and China formally resumed diplomatic relations in 1979, interactions have expanded on a number of fronts. As China moved gradually to relax restrictions on foreign business and open the door to Western participation, the United States has loosened restrictions on exports to China and widened the scope of science and technology (s&T) exchanges.² The United States and China have begun to consult on issues such as Afghanistan and Indochina and to explore other possibilities for strategic cooperation.³ Defense delegations are exchanging visits and foreign military sales (FMS) have begun.

The decisions that ushered in these new developments in U.S.-China relations are based on a rationale, shared by four U.S. administrations, that assisting in China's modernization will serve U.S. interests. Exchanges of goods, people, and ideas present commercial opportunities for U.S. business, provide mutually enriching cultural exchanges, and could help integrate China into the world economy

and make it less vulnerable to outside pressures.⁴ Official U.S. policy statements have stressed that China is a friendly, but not an allied, country—one particularly important because of its large population and potential role as a counterweight to the Soviet Union. If China's modernization succeeds, it will be a candidate for superpower status in the future and, at the least, an important regional power.⁵

Many view these assessments as sound calculations of U.S. national interest. A number of developments indicate progress in achieving some policy goals. China is experimenting with economic reforms that involve expanded Western participation in trade and joint ventures, and has expressed desire to participate in multilateral organizations such as the General Agreement on Tariffs and Trade (GATT). Among the ranks of China's leaders are many who have been trained in the West. China has developed an "independent" foreign policy, avoiding close ties with the Soviet Union.

²One authoritative estimate is that between 1979 and 1983 about 19,000 Chinese students and scholars came to the United States. See Leo A. Orleans, "Chinese Students and Technology Transfer," *Journal of Northeast Asian Studies*, vol. iv, No. 4, winter 1985.

³See Harry Harding, concerning reports of a joint U.S.-Chinese effort to monitor Soviet tests in "China's Changing Roles in the Contemporary World," in Harding, *China Foreign Relations in the 1980s* (New Haven, CT: Yale University Press, 1984), p. 194.

⁴See statements by U.S. Ambassador Winston Lord, quoted in *International Trade Reporter*, June 4, 1986, p. 752.

⁵See Jonathan Pollack for an argument that China "...enjoys the privileges and deference conceded a major power, without possessing the requisite national capabilities and accomplishments that appear to define the term. Pollack, "China and the Global Strategic Balance," in Harding, op. cit., p. 170.

Some observers, however, worry about what they see as an emotional and overly optimistic strain in U.S. policies toward China.⁷ The United States and China have quite different political and economic systems. While they share mutual interests in some areas, they disagree in others. The primary strategic concern is that China might use the technology supplied by the United States in ways that run counter to U.S. interests or to those of other Asian countries friendly to the United States. A second area of concern is commercial. U.S. businesses still see potential in China's domestic market, but also view China's export and performance requirements⁸ and other regulations of foreign business as obstacles. Over the longer term, China may join the ranks of the Asian newly industrializing countries (NICS) that today loom as major competitors to a number of U.S. industries.

These issues were analyzed in chapters 6 and 7. The general conclusions drawn there were that despite improvements in Sino-Soviet relations, there are reasons to assume that China will in the next 10-15 years see its interests become closer to those of the United States. So long as economic modernization remains China's top priority, China is likely to play a stabilizing role in East Asian security. While institutional and other factors suggest caution in comparing China with the NICS, Chinese exports are likely to grow faster than the overall rate of economic growth. As a result, Chinese exports (representing about 4.4 percent of world exports by 2000) will compete most directly with those of NICS in third-country markets. OTA also notes the many uncertainties about China's future course and the room for disagreement about implications for the United States and neighboring countries in Asia.

Given these uncertainties and a limited 8 years of recent experience, it is not surprising that a number of different themes run through

public discussions of U.S.-China policies. The predominant theme, and the one central to current U.S. policy, favors a flexible approach oriented toward gradual liberalization of controls on technology transfers. Other themes, discussed below, also appear in discussions of U.S.-China policy. Each reflects different evaluations of how technology can be used as a tool of U.S. foreign policy.

A Flexible Approach to Liberalized Controls

Since 1983, regulations governing exports have been significantly loosened, consistent with a broad policy direction favoring expanded economic interaction. At the same time, exports of military equipment and very advanced technology are restricted by U.S. export controls. The export licensing system provides mechanisms for revising controls in light of changes in technology and bilateral relations.

Student and technical exchanges have thrived under this flexible approach to technology transfer. These growing exchanges, which do not rely on strong government coordination, have been built at the individual and institutional levels, providing ongoing scholarly relationships, cultural exchanges, and potential commercial opportunities for U.S. firms and organizations. Localities and regions are establishing relationships with their counterparts in China, who are apparently attracted by U.S. educational and research strengths.

The U.S. Government has not taken a strong, active role in coordinating and initiating efforts to expand trade and technology transfer.⁹ Official export financing through the Export-Import (ExIm) Bank is comparatively limited, and the United States has no traditional aid program for China. The U.S. Government has instead focused its efforts in trade policy on negotiating agreements that set out

⁷See Michael H. Hunt, "Chinese Foreign Relations in Historical Perspective," in Harding, *op. cit.*, p. 41.

⁸Examples are requirements that products produced in China include certain amounts of locally produced inputs or that production facilities in China export a certain percentage of output.

⁹The U.S. Government took a stronger lead in the early years through establishment of protocols for industrial and technical cooperation. Many of these efforts continue, as does the Foreign Commercial Service (FCS). In general, however, the U.S. Government has played a facilitating role (outside the export control area) rather than an activist coordination role.

the “rules of the game” for trade and investment. In addition, guarantees have been provided for investments by the Overseas Private Investment Corporation, and financing has been provided for low-budget, “reimbursible” feasibility studies, such as those carried out by the Trade and Development Program.

Major resources of the U.S. Government have been devoted to establishing a system of controls on exports to China. The Department of Commerce (DOC) is the lead agency, but the Department of Defense (DoD) and other agencies also participate. Within the general guidelines established, however, technical license examiners actually make many key decisions about exports of sensitive technologies. These choices are critical to the determination of whether a specific technology export takes place. Within the guidelines set by higher level policy officials there is thus room for *de facto* policy making below as case-by-case decisions are made on whether to export the more militarily sensitive technologies and equipment.

Delays in export licensing review have been a primary source of complaints. Congress has attempted to deal with this problem by requiring the U.S. Government to process licenses within certain time limits. License reviewers may make safe but too rigid interpretations. Lacking understanding of overall policy goals, mid-level and lower level bureaucrats may inadvertently or intentionally work at cross-purposes to overall policy goals. Technology is changing so rapidly that the U.S. Government has found it difficult to revise regulations before large backlogs of pending cases have developed.

A related issue pertains to uncertainty about where the U.S. Government will draw the line to prohibit an export. While export regulations specify the kinds of exports that “are likely to be approved,” it is not clear what types of exports will be denied. Applications involving sensitive technologies and equipment (including those for military exports) are decided on a case-by-case basis. Because of this situation and in response to pressure from Chinese buyers to supply more advanced technologies,

U.S. exporters are constantly “testing” the parameters of the export control system. Recent experience indicates that incremental decisions do not result in effective and consistent policy implementation.

No single entity of the U.S. Government effectively integrates these diverse efforts into a carefully coordinated program for technology transfer to China. DOC implements controls on dual-use exports, carried out by the Assistant Secretary for Trade Administration. Other parts of DOC such as Foreign Commercial Service (FCS) are involved in trade development programs. Generally speaking, promotional programs are carried out on different policy tracks and by different individuals than those who administer export controls. Within the Pentagon, for example, those charged with “security assistance” are expanding military cooperation, while those responsible for strategic trade are controlling exports.⁸

A pending question is whether it is necessary to formulate and implement a clearer strategy on technology transfer to China. There are few such examples of comprehensive U.S. foreign policy strategies other than for the Soviet Union, where serious problems are apparent. But it maybe that the United States has not realized all the potential benefits of a flexible approach. There may be gains to be made from better integrating U.S. programs toward China. The key question is whether this is desirable or possible in view of the many other important foreign policy issues on the agenda.

Activist Strategy of Technological Cooperation

Some favor a more coherent and aggressive strategy of promoting cooperation with China because of China’s critical strategic position and commercial promise or because they wish to assist China in its development. Placing special emphasis on U.S.-China relations is a resonant historical theme. For generations, Amer-

⁸The Defense Technology Security Agency (DTSA) within DoD handles DoD review of both dual-use and munitions exports. DSTA officials attempt to coordinate these policies.

icans have believed that China is in some sense "special."

A more activist strategy would probably require a larger role for the U.S. Government. Expanded export financing and FCS representation are possible avenues, as is the establishment of an aid program. Over time, export controls would be diminished, or even eliminated in some areas. Assuming that China demonstrates its commitment to avoiding illegal acquisition and retransfers of Western technologies and that relations improve, the Coordinating Committee for Multilateral Export Controls (COCOM) might decide to end all multilateral export controls for China trade.

Adopting a more positive strategy could help U.S. firms to expand their exports to China and serve to broaden and deepen technology transfer. However, because of China's clearly articulated call for U.S. technology, it would be difficult to develop a promotional policy oriented solely toward expanding U.S. exports of finished products.

A stronger China would be in a better position to counter the Soviet Union, and a successfully modernizing China may serve as a model to Soviet bloc countries. More speculative is the question of whether under such circumstances China would be inclined to contribute constructively to resolving persisting regional conflicts like the one on the Korean peninsula.

By promoting technology transfer to China more actively, the United States could also support expanded free trade in the Asian region. A central question, however, is whether the United States would be willing to eschew protectionist responses to China's growing export capacity. To the extent that a more activist promotional policy implies technology transfer as well as trade, a growing Chinese export capability is to be expected. An activist strategy therefore would involve keeping markets open to Chinese imports. To deal effectively with associated trade impacts, it would be necessary to develop a U.S. strategy toward Asian markets, one that locates China in a broader regional context.

The implications of an activist approach would depend to some extent on the degree to which the strategy were directed to security cooperation. A rapid expansion of military cooperation could create anxieties among Asian countries fearing a U.S.-China alliance. If the ultimate goal of U.S. foreign policy is to preserve a stable and peaceful Asia, it may be well to note the limitations of building "special relationships," such as those apparent in the Middle East, where a regional peace remains elusive despite active promotion of relations with a few key countries. If security cooperation with China were pursued unskillfully, it could be perceived as diverting attention away from the NATO alliance and Europe.

There is also a risk that a more activist approach could strengthen certain elements within China, such as parts of the military, or lead to anti-Western backlash stemming from long-held fears that China might become too dependent on foreign suppliers. Under worse conditions, the United States would come to regret an activist strategy of promoting technology transfer if China's leaders switched to an alliance with the Soviet Union.

Technology Leverage

Some advocate the use of technology as a bargaining chip in U.S.-China relations. Underlying this theme is a concern that technology transfer may too often be a one-way street, with U.S. firms providing more and more critical technology while Chinese foreign policy sometimes runs counter to that of the United States. China's stress on nonalignment and its association with Third World issues inferred from United Nations votes are often cited as evidence. According to this view, the United States must extract political concessions for the advanced technology it supplies China.¹⁰ Noting that Chinese leaders are skilled negotiators who never lose sight of national interests in technology exchange, proponents believe that the United States should likewise do more to foster its own foreign policy goals.

¹⁰Denis Simon, "China: Too Much Technology Too Fast?" *Technology Review*, 1985.

In contrast to those who believe that expanded technology transfer can help usher in good political relations, those who stress technology leverage believe that transfers should be conditioned on political or other concessions by China.

Technology leverage holds some attractions as a policy theme. Theoretically, at least, China might be further persuaded to cooperate with the United States on Korea or refrain from acerbic criticism of U.S. policy in the Third World in exchange for advanced technologies. Sharing intelligence about Soviet activities could be expanded in the context of transfers of critical technologies. If advanced technology transfers (such as those promoted under the aegis of government-to-government protocols) were linked to requests for broader access by U.S. technical personnel to China's corresponding industrial and research institutions, the United States could gain more from such exchanges. At issue is whether the United States can use transfers of technology to influence China's foreign policy.

Much depends on the way in which bargains are struck—through publicly applied pressure or in closed-door sessions—and the extent to which quid pro quo exchanges would be expected. Public demands for Chinese political concessions in early stages of negotiations could easily backfire. Nor does it appear likely that other Asian countries such as Japan would be willing to participate in pressuring China to change its policy vis-à-vis Taiwan, for example. Chinese resentment over the bargain struck by Moscow in economic cooperation with China in the 1950s suggests the possible liabilities of such an approach.⁷ Nor is it safe to assume that Chinese leaders simply respond to U.S. actions, ignoring the importance of history, traditions, and domestic political pressures. The application of pressure (in the form of conditions set on technology transfers) will not necessarily result in the response desired.

"Stalin demanded access to Chinese port facilities and the formation of joint stock companies, and insisted that China pay for all economic and military assistance. See Harding, in Harding, *op. cit.*, p. 183. Some experts, however, believe that the Soviet Union was actually much more generous in its economic cooperation with China. In any case, such negative Chinese perceptions could color economic cooperation with other countries.

Technology leverage may work in some precedent-setting cases, where negotiations are conducted behind closed doors. In such instances, however, it may be difficult for all but the few directly involved to understand the linkages between technology transfer and politics. Sensitive issues such as cooperation in intelligence gathering fall into this category. In view of the many routine decisions made in export licensing, it hardly seems possible that explicit bilateral political deals could be struck in any but a few key cases. On the other hand, conditions in many cases have been set on transfers of advanced technologies to China. The Chinese have apparently judged these limitations on their use of U.S. equipment and technology as not desirable but acceptable. The end-user certification provided by the Chinese government to verify the Chinese buyer of Western technology, for example, addresses Western concern about retransfers to the Soviet bloc.

Another factor limiting stronger emphasis on technology leverage is the wide availability of many advanced dual-use and military technologies. Because China could always turn to other suppliers, a unilateral strategy to deny technology would not be feasible in most cases. But China wants U.S. technology, and transfers from the United States undoubtedly have political value to the current leadership.



Photo credit: Eric Basques

As a diesel locomotive enters the Shanghai railroad station a steam locomotive on a siding is unloaded. The Chinese plan to decrease their reliance on steam locomotives and will promote railroad electrification.

If stress is laid on U.S. willingness to supply (rather than threaten to deny) certain kinds of advanced technologies, it maybe more likely that political understandings can be developed in conjunction with these transfers. Even if technology is seen more as a carrot than a stick, however, U.S. Government influence is limited in the sense that private companies make independent judgments about potential gains and risks. It appears that technology leverage will have to be applied selectively, and that it may be most effective in the context of a flexible approach.

A Cautious Approach to Technology Transfer

Still another theme in debates over U.S. technology transfer policy is one of caution. Because China may well have trouble in assimilating the most advanced technologies, some prefer to concentrate on transfers of less sophisticated technologies. Others may hope to avoid the "boomerang" effect—providing China with the technology to transform itself into a major competitor. Those who see the China market as a chimera, and those wary of close relations with a Communist country where leadership changes have in the past resulted in swings in policy, would prefer to proceed slowly in technology transfer to China.

Much would depend, however, on whether caution is directed at slowing the pace of U.S. export control liberalization, or adding new restrictions that negate the liberalization that has already occurred. Assuming no great adverse developments in bilateral relations, it seems unlikely that the United States would abruptly reverse the current policy path. On the other hand, if relations were to sour, a more cautious policy would be a natural outgrowth.

Despite the apparent safety of exercising caution, there are significant liabilities. In the current context of U.S.-China relations, officially stressing this theme would very likely antagonize China, perhaps pushing the Chinese toward rapprochement with the Soviet Union. The United States cannot prevent China's economic modernization or preclude China's emer-

gence as an exporter. Nor is the U.S. Government well equipped to further such goals systematically through technology transfer policies.

Those who favor caution on the grounds that certain types of technology transfer are not appropriate for China must recognize the limits on the ability of the U. S. Government to tell China how to carry out its modernization programs.¹² Where U.S. Government financing or sponsorship are provided, as with the Trade and Development Program (TDP) and Overseas Private Investment Corporation (OPIC) projects or those receiving ExIm financing, the Federal Government has leverage in selection and in setting requirements that ensure effective technology transfers. Particularly in the case of officially sponsored cooperation projects (under the protocols), there is considerable leeway for shaping the projects to ensure protection of public health and safety. But such projects are only a small part of U.S.-China trade. Generally speaking, U.S. Government influence had been focused on ensuring that the risks to national security are minimized.

It must also be noted that China could pose a major security risk if it fails to achieve its development goals. A stagnant Chinese economy could breed political disaffection at home and conceivably a foreign policy less open to the West and more threatening to other countries in Asia.

A Multilateral Approach

A multilateral approach to China has not been strongly emphasized. Such an approach implies that the United States, Japan, and Western Europe share common interests in assisting China's economic modernization and integration into the global trading system while protecting Western security through controls on militarily significant exports that could be useful to the Soviet Union or other adversaries.

¹²For a discussion of U.S. government influence on China's selection of energy development projects, see OTA, *op. cit.*, pp. 58-59.

Major Western suppliers of technology to China thus have joint interests in ensuring that all compete fairly for the China market and in preventing the diversion of advanced dual-use technologies to adversaries. COCOM and the Organization for Economic Cooperation and Development (OECD) agreements on financing reflect these joint interests. Taking a broader view of commercial interests, if some countries maintain severe restrictions on imports from China while others take a more open approach, the burdens of domestic adjustment will be unevenly spread and resentment may grow. From a Western security perspective, a joint approach to export controls is also essential because Japan, Western Europe, and some NICS are now developing dual-use technologies and producing sophisticated equipment and services with military applications.

A multilateral China policy would have many advantages, but there are also problems. Western countries compete for technological leadership and participation in the China market. Although firms from many countries are cooperating in large, capital-intensive projects in China, it is also true that they are vying for prime contractor awards and market shares. The United States thus has significant commercial interests at stake in the export of goods and services that translate into jobs for American workers and revenues to support further innovation and economic growth. Similarly, while a joint approach to export controls is mutually beneficial and essential, different COCOM countries approach export controls differently; thus, firms in different countries face different obstacles to exporting.

The dilemma from a policy perspective is that multilateral agreements are often based on the lowest common denominator—the rules of the game acceptable to the most liberal member of the club. The question is whether, through deliberations over China's entry into the GATT and other multilateral institutions and through OECD negotiations over financing, the scope and strength of agreements can be expanded. OTA'S research also highlights the need to strengthen the COCOM system.¹³

¹³ See also National Academy of Sciences, Report of the Panel on the Impact of National Security Export Controls on Inter-

But, despite the contribution made by COCOM governing certain types of dual-use exports, there are significant differences in policy approaches. The United States maintains unilateral controls on many types of exports to all countries (China included) and makes a serious attempt to limit potential diversions through controls on re-exports. Japan and Western Europe, as discussed in chapter 5, have much less complicated procedures for review of export applications and oppose extraterritorial application of U.S. laws. From a security perspective, the problem is further complicated by a number of NICS in Asia (not members of COCOM) that serve as production sites and entrepôts for high-technology trade.

In theory, the obvious solution is to bring the export control policies and practices of the COCOM countries more into harmony while persuading non-COCOM countries to institute effective controls. Harmonization of COCOM policies implies some modifications by both the United States and other COCOM allies. If for example, the United States were to eliminate unilateral controls on exports to China, U.S. exporters would benefit. Permitting freer intra-COCOM trade might help persuade other COCOM countries to be more vigilant in preventing diversions from third-country markets. Because each country has a different legal and administrative tradition, however, it would be unrealistic to assume that harmonization would eliminate all differences or reassure critics who charge that burdens and benefits are unequal.

Theme Implementation

In practice, the five themes discussed above are played out in U.S. policy. Periodically, U.S. negotiators seek specific assurances from China in return for sensitive technology transfers. A recent, publicized example was China's decision to become a member of the International Atomic Energy Agency and accept safeguards, and public statements that it will not assist

national Technology Transfer, *Balancing the National Interest: U.S. National Security Export Controls and Global Economic Competition*, 1987, for detailed recommendations about COCOM.

other countries in developing nuclear weapons (in the context of negotiations on a nuclear cooperation agreement).¹⁴ In other areas, such as scholarly exchanges, the U.S. Government has taken a more positive approach. In contrast, absence of an aid program indicates a cautious approach.¹⁵ The multilateral theme is reflected in COCOM and trade-related agreements, such as the OECD agreement on financing.

More important than the policy instruments is the overall direction of U.S. policy. It is, of course, possible that no clear choice will be made to seriously redirect policies. Regardless of whether a decision is made to highlight one of the secondary themes in order to develop a more coherent strategy, there are substantive policy choices that Congress will face.

One set of policy choices concerns export controls. Whether the goal is technology leverage or cooperation, delays and inconsistencies in export licensing decisions remain issues of concern. Congress has an important role to play in oversight of U.S. export policy. Indications of problems in the system are the continuing turf battles among agencies, misunderstandings about the policies of other COCOM countries, and the sometimes conflicting technical and policy judgments in determining threshold levels.

Promotional policies supporting expanded trade and technology transfer through financing and other means constitute a second area of policy choice. Will major stress be laid on export promotion, protectionism or bilateral bargaining, and what will the longterm implications be for U.S.-Asia trade? Congress reviews and helps determine programs of the Export-Import Bank, OPIC, TDP and the FCS.

A third area of choice is *military cooperation*. The scope, nature, and mechanisms for military cooperation will be clarified in the years ahead. Congress has an important role to play in reviewing military sales, particularly those involving FMS credits.

Scholarly and technical exchange is another arena for policy choices that affect technology transfer. Congress allocates funds for fellowships and lectureships that support research and study in the United States by Chinese scholars, and study visits to China by Americans.

Congress also reviews overall U.S. foreign policy toward China to assess the success of past policies and to anticipate future problems. Policies toward China reflect perceptions of the global role of the United States. Should the United States pursue a policy of strong engagement in Asian security by building new coalitions and maintaining a large military presence or take a more "minimalist" approach, restricting its efforts to maintaining the alliance with Japan and naval deployments needed for the strategic submarine fleet? Should the primary goal be to build a strong bilateral U.S.-China relationship or to expand multilateral cooperation? Can the United States afford to promote free trade and transfer technology to developing countries without suffering serious losses, or is it necessary to protect U.S. interests through bilateral bargains and trade protectionism? Many of these questions are beyond the scope of OTA'S study of technology transfer, yet the answers are critical to this subject.

These substantive issues are discussed more fully in the next section. Detailed examination of issues that Congress may confront, and recent experience with policy implementation in these issue areas, suggests that new initiatives may be needed if the United States is to maximize the potential benefits and minimize the possible risks associated with transferring technology to China.

¹⁴See OTA, op. cit. Congressional debate over the nuclear agreement focused on the strength of these assurances, pp. 54-55.

¹⁵The absence of a formal U.S. aid program can also be interpreted as reflecting judgments that U.S. priorities for assisting China in its modernization should be in other areas, rather than simply a negative view toward aid per se.

¹⁶See Richard H. Solomon, "American Defense Planning and Asian Security: Policy Choices for a Time of Transition," in Daniel J. Kaufman, et al., U.S. *National Security* (Lexington, MA: Lexington Books, 1985), p. 384.

EXPORT CONTROL POLICY

Export controls have been a continuing point of controversy in U.S. policy debates over technology transfer. At the heart of these debates is the problem of balancing the twin U.S. policy objectives of promoting international trade and protecting national security. Criticisms of U.S. controls on exports to China have been raised by U.S. exporters eager to expand trade, Chinese officials desirous of more advanced technology, and officials and businessmen in other COCOM¹⁷ countries who see some kinds of U.S. export regulations as infringing on their own sovereignty. DoD has been the target of much of this criticism, primarily because some believe that DoD interprets export regulations too stringently, causing commercial loss to U.S. firms. Observers also question whether U.S. controls concentrate sufficiently on slowing the flow of technologies with real military significance. Congress plays a critical role in framing the legal basis for export controls and in its oversight of the system.

These are general issues not specific to China. But they have been a central focus of debates over U.S.-China policy because extensive controls on exports to China were maintained throughout most of the postwar period and because those controls have been adjusted in recent years to reflect an improving bilateral relationship. China licensing has been a concern more specifically because the United States expected loosened controls to facilitate trade with China and because the number of China licenses reviewed by the U.S. Government and by COCOM grew rapidly in the 1980s. In 1981, for example, the Reagan administration decided to treat exports to China favorably at technological levels twice those permitted for the Soviet Union. While the meaning of the "two times" rule remained less than clear, it signaled a liber-

alization in U.S. policy, as did the 1983 announcement that China would be moved to country group "V" for export control purposes.¹⁸ A zone system was developed for China exports, resulting in faster reviews for items in the "green zone." (See discussion of these zones in ch. 7.)

The most recent significant step in the direction of liberalization was taken in late 1985, when COCOM member countries revised regulations governing exports to China. These changes, as published in revisions of the Advisory Notes to U.S. export regulations, were to result in a "... substantial decrease in processing times" for exports to China.²⁰ This was to be accomplished by expanding the range of exports likely to be approved for export and by eliminating the need for their review by COCOM and U.S. agencies outside DOC. Green zone commodities can now be re-exported to China from COCOM member countries under licenses issued by those countries. Likewise, DOC and other agencies involved in export administration have attempted to improve the efficiency of the U.S. licensing process.²¹

From the exporter's point of view, a key question is whether an individual validated license (IVL) is required. Most exports involving technology require an IVL. If the application is for a commodity that falls within the green zone, license review is normally conducted only by DOC and can be completed in a few weeks. Otherwise, more extensive review

¹⁷COCOM (the Coordinating Committee for Multilateral Export Controls) is an informal organization based in Paris. The member countries include NATO countries (minus Iceland) and Japan. The purpose of the organization is to control exports of militarily significant items to the Soviet bloc.

¹⁸For an overview of U.S. export controls (and promotional policies) affecting technology transfer to China, see OTA, op. cit., especially ch. 5.

¹⁹The V country group includes a large number of countries—Britain, France, Yugoslavia, India, Syria, and Iran among them. It should be noted that U.S. regulations on exports differ across these countries. The V country group is really a catch-all category; export regulations are not uniform for all of the countries in this category. China is, however, the only country in this group subject to COCOM review and national security controls.

²⁰See Department of Commerce, ITA, 15 CRFT Parts 373, 374, 375, 379 and 399, "Exports to the People's Republic of China; Amendments to the Export Administration Regulations," *Federal Register*, Dec. 27, 1985, 52900.

²¹see Paul Freedenberg, Assistant Secretary of Commerce for Trade Administration, before House Foreign Affairs Committee, Subcommittee on International Trade and Economic Policy, Apr. 17, 1986, pp. 4-5. DOC made special efforts to reduce case processing time for exports to China by establishing a special "China team center" in 1985.

Table 17.—China Export Licenses—1984, 1985, and 1986

Commodity Control List (CCL) Category	Dollars approved (thousands)		
	1984	1985	1986
1091 Numerically controlled equipment.	4,019	13,770	9,361
1312 Presses for ceramic manufacturing.	14	0	0
1353 Communication cable manufacturing equipment			6,985
1354 Integrated circuit manufacturing and testing equipment	115	5,422	1,971
1355 Electronic device manufacturing equipment	23,304	94,527	74,311
1358 High technique memory/switching device testing and manufacturing equipment	168	7,316	3,463
1359 Tooling for fiber optic manufacturing	0	0	0
1391 Robots and electronic controllers	0	0	0
1460 Nonmilitary aircraft, helicopters	164,006	1,025,385	117,126
1510 Underwater detection equipment.	1,148	2,017	578
1519 Single and multichannel transmission equipment	11,568	3,007	1,965
1520 Radio relay equipment	1,626	69,224	4,347
1522 Lasers and laser systems	1,501	6,820	6,729
1529 Electronic measuring, calibration, and testing equipment	11,899	33,144	34,118
1531 Frequency synthesizers and equipment containing	2,989	35,241	11,004
1533 Radio spectrum analyzers	2,188	3,036	4,811
1537 Microwave equipment	627	2,457	1,696
1555 Electronic video tubes, components	31	1,263	199
1564 Integrated circuit and electronic assemblies.	15,727	38,009	12,313
1565 Computing equipment	1,164,339	3,897,369	2,694,130
1566 Computer software.	^a	3,713	4,835
1567 Communication switching, stored program	0	14,300	52,517
1568 Electric/electronics equipment	699	1,013	495
1572 Recording, reproducing equipment	57,738	66,089	52,339
1584 Oscilloscopes	1,866	3,183	2,336
1587 Quartz crystals/assemblies	67	11	1
1767 Optical fiber preforms	0	0	0
Total for 27 CCLs	1,465,639	5,322,603	3,092,795
Total all CCLs	2,004,199	5,493,456	3,366,460
27 CCLs as % Total CCLs	73.1	96.8	91.8

NOTE: Temporary licenses are excluded. Data include total for calendar years (in current dollar value for IVL applications).

^aIncluded in 1565.

SOURCE: US Department of Commerce.

is required by other U.S. Government agencies and by COCOM. In early 1986 this green-zone review was extended to cover certain kinds of items covered by 27 Commodity Control List (CCL) categories as shown in table 17.²²

²²Those include numerical control equipment and software, presses and specialized controls, communication cable machinery, printed circuit board machinery, semiconductor manufacturing equipment, test equipment for recording media, tooling for fiberoptic connectors, robots, aircraft and helicopters, underwater detection/locating equipment, data communications equipment, radio relay equipment, lasers, electronic measuring equipment, frequency synthesizers, spectrum analyzers, microwave equipment, image intensifier and TV video tubes, integrated circuits, Computerland computer software, telecommunications equipment, A/D and D/A converters, recording and reproducing equipment, oscilloscopes, crystal oscillators, and optical fiber preforms. It should be noted that some but not all of the items covered by each of the 27 categories now receive favorable treatment as green-zone cases in license review.

The number and value of U.S. licenses approved for exports to China has expanded rapidly in recent years. The dollar value grew by 15 times, from \$374.3 million in 1980 to \$5,493 million in 1985, though it declined to \$3,366 million in 1986. The number of applications more than doubled between 1983 and 1985, rising from 4,300 to 10,200. In 1986, a total of 8,130 cases (including temporary licenses) were closed out for export to China.

Not surprisingly, the bulk of the approved IVLs fall into a few commodity groupings. In 1980, more than 60 percent (in dollar value) of the approved licenses were for exports of semiconductor manufacturing equipment. In 1986, approvals for exports of electronic computing equipment made up more than 80 percent of the total, and nonmilitary aircraft and helicopters another 7.3 percent in terms of

value.²³ Table 17 provides an indication of the prominence of license approvals in the 27 CCL categories liberalized.

Export controls are established to protect U.S. national security by making it more difficult for adversaries in the Soviet bloc to obtain militarily significant technologies. Controversies continue about whether the commercial loss is justified by the national security gains, both values difficult to capture in dollar estimates.²⁴ Estimating the dollar value of such commercial losses would entail documenting sales won by foreign competitors *because* of delays in U.S. licensing or unilateral U.S. controls.²⁵ A full estimate would also have to take into account the potential business lost because export controls caused U.S. exporters to forego business or because delays in the U.S. process caused potential buyers to modify contracts.²⁶ Calculating the dollar value of licenses under review for a long time provides one indicator of the potential magnitude of the problem, however. In January 1987, for example, the total value of licenses pending more than 60 days for export to China was more than \$806 million.²⁷

²³Data on licensed exports to China are published in the *Export Administration Annual Report*, U.S. Department of Commerce, 1986.

²⁴Estimates can be more easily developed for commercial impacts of trade embargoes. See, for example, Gary Clyde Hufbauer and Jeffrey J. Schott, *Economic Sanctions in Support of Foreign Policy Goals*, 11 E, October 1984. Developing a quantitative estimate of the national security gains associated with export controls would also be extremely difficult.

²⁵As discussed in ch. 4 (supplier country policies), complaints about unfair trading by foreign competitors abound. The American Electronics Association (AEA) has compiled a compendium of examples of export control problems, based on information provided by member firms. Included are reports of delays, unilateral U.S. regulations governing demonstration licenses, and semiconductor manufacturing equipment exports to China. See Case Study Report, AEA, Export Control Task Force, Mar. 12, 1987.

²⁶See William F. Finan, "Estimate of Direct Economic Costs Associated With U.S. National Security Controls," app. D, in National Academy of Sciences, *Balancing the National Interest: U.S. National Security Export Controls and Global Economic Competition* (Washington, DC: National Academy of Sciences, 1987). The author estimates that the direct, short-run economic costs to the U.S. economy associated with export controls was \$9.3 billion in 1985, and that the overall aggregate impact on the U.S. economy was \$17.1 billion.

²⁷OTA was given special access to DOC export licensing data, based on a "national interest finding by the Assistant Secre-

U.S. export controls today affect trade with China primarily in a few key advanced technology sectors. Computers, telecommunications, aircraft, precision instruments, and advanced manufacturing equipment constitute the bulk of this group. In most cases foreign firms can supply equivalent technologies. In 1985, U.S. exports from these sectors made up between one-quarter and one-third of total U.S. exports to China in dollar value. It is also important to note that these have been key areas of export growth in recent months. From 1984 to 1985, exports of telecommunications equipment, for example, increased by 72 percent and exports of computers and office machines increased by 85 percent. 's U.S. controls strongly affect joint ventures in China because exports of technical data and advanced manufacturing equipment are often involved, exports that require interagency review. Since these are likely to remain priority import areas for China, controls will continue to affect U.S. exports of advanced technologies. Controls are not a determining factor across the board in U.S. trade with China, however.

The License Review Process

The Export Administration Act, the foundation for the export control system, designates DOC as the lead agency in implementing controls on dual-use exports.²⁸ The law states that restrictions on international commerce should be used only where necessary to further U.S. national security and foreign policy goals. Section 10 of the act establishes procedures for efficient processing of applications within certain time periods and requirements for periodic reports to Congress. While some critics have charged that Congress should not micromanage export administrators by requiring DOC to process applications within cer-

tary of Commerce for Trade Administration. In August 1986, 878 China cases had been in the system for more than 60 days. In January 1987 the number was 809.

²⁸DOC official export statistics. It is not clear whether exports in these sectors might have increased even more rapidly without factors relating to U.S. export controls.

²⁹The Export Administration Act of 1979, as amended in 1981 and 1985. A copy of the law can be found in the Export Administration Regulations.

tain time periods, it appears that these stipulations have prompted improvements in license review.

All applications for dual-use exports are received first by DOC, which must complete initial screening within 10 days. Cases that fall within the green zone can be approved by DOC alone. Others may be referred to other agencies such as the Departments of Defense, State, and Energy, depending on the particulars of the case. Many, but not all, of such referred cases must also be sent to COCOM for multilateral review.³⁰ Congress has set time requirements for processing at each stage of the review process to ensure that delays are minimized.³¹

DOC and other agencies have taken a number of steps during recent years to reduce delays. For a period in 1985 a China team center was established. Automation has also been used to reduce the paperwork and time needed to submit a case for COCOM review, to cite another example.

The reorganization of DOC'S licensing procedures in November 1985 abolished the China team center set up to speed review of China cases. China applications are now routed to one of four commodity teams that handle individual validated licenses: capital goods (which also handles technical data); computer systems; microcomputers and telecommunications; electronic components, and instrumentation. These teams process applications for exports to China along with similar types of exports to other countries. During the first 6 months after the reorganization was announced, many people were moved to new positions. Problems of adjustment, presumably temporary, became ap-

³⁰The State Department is the lead agency on COCOM and for munitions exports, as discussed in the next section of this chapter.

³¹DOC categorizes cases that exceed statutory limits in a number of categories: 1) applications not requiring interagency referral for which DOC has neither issued nor denied a license within 60 calendar days of receipt (Sec. 10 (c) of the Export Administration Act); 2) applications requiring interagency referral but which have neither been closed out nor referred to COCOM within 120 days after receipt (Sec. 10 (f)(1)); and 3) applications referred to COCOM that are over 160 days old, or exceeded 160 days before completion (Sec. 10 (h)).

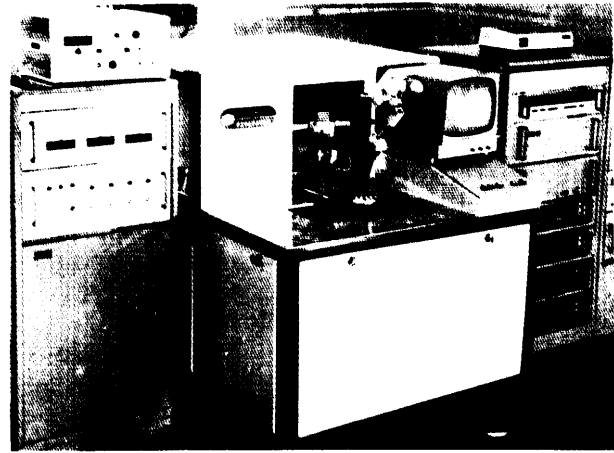


Photo credit E/ectro Scientific /ndustr/es, /nc

A semiconductor processing system incorporating a sophisticated laser. This system, including the laser, was built in China.

parent as license reviewers and managers learned new jobs.

Management challenges of other kinds (recruiting and keeping qualified personnel and utilizing them effectively) also importantly affect the functioning of the system. Licensing officers and engineering specialists are ranked at GS-9 through GS-13 levels. DOC has apparently lost some its best young people to industry and to DoD. The Office of Export Licensing (OEL) now has a staff of 152 and the Office of Technical and Policy Analysis (OTPA) over 76, but DOC has been unable to fill all of the positions that were open.³² Expanded use of the automated system for data entry, case tracking, and review may permit a concentration of staff for focusing on really important cases.

Another major goal of the reorganization was to better integrate technical and policy analysis in the licensing process, a persisting issue in U.S. export administration. OTPA was set up in part to improve technical review in precedent-setting cases. However, exporters have found it difficult to understand the division of responsibility between OTPA and the OEL.

There is widespread agreement that automation is a major tool for improving the system.

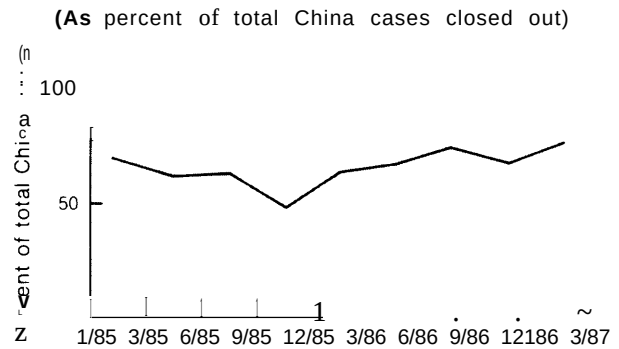
³²DOC, August 1986.

Plans are being made to automate data entry, and a system has been put in place to provide automated response to telephone inquiries about the status of cases.³³ The automated systems can also be used to improve accountability by eliminating some steps in the licensing process. Illustrative of the latter was a striking reduction in the processing times for non-referred COCOM country cases after license examiners began to use the automated tools available to close out and issue license approvals. DOC has developed a comprehensive plan for automation that in the near term will automate data entry and license issue, and initiate the automation of the license approval process. Over the longer term, the automation plan calls for immediate access by the license examiner to a history of similar cases, online regulations, policies, precedents, and the integration of information about foreign availability.³⁴

One near-term objective of DOC is to reduce the time required to complete action on IVLS to 45 days by July 1987.³⁵ There is no reason why processing times for green-zone cases cannot be further reduced to the time required for free-world destinations (6 days, according to DOC's own goals). *Congress may want to monitor progress carefully toward achieving these goals of quicker license reviews to determine whether additional staff or other resources are required.*

When new China licensing regulations were published in December 1985, the expectation was that, by expanding the numbers of items in the green zone, fewer cases would require interagency referral. However, figure 7 shows that this expectation has been only partially

Figure 7.—Green Zone (Nonreferred) China Cases



SOURCE: Office of Technology Assessment, 1987

realized. Nonreferred cases were 70 percent of all closed out China cases in both the first quarter of 1985 and the last quarter of 1986, though they rose to 78 percent in the first quarter of 1987.

Average processing time for China cases has declined, a trend that some believe indicates the success of the revised guidelines in streamlining the system. Improvements in processing time also reflect introduction of computerized processing of West-West cases, permitting more efficient use of licensing staff. Table 18 provides an overview of average days of processing time required for all China cases completed during the period January 1985 through April 1987. The number of completed cases de-

Table 18.—Processing Time for China Cases

	Average number of days	
	Number of cases closed	Average processing time
January 1985	911	83
June 1985	976	94
January 1986	786	74
June 1986	609	60
August 1986	666	76
November 1986	514	70
December 1986	411	77
April 1987	729	57

NOTE: Average processing times have been calculated for the cases closed out (completed) during the 30-day period noted. Total cases include referred and non-referred China cases.

SOURCES: U.S. Department of Commerce, August 1986, January 1987 and May 1987.

³³The System for Tracking Export License Applications (STELA) is operational. The system provides exporters with information concerning the location of the case within the system. More substantive inquiries concerning interpretations of regulations are handled by Exporters Assistance and licensing officers.

³⁴For a detailed overview of the Export Automated Support System (E CASS) developed by DOC, see Office of Deputy Assistant Secretary for Export Administration, *Export Control Automated System*, July 25, 1986. The plan notes the growing need for interagency coordination, p. 23.

³⁵See *Export Control Automated Support System—ECASS*, concept paper, revised, July 25, 1986, p. 12.

Figure 8.—Processing Time for Referred (Closed Out) Cases

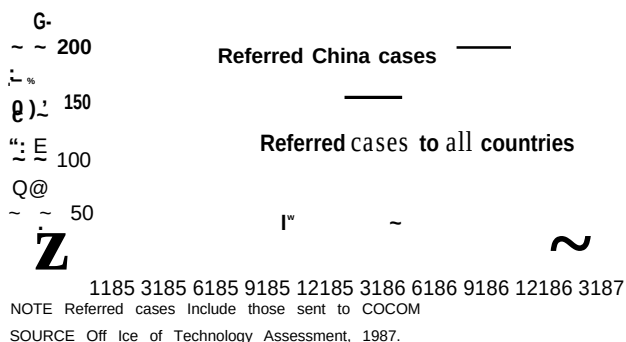
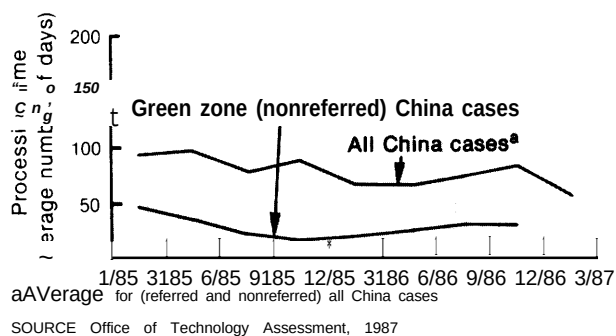


Figure 9.—Average Processing Times: China Nonreferred and All China Cases



declined along with processing times up until mid-summer of 1986; after that, processing times fluctuated, showing another decline in early 1987.

Average processing time for referred cases, however, took more than 200 days in December 1986, and remains significantly higher than processing times for referred cases for export to other countries. Figures 8 and 9 show the persisting pattern of unusually lengthy reviews of referred China cases. During the last quarter of 1986, about 30 percent of the closed out, referred China cases exceeded the statutory limits.³⁶ OTA finds that improvements have been achieved in average processing time

where the percentage of referred China cases where reviews exceeded statutory limits was 70 percent in the first quarter of 1985. The percentage of all China cases (referred and nonreferred) where reviews exceeded statutory limits was 36.8 percent in the first quarter of 1985 and 16.1 percent in the last quarter of 1986. Data in all cases for closed out cases.

for China cases but that a significant problem remains in the unusually long periods of review for referred China cases.

For China exports, and for exports to other countries, the percentage of applications denied is quite small. License examiners can also return applications to the exporter without action (RWA), when additional information is required. Critics have suggested that a large percentage of such applications is cause for concern because the U.S. Government may thereby unduly delay or effectively deny an application. The number of RWAS has declined, as table 19 indicates. This reflects efforts on the part of DOC to work with exporters rather than deny or return applications when additional information is needed.

Issue: Is Inter-Agency Review a Major Factor Slowing Review of China Cases Within the U.S. Government?

In December 1986 about 1,300 China applications were pending, and processing times exceeded the statutory limit in 40 percent (524) of those cases. Most of those cases pending over the statutory limit (461 of 524) were referral cases (those sent to other agencies or to COCOM for review).³⁷ Hence, the number of China cases pending over statutory limits remained in early 1987 almost as large as it was in the spring of 1986. Cases referred to other agencies make up the bulk of the backlog. Pending cases for exports to China made up about one-third of the total number of U.S. cases pending over the statutory limits in 1986.

³⁷DOC, January 1987. According to DOC officials, cases referred to COCOM normally exceed U.S. statutory limits for review.

Table 19.—Actions Taken on Closed China Cases

	Percent of total number of cases closed		
	Approved	Denied	Returned without action
January 1985.	70.39%(83.13)	0.12%(0.61)	29.48%(17.24)
January 1986.	75.00 (81.86)	0.26 (0.41)	23.73 (17.72)
June 1986	86.77 (88.03)	0.16 (0.16)	13.05 (11.79)
December 1986	89.32 (93.85)	1.21 (0.42)	9.46 (5.72)

NOTE Percentages in parentheses reflect exports to all parts of the World Data include temporary exports

SOURCE U.S. Department of Commerce August 1986 and January 1987

In June 1986 the all-agency average processing time for referred China cases was 152 days. At that time it took longer to process such cases than cases for exports to any other part of the world. In early 1987 processing time for referred cases continued at a level of more than 175 days (see figure 8).

OTA analyzed the China cases more than 60 days old, first in August 1986 and then again in January 1987.¹⁸ The number at both times was substantial—more than 800 cases. The total value of these cases actually rose from \$713 million in August 1986 to \$806 million in January 1987. A significant portion of these cases (1a1) had been in the system more than one year by January 1987. The value of these cases was \$145,342,171,39.

Most of the cases in the 1987 sample were identified as located in various stages of DOC IVL licensing. (These cases also represented about half of the total dollar value of the pending China licenses.) At the same time, almost 20 percent were in COCOM: they were valued at more than \$218 million. The number of cases in the sample located at DoD was not large, and their value was about 5 percent of the total. It should be noted, however, that agencies such as DoD may return cases to DOC quickly, recommending denial or asking for additional information. Cases located in DOC may therefore reflect actions taken by other agencies that have the effect of increasing the period of license review at DOC. For a detailed examination of factors contributing to delays in the interagency review process, see appendix C at the end of this chapter.

The backlog contains a large number of cases that are not really active. ” Particularly striking were the sO cases being held without action (HWA) and the 97 cases in which nega-

tive consideration letters (NCL) had been sent. Together, these two types of cases were valued at \$111 million, or more than 10 percent of the total value of China cases more than 60 days old.

DOC could make a special effort to eliminate cases that have been under review for very long periods of time, thereby making the case list a more accurate representation of cases that are really active. Another possibility would be for Congress to restrict the number of days a case could remain active in the system. For example, cases more than a certain number of days old could be automatically approved unless the Secretary of Commerce provided written explanation to the exporter that the particulars of the case made extended policy review necessary. (Some of these cases would, of course, still require COCOM review.)

It is striking that a few very large companies make up a large percentage of the total value of pending cases. OTA found in both samples, for example, that one company was responsible for more than 10 percent of the dollar value (and more than 15 percent of the total number) of China cases pending more than 60 days. In contrast, another company had only one China case pending for more than 60 days, but it was valued at \$2.5 million. This suggests that a few companies take the lead in testing the system and that their efforts are concentrated in a relatively small number of CCL categories, such as computers (CCL 1565). In January 1987 there were 207 cases more than 60 days old in CCL 1565, and 74 of them were valued at \$295 million.

It appears that a considerable investment of time and resources is needed to work the system, and few smaller firms can afford to do so. Instead, the export system has nurtured a large group of middlemen and Washington consultants who represent the actual exporters. Measures to make the system more understandable and accessible could make it easier for small U.S. companies to export.

¹⁸OTA collected these data samples from the DOC licensing database. The data include the total number of China cases that had been in the system for more than 60 days.

¹⁹The number of these cases was roughly the same as it had been in August 1986, but the dollar value was substantially higher.

²⁰Such cases may be held within the system because the exporter wishes (held with action, or HWA) or in order to fulfill requirements under the Export Administration Act (negative consideration letters).

²¹HWA's are held at exporter's request; therefore, delays in these cases are not caused by DOC. It should also be noted that NCL and intent-to-deny cases routinely exceed statutory limits, due to time periods needed for rebuttal.

Interaction between DOC and DoD has been a major focus of attention in export administration debates. Exporters have charged that DoD dominates the system, interpreting regulations rigidly and delaying decisions. Others, however, question whether DOC green-zone review involves adequate technical analysis.

DoD has reorganized and consolidated its export control apparatus into the Defense Technology Security Administration (DTSA).⁴² DTSA reviews the applications for the most sensitive dual-use and munitions exports. DoD has developed its own approach to automation, which builds on the licensing data base that DOC established. During recent months, DoD was processing China cases quickly, on an average of 25 days during the last quarter of 1986, although DoD processing times rose to 31 days in the first quarter of 1987 for closed out cases. DoD has clearly developed a Coordinated program for export licensing.

Some fear, however, that DoD is in a position to negotiate unilaterally with exporters, requiring modifications and other conditions on export. Typically more cautious about approving exports, DoD license reviewers are in a position by virtue of their considerable organizational resources to play an important role in reviews of referred cases. There are internal differences within the Pentagon over technology transfer to China, but DTSA plays a leading role in coordination with policy makers in international security affairs.

Exporters sometimes complain that DoD and DOC interpret the regulations differently.⁴⁴ While it was beyond the scope of OTA's research to substantiate this charge fully, dis-

cussions with officials from both agencies indicated that their views diverge on some key policy issues. Officials in DOC, for example, stress that a de facto red zone exists, while DoD staff disagreed with this characterization, stressing that all cases above the green zone are reviewed on a case-by-case basis. Serious and persisting differences in interpretation of export regulations continue, lending uncertainty to the process and suggesting that policy is not clearly defined or consistently applied.

Problems in reaching interagency consensus have rendered the formal process ineffective. *The formal process is that precedent-setting cases that involve militarily significant exports are referred to various agencies, and the most difficult cases are considered by interagency groups such as the Operating Committee. In practice, however, the Operating Committee formally reviews only a handful of cases.* Higher level formal interagency reviews—for example, those that involve the Secretaries of Defense and Commerce—are also unusual. Without interagency consensus, cases may languish for years with no decision. One solution is for high-level officials in DOC to push for resolution of such controversial cases, bringing them to Cabinet level and even Presidential attention, when necessary.

Some argue that one way to solve the problem of interagency consensus-building is to eliminate DoD participation in license reviews. The committees of jurisdiction in Congress have struggled with this issue in recent years, particularly in the conference committee that reviewed amendments to the 1979 Export Administration Act.⁴⁵ Section IO(g) of the act outlines a role for DoD in reviews of cases involving national security. The rationale is that differences in viewpoints among the key agencies (Commerce, Defense, State) involved in export controls can provide useful checks and balances.

⁴² See Defense Technology Security Administration Program Development Plan, *High Technology Export License Review and Analysis System for the 1990s*, May 5, 1986.

⁴³ For reasons mentioned earlier, the agency average processing times tend to underestimate the overall effect of decisions taken outside DOC that extend review time within DOC.

⁴⁴ One example cited was the 16-bit microcomputer. Exporters suggested that DoD first approved such exports, and then began denying them for exports to China. More recently, DoD has once again changed its policy, approving such exports for China. When DoD officials were asked about this and other such examples, they discounted them as inaccurate, suggesting that if 16-bit microcomputer exports were denied for China it was for some reason that had nothing to do with technology level.

⁴⁵ The Export Administration Act Amendments of 1985 were eventually signed into law, after prolonged debate in the conference committee.

As the lead agency in export administration, DOC officials have the leeway to present their views more forcefully, if need be, in high-level interagency reviews. Therefore, one alternative is for DOC to play a stronger role. One way to accomplish this would be to encourage DOC to exercise final authority in approving an application unless DoD exercises its formal appeal to the President as outlined in section 10(g). Another variant on this would be to amend the act by limiting DoD's role to giving advice to DOC, leaving final authority for China cases with DOC. This approach might be justified by some who see export controls for China as primarily a foreign policy question or by those who favor removing China from COCOM. Still another possibility would be to mandate a deadline for review (such as 6 months) and amend the act to call for automatic approval for cases that exceed the deadline.

The effect of all of these proposals would be to increase incentives for DOC to reach a decision more quickly. Nevertheless, much would depend on how much initiative is taken by officials at DOC. In the first case, the burden of objection would be with DoD, but DOC officials would have to ensure that final decisions were made in timely fashion if the system is to work any differently than it does now. In the second case, national security considerations might be downplayed. Evaluations of that risk, however, depend to some extent on whether or not one judges that such considerations are now overemphasized. Under the third option, there is also a risk that the automatic approval process would produce some bad decisions.

A recent study by the National Academy of Sciences proposes to address these issues by expanding the role of the National Security Council (NSC).⁴⁷ NSC currently helps coordinate interagency decision making, and its effectiveness depends to some extent (as with the above options) on the interest and initia-

tive taken by NSC staff. In practice, new and important policy proposals on export controls receive Cabinet-level attention, Encouraging DOC to play a stronger role through one of the mechanisms discussed above, therefore, seems a more direct approach than one that depends on a greatly expanded role for NSC as the interagency arbiter.

Nevertheless, the goal should be to provide new incentives for interagency consensus-building. The process outlined in the Export Administration Act (formal DoD objections conveyed to the President) has not been frequently used, and decisions have been delayed well beyond statutory limits in a significant number of China cases. The question that Congress may wish to address is how to ensure that good decisions are reached in timely fashion.

The Department of State (DOS) is also a key participant in the process, particularly for COCOM cases. Consensus-building among these agencies is difficult because each agency has its own data base, procedures for review, and criteria for making judgment.⁴⁷ The Department of State, for example, handles foreign cases submitted by other COCOM member countries but does not have ready access to information about U.S. cases involving similar types of equipment and technology.

Issue: How Can Export Regulations Be Clarified To Provide Clearer Guidelines?

Ambiguity in the guidelines for exports (particularly for exports that exceed green-zone criteria) remains a problem. In evaluating this situation, OTA compared the value of approved licenses for exports to China with the value of actual exports. It found that the value of approved licenses for China has not only expanded but exceeds by far the actual value of U.S. exports. In 1980, when U.S. exports to China totaled \$3,754 million, the value of export licenses granted was about 10 percent of that total dollar value. In 1985, however, when

⁴⁷National Academy of Sciences, *Balancing the National Interest: U.S. National Security Export Controls and Global Economic Competition* (Washington, DC: National Academy of Sciences, 1987), pp. 173-174.

⁴⁸U.S. General Accounting Office (GAO), *Export Licensing: Commerce-Defense Review of Applications to Certain Free Trade Zones*, GAO/NSIAD-86-169, September 1986.

U.S. exports totaled \$3,855 million, the value of approved licenses totaled \$5,493 million.⁴⁸ Of the 2,688 licenses, valued at \$761 million, used for export to the PRC and returned to DOC in 1986, the value of actual shipments was only \$483 million.⁴⁹

There are a number of possible explanations for the comparatively large value of approved licenses. First, licensed exports include those for demonstration purposes, where no sale is actually made,⁵⁰ and for reexports of U.S. technology from other countries. However, because licenses for such types of exports were valued at less than \$100 million in 1986, these licenses alone cannot account for the comparatively large value of licensed exports.⁵¹ In addition, licenses that are returned without action (because information is inadequate and other reasons) are reentered in the database when they are resubmitted, and they are double-counted among pending licenses.⁵² Also, exporters receiving an approval in one year may make the actual shipment in the following year.

In many cases, however, it appears that final sales never take place, even though a license has been approved. This may occur when a long period elapses between the time of application and the time of approval. In such a case, the buyer may lose interest and turn to another seller.⁵³ Another explanation is several U.S. exporters submit applications, all hoping to make the same sale in China.

An exporter incurs no penalty for keeping a license active or for making multiple submissions to export similar types of equipment to different Chinese buyers. Exporters may do this to obtain documentation useful in future export licensing submissions. When an appli-

cation involves cutting-edge technology, industry representatives may also find it necessary to press their cases at high levels.

A certain amount of testing is to be expected, but if this becomes the major mechanism for forcing critical and precedent-setting policy choices, it suggests that exporters (and perhaps license examiners) lack clear guidance and that the policy process has failed. Since the publication of new regulations in December 1985, the green zone has been more clearly defined, but ambiguities remain. Exporters mention areas such as semiconductor manufacturing equipment, software development systems, and computer systems as areas of controversy.

In particular, exporters as well as license examiners are uncertain about how exports exceeding green-zone limits will be treated. Such exports are reviewed on a case-by-case base. In recent years U.S. officials have approved exports exceeding green-zone guidelines, attaching various conditions to export. Powerful computers, for example, have been leased to China for use in seismic applications.⁵⁴

Past China controls included intermediate and red zones along with a green zone. Today, the proscribed "mission areas" ⁵⁵ provide only general guidelines about what kinds of exports are likely to be denied. In fact, there is no outright prohibition on exports above the green zone; each case is reviewed separately. The absence of a clearly defined red zone provides exporters (as well as Chinese buyers) with incentives to test the system. *Export control regulations provide little ~"dance to exporters concerning items above green-zone levels. There is no practical way for an exporter to know what previous decisions may have been made to approve exports of certain types unless the exporter is wifing and able to invest the considerable resources necessary to learn from officials about such cases or to take the initiative to make multiple applications to document previous decisions.*

⁴⁸U. S. exports are based on official U.S. statistics.

⁴⁹Data from DOC, April 1987.

⁵⁰Data for 1986 exports included in the paragraph above do not include temporary licenses, however.

⁵¹Data for re-exports cover the period Jan. 1 to Dec. 31, 1986. U.S. DOC data, August 1986.

⁵²A reasonable estimate is that about 10 to 11 percent of the pending cases for export to China are resubmissions. U.S. DOC, August 1986.

⁵³A related explanation is that the Chinese buyer finds it impossible to raise the needed foreign exchange to make the final purchase.

⁵⁴Approval of exports may also be conditioned upon the type of end-user, monitoring of facilities and access by Chinese personnel.

⁵⁵See ch. 7 for a discussion of the mission areas.



Photo credit Wendy Freeman

A consumer electronics factory in Shenzhen. Product Ion has grown rapidly, and exports may soon become competitive with those of the newly industrializing countries

Publication of a red zone might lead to adverse Chinese reaction and would require continuing modifications as technologies and bilateral relations change. On the other hand, the process of license review might be speeded and coherence in U.S. policy better assured if a more carefully defined red zone could be developed for use within the U.S. Government. There is widespread agreement that the U.S. export control system could be improved by concentrating efforts on controlling a small number of truly militarily significant items. Better definition of the red zone would be consistent with this. There is, moreover, the very real danger that review of a.Zl exports above the green zone level will be slowed unless the red zone can be better defined.

The disadvantages of such an approach would be to reduce the flexibility of the current system and to make it even more important to revise such ~idelines in a timely fash-

ion." Some argue that such an approach would be extremely difficult to implement because it would have to take into consideration not only the level of technology and its military significance but also the specific conditions of use, and the nature of the end-user which are generally developed on a case-by-case basis.

For the next few years, the potentially difficult areas of decision for exports to China include powerful computers, electronic measuring equipment, software, telecommunication (including networks and fiber optics), and technical data (including training). *What is lacking is a strategy for future U.S. technology transfers to China in key industry sectors. Practically speaking, sectoral analyses could lay the foundation for expanding the China green zone.* To develop such a strategy, consultations with industry officials would be essential. Moreover, factors such as U.S. commitments to cooperate with China (e. g., under signed protocols), changes in technology, and Chinese technology needs would have to be taken into consideration, along with national security concerns. Developing a strategy for a key industry sector would not be an easy task because many transfers involve technical data and managerial expertise that are much more difficult to bound than equipment and hardware, and because transfers involve combinations of equipment whose technical parameters may be different from the simple sum of the parts. The thrust of the effort would be to chart a future course over a 5-year period, providing exporters and license examiners with better guidelines.

Regardless of the approach taken, *better use of the computerized data base for review of applications for export of equipment or for review of technolo~es equivalent to what has already been perm~tted for export could ensure more consistent decisions.* Once a precedent-setting decision has been made to permit an export of a certain type, subsequent decisions should be consistent with those precedents un-

⁵⁹A major criticism of the current U.S. export control system is that there have been only a handful of findings of foreign availability that provide the basis for removing items from the controlled list.

less other, nontechnical factors come into play. To ensure consistency in decision making, the various U.S. agencies involved in license review would need accurate information about such precedents and common understandings about implementation.⁵⁷

From a public policy perspective, it maybe essential to expand efforts to make the system more transparent. A number of approaches could be considered. *DOC might issue periodic general guidance to exporters about recent key decisions (without disclosing the names of exporters or confidential information).* In recent years the publicly available annual reports on export administration for one calendar year have not been published until many months later. Information about the status of China licensing (numbers of applications approved, denied, and pending in the U.S. Government and in COCOM) could be provided to the public on a more frequent and timely basis. DOC has recently taken a step in this direction by setting up an automated telephone system for providing exporters with information about the status of their cases. Efforts to expand automated systems by providing license reviewers with electronic information on precedent-setting cases may also contribute to the increasing consistency in license reviews. Industry participation could also be strengthened through the technical advisory committees (TACS) and specialized seminars for China exporters.

Increased availability of information within the Government and for Congress may also be required. Expanded use of automated systems implies increased accountability for licensing officers and improved information access by policy makers themselves.

⁵⁷As mentioned earlier, exports are often permitted with conditions. Disagreements arise as to whether a prior export has established a "precedent," or is more appropriately viewed as a one-time conditional approval.

The COCOM Review Process

By expanding the COCOM green zone (to permit COCOM countries to process more cases unilaterally), COCOM member countries set out to streamline the review of China cases. Revisions to COCOM China policy made in late 1985 came at U.S. initiative, but they have apparently been well received by other COCOM member countries. The immediate effect of these changes was to relieve pressures on the COCOM organization that had been created by a huge China caseload. *The number of U.S. China cases sent to COCOM declined markedly from 237 in January 1986 to 64 in August 1986. In 1986 the average processing time in COCOM for China cases declined from 77 to 56 days between January and June but rose to 81 days during the first quarter of 1987.*⁵⁸ On the other hand, of total China cases closed out on a monthly basis, the percentage of those that had been sent to COCOM actually rose from 13 to 17 percent during the same time period.

The number of U.S. cases pending in COCOM declined in 1986 from 267 in January to 116 in December but rose to 187 in April 1987; the majority of U.S. cases pending in COCOM are for exports to China. Table 20 shows that the number of pending U.S.-China cases in COCOM declined by 57 percent between January and December 1986. Submission to COCOM adds considerable time to the review period.

Issue: Should China Be Removed From COCOM Review?

If relations with China continue to improve and China's economy continues to grow, COCOM policy may require further revamp-

⁵⁸U.S. tiOC, August 1986.

Table 20.—U.S. Cases Pending in COCOM

	China cases	Other cases	Total
January 1986	267	23	308
June 1986	153	34	187
December 1986	116	43	159
January 1987	143	31	174
April 1987	187	63	250

SOURCE U S Department of State

ing. Removing China from COCOM review would have some advantages, would send a positive signal indicating full acceptance of China as a trading partner by the West, and should result in expanded trade in high-technology sectors that now exceed green-zone guidelines. OTA'S finding that transfers of dual-use technologies are likely to have limited effects on China's military capability in the near term provides support for removing China from COCOM review.

There is no easy answer to the question of whether the United States would stand to gain in commercial terms if such action were taken. The answer depends in part on whether U.S. exporters are disadvantaged by the current system. *OTA heard widespread complaints from U.S. exporters about loose export controls in other COCOM countries.* However, OTA was unable to substantiate these claims with specific examples in China. U.S. exporters could help clarify this issue by providing hard evidence to the U.S. Government. On the other hand, the different approaches of various COCOM countries to publishing China regulations provides one indication of leeway for legitimate differences in the interpretation of guidelines. It is also clear that the United States is the only country that attempts to limit unauthorized re-exports through third countries. But exporters from other countries also complain that the United States has used the export control system to its own commercial advantage, by proceeding to liberalize U.S. policies prior to agreement within COCOM.⁵⁹ By far the largest impact of removing China from COCOM would stem from faster review within the U.S. Government, rather than from elimination of discrepancies in the policies of other COCOM member governments.

There, however, would be some disadvantages to removing China from COCOM. If China's policies shifted dramatically (for example, toward alliance with the Soviet Union), it could be difficult to persuade COCOM mem-

bers to return China to COCOM review. Nor would all COCOM members necessarily favor removing China from COCOM at this point, considering the important role that COCOM plays in the review of military as well as dual-use exports and given their different perspectives about East Asian security. Even if COCOM continued to review military exports (while review of dual-use exports were eliminated), some would argue that there is no overwhelming reason why this step should be taken now. Although the COCOM process is opaque and slow, it provides a mechanism for consensus-building on China policies among the member countries.

Some further "harmonization" of COCOM country policies may be essential for the viability of the multilateral control system. As discussed more fully in Chapters, no one would expect the COCOM countries to have identical approaches to export control, given their widely diverging political and economic systems. Complaints of wrongdoing indicate deep suspicion by COCOM members about their associates in the multilateral controls system. *A comparison of export control systems in various suppliers is a necessary first step toward further harmonization of approaches. The United States could best pursue this through a joint effort involving other COCOM countries.* The goal would not be to force other countries to change their systems, but rather to understand better where differences lie and determine whether these differences result in weaker controls or just different approaches to controls.

The United States could begin this process by establishing the general principle that COCOM countries should strive to develop uniform controls on exports to China. The United States unilaterally controls some types of exports to all countries worldwide. While these controls are not specifically directed toward China, they do represent a divergence in the U.S. approach. Over the long term, the United States may be in a better position to persuade other COCOM countries to strengthen their controls on re-exports if U.S. controls on ex-

⁵⁹It should be noted that the United States continued to submit U.S. cases that required COCOM review to COCOM after the 1983 liberalization of U.S. policies.

ports to other COCOM countries are further relaxed.

One as yet little noticed effect of the revised COCOM China policy maybe to bring to public attention discrepancies among COCOM member countries in interpretation. Because the United States and some other COCOM member countries have published their own regulations, based on COCOM policy changes, the technical parameters used in judgments about China exports made in various countries are open to public scrutiny and comparison.⁶⁰ If public debates over these questions expand, the need for congressional oversight of the multilateral export control system may be heightened.

What Other Actions Could Be Considered?

During the past 6 years, a series of important, progressive changes have been made in U.S. controls on exports to China. An important issue is whether or not these changes have been paced to maximize U.S. commercial and national security goals, and whether the process of updating the export guidelines can be improved.

Critics suggest that these regulations merely codify the U.S. approach as worked out in practice during the period 1983-85. On the other hand, it is true that the original green zone included only 11 CCL categories, whereas the green zone today was expanded in 1986 to 27 categories (and later to 30). Some observers have expressed concern that the stimulus for new determinations in precedent-setting cases often comes from other COCOM member countries who push harder than the United States for approvals to export; they cite key decisions on sales of telecommunications switching equipment and seismic equipment as examples.

U.S. industry representatives provide their views through the TACS. But the process in-

volves extremely complicated technical reviews, which are not always effective in providing information and analyses used by U.S. exporter administrators.

With the liberalization of U.S. controls on exports to China, key decisions on nongreen zone exports have become more difficult. The need to continually update the guidelines will remain. On a multilateral level, COCOM policies will have to be reviewed and the treatment of China considered in light of developments in overall relations with the West. One stimulus for another full review of China policy in the United States and COCOM would be the buildup of another backlog of U.S. cases in COCOM. *If, on the other hand, the U.S. Government were to adopt today a more active lead in reducing the COCOM list for China when the equipment and technologies are no longer state-of-the-art or when they are readily available in China, a more measured and anticipatory approach could be developed.* These efforts, if pursued positively, could expand and deepen consensus among COCOM member countries about technology transfer to China.

DOC has recently proposed that distribution licenses be made available for China, a change that would require legislative action. Such licenses make it possible for U.S. exporters to export certain commodities to three or more consignees that have been preapproved as foreign distributors or users; they are considered a 'special privilege, according to U.S. export regulations. Internal control mechanisms are required to assure compliance. As U.S.-China trade grows, some mechanism will be needed to permit U.S. firms to obtain a license permitting them to make repeated sales of green-zone level items to trusted Chinese consignees. Other areas for future consideration include controls on technical data exports (including training) and controls on temporary exports to trade shows.

The pending export control issues are significant ones that deserve high level attention in the United States and in COCOM. *The solutions cannot in most cases be achieved through legislation, but Congress can play an impor-*

⁶⁰ Stephen E. Norfinger reported that the U.S. Government had agreed to a British sale of advanced telecommunications equipment that U.S. firms had been barred from exporting on national security grounds. This sale involved fiber optics. *Baltimore Sun*, Dec. 28, 1986, p. 4A.

tant role by monitoring progress in improving the efficiency of the current system and in considering the commercial and national security

implications of alternative future courses in U.S.-China policy.

MILITARY COOPERATION

In 1981 China was removed from the list of prohibited destinations for export of U.S. munitions list items. While more than 6 years have elapsed since that time, views differ about the appropriateness of cooperation in this area, and about how best to pursue it. Although press reports often give the impression that there is a rapidly developing military relationship between the two countries,⁶¹ actual arms sales and military cooperation have been limited. Differences in views about arms sales to China reflect underlying concerns about whether military cooperation should be emphasized in the bilateral relationship, and how it can contribute to broader U.S. strategic goals in Asia.

It appears doubtful that U.S. sales of advanced weapons systems will increase rapidly in the near term. Differences between U.S. and Chinese perspectives on a number of issues preclude the formation of an alliance between the two countries. China's limited financial resources and its desire to obtain technology rather than import complete weapons systems also set constraints.

There are both advantages and disadvantages to the approach taken by the United States to military sales to China. Blanket restrictions on arms sales have been eliminated, and licenses to export items on the munitions list are now reviewed on a case-by-case basis. As arms sales and military cooperation proceed, however, it will be important for the United States to define more clearly those areas for military cooperation, based on evaluations of past experience. OTA also concludes that U.S. officials making decisions on dual-use exports should be more aware of the scope and nature of munitions sales.

Since 1981, U.S.-China military cooperation and U.S. arms sales to China have been expanded. However, U.S. commercial arms exports to China do not compare with those to South Korea, Indonesia, or Taiwan in dollar value, and official military cooperation has been limited. Table 21 provides a comparison of U.S. commercial arms sales to selected destinations.

Several high-level discussions have occurred, beginning with a visit to Beijing by Harold Brown, Secretary of Defense in the Carter administration. The general framework for U. S.-China military cooperation was established in a 1983 visit by Secretary of Defense Caspar Weinberger. The components area high-level strategic dialogue between military leaders, functional military exchanges, and the identification of several military mission areas for cooperation. High-level visits continue—the most recent in May 1987 when Yang Shang Kun, Vice Chairman of the Central Military Commission, was hosted by Vice President George Bush.

During this 6-year period, four military-related sales have received public attention. Two cases involved sales of civilian technology to Chinese military end users: 24 civilian derivatives of Sikorsky Black Hawk military heli-

Table 21. —U.S. Commercial Arms Exports
(thousands of dollars)

	1981	1982	1983	1984	1985	Total
China	0	1,000	984	22,732	3,151	29,516
Japan	344,862	300,000	439,238	546,874	301,647	3,014,444
Korea	28,710	25,000	123,513	122,299	36,041	615,258
Indonesia	6,673	10,000	25,083	27,197	23,088	132,570
Taiwan	66,731	75,000	124,785	133,133	100,000	838,337

NOTE: War value of deliveries of munitions-controlled (items purchased directly from U.S. manufacturers). Data do not include official U.S. Government programs such as foreign military sales. In the case of Korea for example such official sales were valued at \$266 million in 1985.

SOURCE: Department of Defense Security Assistance Agency foreign Military Sales Foreign Military (Jry bmfwtion Sales and Military, Lwslmce Facts (as of Sept 30 1985).

⁶¹See, for example, Edward Neilan, "Peking, U.S. Brass Getting Along Well," *Washington Times*, May 14, 1986, p. 7.

copters⁶² in 1984 and 5 General Electric turbine engines to the Chinese navy in 1985.

The other two cases involve foreign military sales (FMS)—direct government-to-government transactions.⁶³ The most significant completed sale of an item on the U.S. munitions list was artillery shell technology. While some observers expected China to spend \$500 million on artillery manufacturing equipment, the final value of the transaction was about \$22 million.⁶⁴ In May 1986 U.S. approval was given for an FMS sale of 55 avionics kits (\$10 million each) to modernize China's F-8 fighter. In late 1986 it was reported that the U.S. Air Force had signed a \$501 million contract for the avionics upgrade and planned to issue requests for proposals for the first 50 avionics kits, to be delivered in 1991.⁶⁶

It appears that negotiators from the United States and China have concentrated their discussions primarily on mission-specific systems used for tactical defense,⁶⁵ including antitank weaponry that China needs to defend its border against the Soviet Union. Repeated reports of discussions over TOW antiarmor missiles fall into this category. Another area is improved air defense. I-Hawk anti-aircraft missiles are among the weapons that have been considered. A third area is antisubmarine warfare, where potential sales of towed-array sonars, and the Phalanx ship defense system have received some public attention.⁶⁷

U.S. officials indicate that, for the most part, such systems would not significantly improve

Chinese capabilities to launch an offensive attack and that they involve limited advanced technology transfer. Military sales to date have involved little production technology or complete weapons systems. Observers note that applications for export of military hardware or technology more than 5 years old are viewed favorably by U.S. license reviewers.⁶⁸

All U.S. commercial arms sales are regulated by the International Traffic in Arms Regulations (ITAR), as implemented by the Office of Munitions Control in the Department of State. DoD's Munitions Directorate reviews some but not all of the munitions export applications. In recent years DoD has reviewed about one-fourth of the roughly 40,000 applications for munitions exports worldwide submitted annually.⁶⁹ DoD reviews a higher percentage of applications for export to China.⁷⁰ The cases that DoD reviews are the cutting-edge cases—those not previously licensed for a particular export market.

The review process involves the Department of State, DoD, and various military departments and agencies, with industry representatives providing information. Many of the key cases that DoD reviews require careful consideration of the interests of different military agencies involved, depending on the type of technology or equipment. DoD officials taking the lead in munitions case reviews look to International Security Affairs (DoD) for policy guidance, taking an activist approach designed to build consensus on a joint DoD position.

When sales involve major defense equipment, valued at \$14 million or more, or when defense articles and services valued at \$50 million are proposed, the President must notify Congress 30 days prior to transfer.⁷¹ Congress rarely musters the votes to block arms sales proposed by the executive branch, but anticipated opposition from Members of Congress

⁶²The helicopters included military engines.

⁶³ CIA, 1984 FMS has been available for China. In addition, 4 Mark 46 antisubmarine missiles and some training have been provided through FMS.

⁶⁴Roger W. Sullivan, "U.S. Military Sales to China," *China Business Review*, March/April 1986, p. 6.

⁶⁵The kits include new radars, inertial navigation equipment, head-up displays, air data computers, and a new data bus. See *Aviation Week and Space Technology*, Nov. 24, 1986, p. 28.

⁶⁶See Kerry B. Dumbaugh and Richard F. Grimmett, *U.S. Arms Sales to China* (Washington, DC: Congressional Research Service, July 8, 1985).

⁶⁷The United States agreed in principle to discuss cooperation in modernization of the People's Liberation Army antisubmarine capabilities. See Report to Congress, fiscal year 1986, by Secretary of the Navy John F. Lehman. See ch. 7 for a discussion of issues surrounding possible transfers of antisubmarine warfare technologies.

⁶⁸Sullivan, op. cit., p. 8.

⁶⁹DOS unilaterally reviews the other 30,000.

⁷⁰A reasonable estimate is that DoD reviews about 80 percent of the China munitions cases. Estimate will be verified.

⁷¹Sec. 36 9(b) (1) of the Arms Export Control Act.

may cause administration officials to defer a sale. In the spring of 1986, Congress reviewed the proposed F-8 avionics package, which was eventually approved.⁷² U.S. arms exports to China also receive COCOM reviews.

The number of munitions export cases is small in comparison with dual-use cases. In 1985, the U.S. Government reviewed 11,000 applications for dual-use exports, and a total of 269 applications for munitions sales to China. As table 22 shows, the percentage of applications denied is higher and the share of those approved lower for munitions applications than for dual-use exports. Fewer than 1 percent of the dual-use applications were denied and more than 70 percent approved in 1985. In the same year, 60 percent of the munitions cases were approved (20 percent approved with provisos), and 11.5 percent denied.

Out of the total 860 munitions applications reviewed over the course of the past 6 years, about 150 involve equipment exports reviewed by COCOM. In the past year, the number of applications has increased (as shown in table 17). During the first 5 years of the 1981-86 period, 80 cases were sent to COCOM. During the period August 1985 through July 1986, another 70 cases were submitted to COCOM, indicating growth in munitions applications for China. Since 1982, U.S. cases have made up 60 percent of all COCOM munitions cases

⁷²For a summary of the arguments against the sale, see Martin L. Iasater, *Arming the Dragon: How Much U.S. Military Aid to China?* (Washington, DC: Heritage Foundation, Lecture No. 53, April 1986).

Table 22.—Munitions Licensing for China, 1981-86

	Numbers of cases						TOTAL
	1981	1982	1983	1984	1985	1986	
Approved	5	28	60	83	109	50	335
Denied		12	15	31	31	23	82
Returned without action	4	17	40	57	69	4(1	227
Prowso	3	17	25	34	55	29	163
Total	12	44	140	197	269	198	860

NOTE Data for 1986 through Sept 9 Totals may not add up because a few cases have been canceled or lost Cases do not include temporary exports

SOURCE U S Department of State Office of Munitions Control data provided to the Office of Technology Assessment September 1986

for China.⁷³ Other countries such as Italy are also providing China with military technology subject to COCOM review.⁷⁴

In some cases, reviews of munitions cases are completed within a month of receipt of application, although cases sent to COCOM often take much longer. The task of licensing munitions exports may be more manageable than that of dual-use exports because there are fewer applications to review. While there have been few trade missions to China by U.S. industry officials involved in arms sales, this situation may change in the years ahead.

Issue: Is There a Discrepancy Between Dual-Use and Military Exports?

Some observers have charged that there is a disjunction between U.S. dual-use and military exports to China. To cite one example, some argue that there is a discrepancy between U.S. reluctance to provide bulk licenses for microcomputers and the fact that discussions are under way about assisting China in improving its surface-to-air missile systems. The promptness of decision making and the attention given to any reports of talks concerning arms sales to China leave some observers with the impression that it is easier to get an approval for military exports than it is to get approval for dual-use exports.⁷⁵

Arms exports and dual-use exports are covered by different sets of regulations, and licensing is handled by different government agencies. There is no simple basis for comparing the levels of technology in arms sales and dual-use sales. The former have specific military applications, whereas the latter (as discussed in ch. 7) may be used more generally by the mili-

⁷³Data provided to OTA by the Office of Munitions Control, September 1986.

⁷⁴An official from China National Aero-Technology Import and Export Corporation stated that Aeritalia was assisting China in developing the A5-M, a supersonic, twin-jet attack aircraft to be used by China and exported. See FBIS, *Dm* "y Report, China, Nov. 6, 1986, p. A4.

⁷⁵See comment by Madelyn C. Ross, "China and the United States Export Controls System," *The Columbia Journal of World Business*, spring 1986, p. 31. In order to analyze this question, it would be useful to compare the technology involved in actual exports of dual-use and munitions items.

tary and require modification. OTA has not conducted a systematic analysis of the relationship between dual-use and military exports to China. *However, the available data do not suggest that military exports to China to date have outpaced dual-use exports in technology level. Moreover, the volume and dollar value have been much lower.*

There is a separate but related question about the resources devoted to reviews. Reviews of applications to export lower-level, dual-use equipment can be quite lengthy, leaving many participants to conclude that U.S. agencies waste time focusing on such cases while munitions cases are handled more expeditiously. *However, the comparatively higher percentage of denials for munitions applications suggests that reviewers are no more willing than their counterparts reviewing dual-use exports to approve exports.*

No systematic comparison is made between dual-use and munitions export. *In the future, as military exports increase, comparisons of dual-use and military exports may be needed to ensure consistent policy implementation.* Information about recent military sales of certain types could, for example, be useful to those reviewing policies of related dual-use technologies. It will also be important to develop clearer guidelines about the types of military technologies and equipment permissible for export and those that, for reasons of national security, cannot be exported.

Issue: How Far Should the United States Go in Military Cooperation?

U.S. policy is based on the belief that military cooperation is a natural part of an evolving bilateral Sino-American relationship that is nevertheless unlikely to become an alliance. Seen from this perspective, gradual steps toward expanded military cooperation will not create Chinese "dependence" on U.S. technology, but rather build shared experience in a few key areas.

The future of U.S.-China military cooperation, however, remains uncertain. This is partly because experience is limited and compara-

tively new, and more importantly because U.S. policies have not clearly defined thresholds for U.S. sales and assistance. General statements about "mission areas" come the closest to identifying types of exports that are unlikely to grow rapidly.

It may be useful to consider the range of alternatives available in the realm of military cooperation. Through high-level consultations and dialogue, Chinese and American officials share their perceptions of important strategic issues. Exchanges of military personnel are another mode for military cooperation. If exchanges can be developed in a truly reciprocal manner, they provide military officers with new experience and understanding of the roles played by their counterparts.¹⁰ Military cooperation could also include intelligence sharing, port calls, and joint exercises.

Sales of equipment and technology, including training and maintenance, are perhaps the most publicized dimension of the evolving relationship in the military realm. One issue is the extent to which such sales will be conducted on a government-to-government basis. Some observers believe that the Chinese would prefer not to use FMS because this involves relying on DoD to act as a middleman between the Chinese buyer and the U.S. producer.¹¹ Another issue is whether or not U.S. sales will be directed toward improving China's own military forces or toward providing China with equipment and technology needed to expand its own arms exports.

It is well to remember that an array of factors will probably limit U.S.-China military cooperation, despite the gains that might be achieved in increased mutual understanding, intelligence sharing, and in strengthening China's ability to defend itself against Soviet aggression. On the Chinese side, these con-

¹⁰Some observers conclude that U.S.-China military exchanges to date have not been reciprocal—that the United States has given much more than it has received.

¹¹Sullivan, op. cit., p. 9. An Atlantic Council report favored use of FMS sales on the grounds that they "permit the U.S. to be responsive yet retain sufficient controls over what China buys . . ." See *China Policy for the IVth Decade*, Atlantic Council, 1983, p. 39.

straints stem directly from a desire to avoid dependence on any outsiders and a determination to pursue an independent foreign policy. On the U.S. side, uncertainty about China's future policies and effects on other Asian countries remain important constraints.

Taiwan is a case in point. Since the early 1980s, when the United States decided to permit arms sales to China, the Chinese Government has objected to continued U.S. arms sales to Taiwan. The Taiwan Relations Act of 1979 provided for continuing U.S. support of Taiwan's defense requirements, while the Shanghai communique of 1982 states that the United States "does not seek to carry out a long-term policy of arms sale to Taiwan, that its arms sales to Taiwan will not exceed, either in qualitative or quantitative terms, the level of those supplied in recent years since the establishment of diplomatic relations between the United States and China . . ."⁷ Built into U.S. arms sales policy is thus a delicate balance of U.S. interests vis-a-vis China and Taiwan.

Each major arms sale to either party raises opposition and concern in some quarters. The United States continues to sell Taiwan more than \$600 million in arms annually. China objects to these sales. It was reported, for example, that Beijing recently questioned U.S. transfers of technology Taiwan needs to develop its own fighter aircraft as contrary to the terms of the Shanghai communique.⁸ In the past, the United States refrained from selling Taiwan certain kinds of military equipment (such as the F-20). The U.S. Government has pursued sales such as the recent F-8 avionics package for China despite criticism from Tai-

⁷Joint Communique of Aug. 17, 1982.

⁸Nayan Chanda, "A Technical Point: U.S. Rejects China's Stance on Technology Transfers to Taiwan, *Far Eastern Economic Review*, Aug. 26, 1986, p. 26.

wan and its supporters. Continuing differences in perspectives over Taiwan will, however, limit U.S. military cooperation with China because interested parties will carefully scrutinize proposed new arms sales to China in this context.

Some may wish to avoid all transfers of military equipment and technologies on the grounds that these are not the kinds of transfers that China most needs, or that building China's military could threaten neighboring Asian nations even if there is no significant threat posed directly to the United States. Others see military cooperation as essential to an evolving U.S.-China relationship. The United States can benefit from certain types of cooperation with China that expand knowledge of Soviet activities and deepen understanding of China's military and the role that it plays in Chinese modernization.

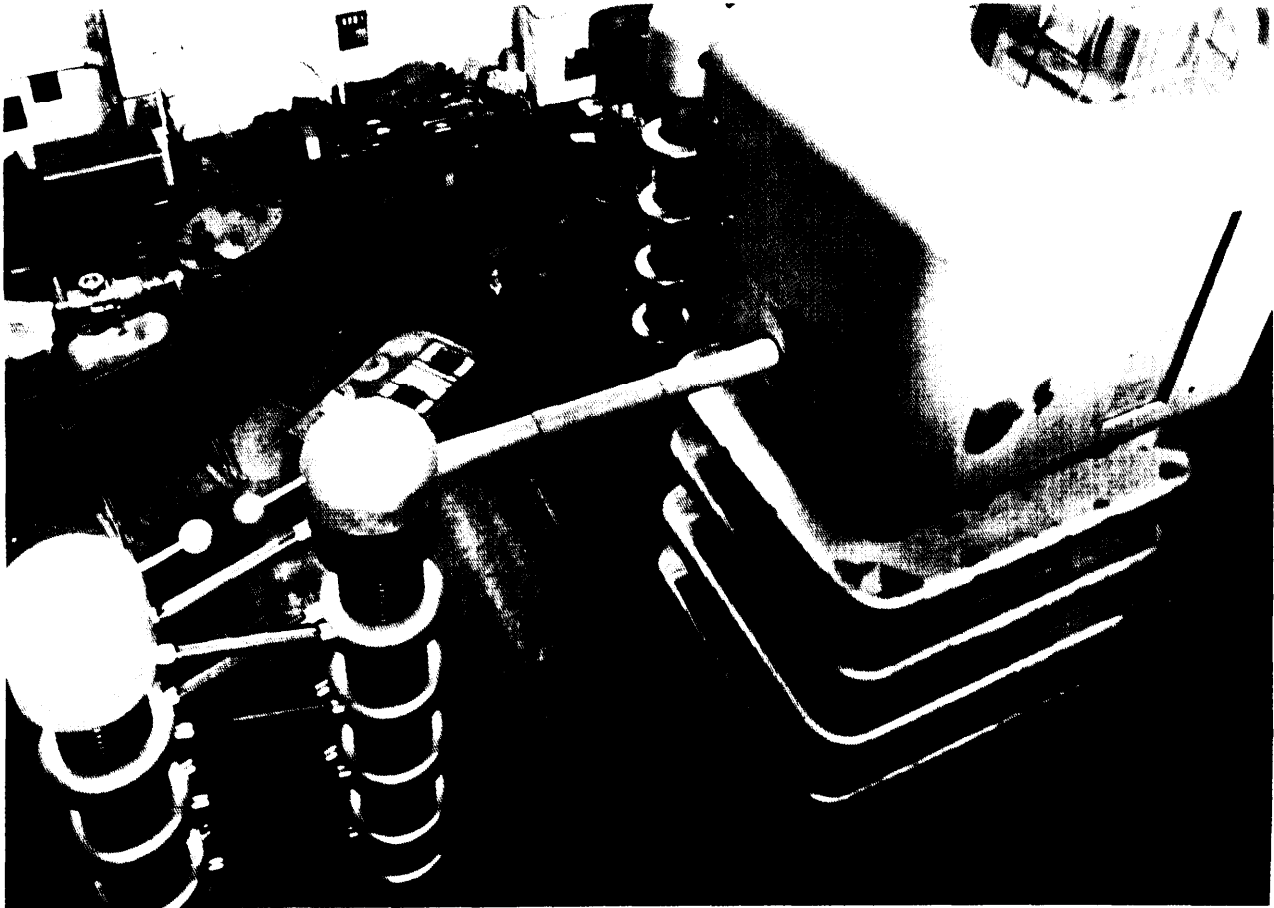
The shape and nature of U. S.-China military cooperation must be further defined and based on growing experience that permits policy makers to evaluate risks and benefits to the United States. It will be important to review the record periodically and update U.S. export guidelines in light of changes in technology and (most importantly) political relations. As discussed in chapter 7, case-by-case decisions on munitions applications must reflect a broader strategy designed to promote U.S. interests.

While military cooperation has been limited and will likely remain so in the near term, it is important to recognize that it carries symbolic importance. Discussions between Chinese and U.S. military officials send important signals to the Chinese and to other countries in Asia. U.S. policy makers may wish to keep this broader context in mind as they define the scope, nature, and future of U.S. military cooperation with China.

SCHOLARLY AND TECHNICAL EXCHANGES

A wide range of activities between the United States and China are referred to as science and technology (S&T) exchanges. These include exchanges of students and scholars,

which have brought some 17,000 Chinese to U.S. institutions of higher education, and the varied exchange and cooperative activities under the 29 protocols signed by the technical



Xinhua News Agency

A 600,000 volt heavy-iron injector manufactured in Shanghai. It is used in the semiconductor industry and in materials research.

agencies of the U.S. Government and its Chinese counterparts.

The diplomatic foundation for Sino-American S&T exchanges is the U.S.-China Agreement on Cooperation in Science and Technology of 1979. Under this umbrella agreement are the Agreement on Cooperation in Educational Exchanges and 28 other agency-to-agency agreements. Activities under the umbrella agreement are overseen by the U. S.-People's Republic of China (PRC) Joint Commission on Science and Technology, which meets biennially. Since the agreement was signed, there has also been a proliferation of nongovernmental exchange and cooperative activities involving universities, professional associations, and industry—including some

that have explicit technology transfer dimensions, such as the agreement between Georgia Tech and the Chinese Association for Science and Technology.

Although there have been some problems for the United States in the areas of reciprocity and access to Chinese research sites and materials, the exchange programs have been successful in achieving most of their initial main objectives. These objectives—in addition to the manifest objectives of S&T cooperation and assisting China in its modernization—included the improvement of political relations, the establishment of knowledgeable relations between the technical communities of the two countries, and the cultivation of informed understanding, if not sympathy, toward the

United States among a new generation of Chinese elites. Less clear is the contribution of the exchanges to the promotion of U.S. commercial interests in China.

This section outlines the scope of the exchanges, including both student and scholarly exchanges and activities under the sponsorship of the bilateral agreements, and considers options for strengthening the exchanges.

Student and Scholarly Exchanges

The direct Federal Government role in supporting the education of Chinese scientists and engineers, while crucial at the inception of the program, is now relatively small in comparison with activities conducted in the private sector and through universities.[~] Indirectly, however, the Federal Government is involved through the research support it provides to universities, some of which supports Chinese graduate students and visiting scholars. The monetary value of this support is difficult to determine.

The education in science and engineering provided to Chinese students in U.S. (and other foreign) universities is arguably the most important contribution to the development of Chinese technical capabilities now being made, whether it is called technology transfer or not. It is fair to say that the Chinese see it this way as well, and having access to our universities is a powerful inducement to the Chinese. From the U.S. point of view, there is clearly the hope that China's future scientists and engineers

will leave the United States with favorable images not only of U.S. society generally, but also of U.S. technology.

Although the student and scholar exchange program gives the United States a powerful policy tool, it does not lend itself to fine-tuned policy intervention, either for promoting technology transfer or for controlling it. If Congress wishes to encourage more exchanges, it could increase the budgets of those agencies that have a role in supporting them, such as the National Science Foundation and the U.S. Information Agency. However, if it wishes to do less, the reduction of China-related activities in those agencies would affect only a very small portion of the total exchange activity. To make more of an impact in reducing exchange activities, the United States would have to use other means, which would represent major changes in China policy and would affect other non-China-related values. Thus, limiting the issuance of visas or attempting to limit Federal funds used to support Chinese graduate students would signal a change in U.S. friendly intentions toward China, and would also compromise academic values and principles supporting the free movement of people. Efforts to limit the access of Chinese to sensitive research must be seen in the context of the larger controversies over the limitation of foreign nationals on national security grounds to sensitive U.S. research, controversies that must be approached with care since they involve clashes of very basic U.S. values.

The large numbers of Chinese students and scholars coming to the United States indicates that the U.S. university system is a magnet to students from around the world. The growth of the foreign student population raises many important issues about the U.S. role in sustaining international science, the costs and benefits to the United States of playing this role, and the implications for U.S. technological competitiveness with regard to trade and national security.”

[~]This is not to say that the Government is not involved in exchanges. The U.S. Information Agency (USIA), National Science Foundation (NSF), and National Endowment for the Humanities (LNEH), for instance, all support exchange activity. USIA and NEH support, however, goes mainly to support Americans studying in China, while NSF supports collaborative research and exchange activities in the sciences, administered by the Committee on Scholarly Communications with the People's Republic of China. When compared with the extensive educational exchanges conducted independently of the Federal Government, however, these federally supported programs are not large. For an account of the distribution of effort in sponsoring exchanges, see U.S. National Academy of Sciences, *A Relationship Restored: Trends in U.S.-China Educational Exchanges, 1978-1984* (Washington, DC: National Academy Press, 1986), ch. 4.

“Dorothy S. Zinberg, “Sending Ideas Abroad: The Education of Foreign Scientists and Engineers,” unpublished paper, Center for Science and International Affairs, Kennedy School

The Bilateral Agreements

Although the amount of government-to-government S&T activity varies from protocol to protocol, the government-to-government bilateral agreements have also been, on balance, quite successful. Activities under the protocols have also done much to bring the technical communities of the two countries together, to improve political relations, and to offer mutual scientific benefits. In terms of the number of protocols, the U.S.-China S&T program is the largest bilateral program maintained by either country.

When the government-to-government programs were begun, they received high level attention from the President Science Advisor, the Office of Science and Technology Policy (OSTP), and the NSC, and active interagency coordination from the Department of State. As the programs began to succeed, their administration became more routine, and high-level attention decreased (even though interest at OSTP and in some offices at the State Department has remained high).⁸² In recent years, partly due to the decentralizing reforms in Chinese S&T, there has been a proliferation of new activities involving units of the two governments outside the framework of the protocols. These developments have led some observers to ask whether the time may not be right for a reexamination of the programs.

U.S. participation has been funded out of the regular domestic budgets of the technical agencies on the basis of the value of participation for the agency involved. While this approach has a number of virtues, it means that there may be areas where the domestic agency has no interest in programs with the Chinese even though there may be foreign policy or commercial benefits for the United States and a high degree of Chinese interest.

of Government, Harvard University, September 1985; National Science Board, *Science indicators: The 1985 Report* (Washington, DC: U.S. Government Printing Office, 1985), pp. 18-20.

"It is perhaps telling that there is only one person at the OSTP level with responsibility for international cooperation, with China being but one country among many falling within the area of responsibility of this position.

In recent years, the growth of activities and the relative success of the programs have led to an increase in the managerial requirements for the entire program of bilateral exchanges. The science office in the U.S. Embassy in Beijing now includes four positions and is one of the largest in the world. The program as it now stands, strains the managerial capabilities of the Government; yet, at the same time, more could be done by way of interagency coordination and liaison with the private sector to obtain more benefits from the program for the United States.

The U. S.-PRC Joint Commission on Science and Technology in recent years has tended to focus mainly on the activities under the agreement and less on the broader range of S&T issues facing the two countries (as it did in its early years). Since the activities under the agreement have become more routinized, and in general are going smoothly, the activities of the joint commission have become more symbolic, and the time and money spent for its meetings have been questioned.

Other questions about the programs pertain to whether the United States can capture more commercial benefits from the programs and whether it would be a good idea to establish a formal aid program for China.

Issue: What Could Be Done To Expand Technology Transfer Under the Bilateral Agreements?

The U.S.-China program presents opportunities for promoting technology transfer if the United States wishes to pursue a more active strategy.

One possibility would be to provide supplemental funding for the programs under the protocols so that agencies now facing financial constraints could become more active. A suggested approach would be the creation of a modest budgetary allocation for activities that would advance foreign policy and/or commercial interests but that cannot be justified out of current agency budgets in terms of domestic mission requirements.

In the course of examining technology transfer in the surface transport area, for instance, OTA consulted with the Department of Transportation (DOT). Although DOT negotiated an agreement with Chinese counterparts, there has been little activity, partly because DOT does not see the justification for spending resources on programs that will not advance the Department's mission.

Yet, in light of China's pressing needs in the transport sector and the considerable expertise residing in DOT, there would appear to be benefits for both countries if a program of cooperation were begun. The potential benefits to the United States would be even greater if such a program of cooperation involved the private sector, and if U.S. participation were designed so that the Chinese could be exposed to the transport technology available from U.S. industry. Inasmuch as DOT does not see a departmental interest that would justify spending on such a program from its domestic budget, a new approach to funding would be necessary.

Another possibility would be to expand private-sector representation on the U.S. side of the Joint Commission, to broaden the perspective of the Commission and to identify better the commercial prospects associated with programs. The U.S. private sector has suggested commercial representation in the cooperative programs with Japan and Korea, countries where technology-based competitive

commercial pressures are greater than they currently are with China. Expanding private-sector representation on the U.S.-China Joint Commission could help insure an informed industrial perspective on the bilateral agreements, and on China's development of technological capabilities. Planning for the meetings should afford the United States an opportunity to take stock of its entire S&T relationship with China. Participating in the meetings would permit better representation of U.S. commercial interests. This would entail, however, changes in staffing and management in the Department of State and the OSTP, more high-level attention to the importance of S&T in the Department of State, and more active and enlightened interagency coordination.

While there is some evidence that activities in the bilateral programs have led to some equipment sales, there has been no systematic effort to assess the value of the programs for U.S. exports. This also appears to be the case for the Dalian management training program, run by the DOC. *The State Department and the OSTP could assess the commercial impacts of the programs and make a stronger effort to inform businessmen and trade promotion officials in the Foreign Commercial Service (FCS) about opportunities.* Closer coordination between the S&T office in the U.S. Embassy in Beijing and the representatives of the FCS there would be one mechanism.

PROMOTIONAL POLICIES

Since the normalization of relations between the United States and China in 1979, trade has been viewed as an area of "great promise."⁸³ But in 1986, U.S. exports to China were lower in dollar value than the 1980 level, although the composition of those exports has shifted away from foodstuffs and materials and toward machinery and equipment.⁸⁴ U.S. mar-

ket share in China has actually declined over the past few years.

There are a variety of explanations for these trends, including the possibility that Japanese firms may be better positioned to compete for certain segments of the China market than U.S. firms are. U.S. business may, at any rate, have learned important lessons in trading with

⁸³See, for example, White House Press release, Apr. 27, 1984.

⁸⁴Current U.S. dollars: in 1980 U.S. exports were valued at \$3.7 billion; in 1986 exports were valued at \$3.1 billion. These are official U.S. trade data. According to U.S. trade data, the

U.S. ran a trade deficit with China of more than \$2.1 billion in 1986. Chinese statistics show that China imported more from the United States than it exported.

China over the past 7 years. Now there is a general recognition that China wants U.S. technology and investment, as much if not more than it wants U.S. imports of finished products.

Many U.S. exporters and some Government officials believe that the U.S. should be able to do better in exporting to China. The purpose of this section is to examine the U.S. policies and programs that, broadly defined, support expanded trade and technology transfer. In contrast to Japan, the United States has not developed a systematic effort to promote exports to China. On the other hand, small programs like TDP have been well received. *The U.S. Government could do more to support U.S. exporters, through focused programs like TDP that permit U.S. firms to help shape development projects at an early stage, by stronger leadership in actively seeking opportunities for U.S. business, and in coordinating efforts.* Such an approach might include selected use of financing support, but more important would be a national-level commitment to expand U.S. exports in particular sectors such as telecommunications, where technology transfer as well as exports of equipment and services are essential for meeting China's modernization goals.

But as important as China is, U.S.-China trade should not be viewed in isolation from larger policy issues. Whether and how the United States chooses to formulate a more coherent approach to promoting U.S. competitiveness and global trade is the key issue on the broader international economic policy agenda. China is arguably a good test case in the sense that prospects for expanded trade are greater here than with many developing countries that suffer from high debt and sluggish growth. But U.S. Government policies, however promotional, are only one element. The future shape of U.S.-China trade will be more directly affected by decisions taken by U.S. firms themselves and by the Chinese Government, particularly with regard to regulation of foreign business. Important too will be the approaches taken by Governments in other countries such as Japan, where expanding imports from China and other developing coun-

tries could relieve pressure on U.S. markets and send a strong signal of support for an open Asian market.

The United States and China have several bilateral agreements that provide a basis for trade and technology transfer. Under the bilateral trade agreement that became effective in 1980, the two countries provide most favored nation (MFN) treatment for imports,⁸⁵ arrangements for business representation, and settlement of trade disputes. China also agreed to provide patent, trademark, and copyright protection equivalent to that of the United States.⁸⁶ In contrast to the trade agreements between Japan and China, where the two countries set specific goals for imports and exports of certain types, the U.S.-China agreement contains no numbers or specific sector targets.⁸⁷

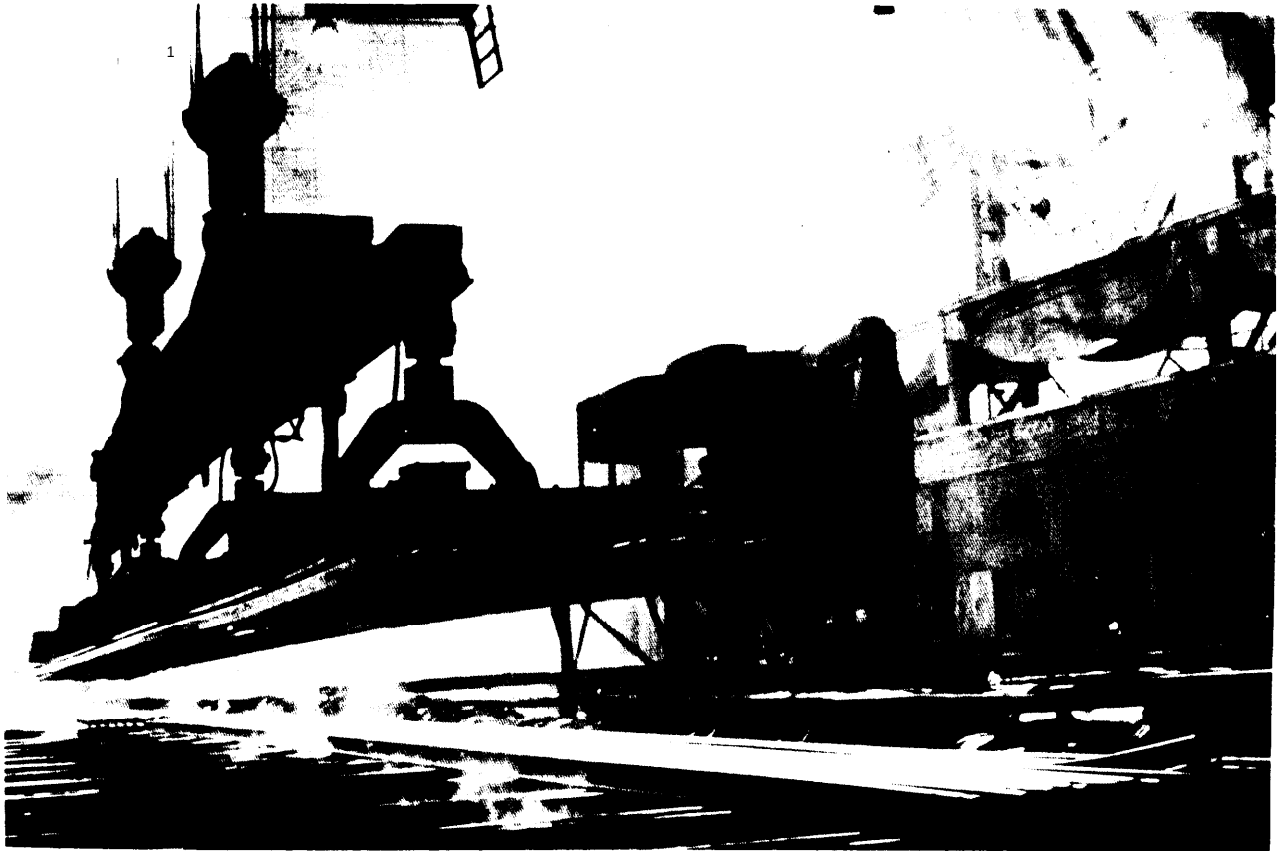
The U.S.-China grain agreement, which included annual targets for Chinese purchases of 6-8 million metric tons of U.S. wheat and corn during the 1981-84 period, has now expired. China did not meet the targets during the final two years, in part to show resistance to U.S. restrictions on Chinese textile imports into the United States. As China became the largest exporter of textile and apparel goods to the United States in 1987, pressure grew within Congress to restrict imports from China and other countries.⁸⁸ A major change in policy was the recent announcement that the Zhejiang provincial Government would begin pur-

⁸⁵The United States has decided to continue MFN status for China by using general waiver authority under the Jackson-Vanik amendment (of the 1974 Trade Act). A decision was taken in June of 1986 in the form of a presidential message to Congress, and elaborated upon in State Department testimony before the House Ways and Means Committee.

⁸⁶Agreement on Trade Relations Between the United States of America and the People's Republic of China, 1979.

⁸⁷The Japan-China agreement, for example, set targets for Chinese exports of crude oil and coal to Japan. The targets have not been met in many cases. The Japanese oil industry, for example, was unenthusiastic about importing waxy Chinese crude oil. See ch. 5 on supplier country policies for a more detailed discussion.

⁸⁸"This legislation, known as the Jenkins bill, did not become law in the summer of 1986 but was introduced in early 1987. The current textile agreement with China is effective through the end of 1987. It places quotas on 67 categories of Chinese textile and apparel exports. The United States has the right under the treaty to negotiate quotas when imports disrupt the U.S. market.



Xinhua News Agency

Steel rails ready for shipment at the Panzihua Iron and Steel Co. China's steel production is rising, and technology transfer has been an important factor.

chasing U.S. grain and might buy as much as 50 million tons of corn over the next 5 years.⁸⁸

Textiles remain the primary irritant in U. S.-China trade. The current bilateral textile agreement with China places import quotas on a large number of items and permits the United States to negotiate further quotas when imports disrupt the domestic market.⁸⁹ At least 20 categories of textile and apparel goods were under unilateral embargo by the U.S. in the spring of 1987 because they were found to have injured U.S. textile producers. China depends

on exports of textiles and apparel for a quarter of its export earnings.⁹⁰ Exports to the United States climbed to more than \$760 million in the first half of 1986, about a quarter of total exports to the United States in dollar value. As Chinese textile exports continue to expand, some within Congress continue to call for the protection of U.S. industry and U.S. administration officials warned that rapid growth in imports would not be permitted. The bilateral textile agreement with China expires in December 1987.

Other detailed U.S.-China agreements include nuclear cooperation, industrial and tech-

⁸⁸China has itself exported a record 6 million tons of corn during the 1985-86 market year, but the southern provinces have difficulty obtaining grain needed for livestock, meat, and shrimp production, some of which is destined for export.

⁸⁹Quotas cover 75 percent of U.S.-China textile trade. See Jerome Turtola, "Textile Trade Tensions, *China Business Review*, September-October 1986, p. 27.

⁹⁰Export earnings for 1985 were \$4.36 billion.

nological cooperation, and taxation.⁹² The United States and China are still negotiating an investment treaty, however. Critical differences remain over issues such as dispute settlement and compensation for expropriation. While the absence of a bilateral investment treaty with China may not put U.S. firms at a disadvantage vis-a-vis the Japanese, for example, some believe that it is one element in a climate of uncertainty that limits U.S. business investment.⁹³

A number of U.S. programs support technology transfers to China, although that is not the primary goal in most cases. Among these are agreements for S&T cooperation in specific areas such as telecommunications.⁹⁴ (Policy issues concerning these agreements are discussed more fully in the previous section). Under the industrial and technological cooperation accord, a number of sector-specific trade missions and seminars have been sponsored.⁹⁵

The United States and China have also institutionalized bilateral consultations on issues relevant to technology transfer. The Joint Commission on Commerce and Trade (JCCT) discusses trade and commercial issues at its meetings. It is staffed mostly by DOC, which is also responsible for the industrial technology cooperation projects mentioned above. The Treasury Department is the lead U.S. agency on the Joint Economic Commission, which deals with macroeconomic issues, including investment.

⁹²Ratification of the tax treaty signed in 1984 was blocked by Senator Jesse Helms until June 1986, when the Senate Foreign Relations Committee approved a special protocol negotiated by Treasury Secretary James Baker. The protocol bars resident firms from third countries from benefiting from the treaty, thus eliminating opposition that had been raised on the grounds that it would permit "treaty shopping." U.S. officials indicated that the treaty would significantly reduce the taxes paid by U.S. firms to the Chinese Government and that high-technology firms, in particular, would benefit.

⁹³The United Kingdom and West Germany have signed bilateral investment treaties (BITs) with China; Japan has not.

⁹⁴The protocol is the latest negotiated since the 1978 umbrella agreement for S&T cooperation. Disagreements concerning fiber optics delayed the signing of the telecommunications protocol in May 1986. The telecommunications protocol is a general framework rather than a detailed outline of working programs. See OTA, *Energy Technology Transfer to China, 1985*, for a discussion of energy-related agreements.

⁹⁵"Work programs" have been developed in electronics/telecommunications, metallurgy, aerospace, industrial renovation, and machine building.

FCS staff of DOC assist U.S. businessmen in doing business in China and in organizing the missions associated with the work programs under the industrial cooperation agreement that put U.S. business in touch with Chinese buyers.⁹⁶ FCS personnel stationed in China perform an important liaison function between potential Chinese buyers and U.S. sellers of equipment and technology. There are now 11 professional FCS staff in China.⁹⁷

The Dalian Management Center, a joint U. S.-Chinese effort, is another mechanism for transferring U.S. management skills to China. The center's more than 1600 graduates include many who now hold high positions in Government and industry in China. The lead agency on the U.S. side is the DOC. In the case of the Dalian program, short-term as well as long-term prospects are uncertain because of funding problems. Many other supplier countries fully fund multimillion dollar management training centers under the auspices of their aid programs, but the U.S. program has been jointly funded by the two countries. The Chinese apparently favor continuation of a government-to-government program, with a larger share of funding from the U.S. Government.

The Export-Import Bank of the United States has, over the years, offered a variety of financial services, including loan guarantees and direct loans to both U.S. exporters and foreign buyers. Between 1979 and the fall of 1986, the ExIm Bank had issued only three direct loans for China exports.⁹⁸ The total value of these loans was \$120 million.

Table 23 provides an overview of ExIm programs affecting China trade. Major projects under consideration include power stations,

⁹⁶In 1983 the FCS had three positions in China.

⁹⁷There is an additional slot, that is vacant. COINTEL/CATI/OIL with FSC in Washington, DC, December 1986.

⁹⁸The House and Senate agreed to authorize subsidies to COWX a \$1.8 billion 1987 direct loan program. The conference committees also established a \$300 million Tied Aid Credit Fund to counter mixed credits used by other major suppliers. The "I-Match" program proposed by the administration was retained, but significant conditions put on its use. The program permits the ExIm Bank to solicit lenders for loans to foreign purchasers and make up the difference between domestic and foreign interest rates. The ExIm Bank requested \$100 million for the tied aid fund in its Fiscal Year 1988 budget proposal.

Table 23.—Export-import Bank Programs for China, Inclusive 1979-86 (in U.S. million dollars)

Date	Amount or authorization	Buyer	Supplier	Products
Direct loans:				
9/81	28.6	China Machine	Various	Manufacturing equipment
9/81	28.4	China Machine	Combustion Eng.	Boiler and air preheat manufacturing
5/86	87.2	Huaneng International Power Development Corp.	General Electric	Coalfired power plant
Small Business Credit Program:				
1/85	4.25	Guangdong Power Dev. Co	Bechtel	Transmission, project management
1/86	8.5	PRC	Various	Grain storage tanks
Working Capital Loan Guarantee Program				
5/83	3.0	China Native Produce	Xylo	Logs
9/83	0.683	China Packing Corp.	Tools and Machinery	Can manufacturing
3/84	1.5	China Machine ExImport	Delta Brands	Aluminum tension-leveling line
1/85	0.181	Jiangsu Import Corp.	Various	Export capital goods
2/85	0.195	Heilongjiang International	Various goods	Export capital
3/85	0.180	Shanghai Instruments ExImport	Comtec Economation	Quartz crystal resonator manufacturing
4/85	0.207	China North Industries Corp.	Various	Machine tools Computer software
4/85	0.274	China North Industries Corp.	Various	Tube pipe manufacturing equipment and technology
6/85	1.8	China Electrical ExImport	Various	production equipment

NOTE: ExIm also provides short-term insurance policies covering contracts worth about \$17 million in contracts.

SOURCE: Export-Import Bank data provided to the Office of Technology Assessment in August 1986.

transport, and telecommunications. According to ExIm officials, many of the projects supported by the bank involve significant technology transfer. The Combustion Engineering project, for example, included transfer of production know-how for boiler manufacturing.

Trade finance can be a critical element for influencing the ability of a U.S. firm to win a contract. To cite one example, a consortium led by G.E. recently won a contract to provide equipment for coal-fired power stations to the Huaneng International Power Corporation. The G.E. contract, reportedly worth \$588 million, involved official export credits (see table 23) and a significant countertrade element."

Since large capital-intensive projects in developing countries often depend on the support of foreign lending and guaranteeing institutions, ExIm financing can be critical. When official financing is available for a project, a U.S. bidder may be better able to pursue negotiations for projects. Once an initial contract has been won with official export financing, the prospects for followup participation

in equipment and component supply normally expand. In the case of U.S. ExIm financing, 100 percent of the long-term financing provided by the ExIm Bank goes to U.S. firms, thus increasing U.S. exports.¹⁰⁰ The bank can provide support for projects involving service exports, technical training, and technology transfer.¹⁰¹

Views differ about the adequacy of U.S. official financing. The U.S. Government has taken the general position that the private sector should be primarily responsible for trade finance. In contrast to other supplier countries, where the provision of export credits is based on the principle that all projects that meet certain substantive criteria should be supported, the United States has turned in a period of budgetary constraint to a philosophy of supporting only those projects that demonstrate extraordinary need—for example, those that involve a competing foreign bidder assisted by government-sponsored export credit. In recent years China has preferred to use more confessional

¹⁰⁰U.S. firms have participated in energy development projects in China supported by the Japanese ExIm Bank.

¹⁰¹In recent years, the bank has supported projects involving licensing agreements where significant equipment exports were involved.

¹⁰⁰See *International Trade Reporter*, June 4, 1986. G.E. reportedly agreed to sell Chinese goods in conjunction with the contract. See also *Financial Times* (London, Feb. 27, 1986), p. 7.

Table 24.—OPIC Insured Investments in China (in U.S. million dollars)

Investor	Project	Insured investment
AMC	Manufacturing 4-wheel drive vehicles	14.4
American President Lines	Containerized shipping	0.874
AMF	Manufacturing electrical relays	1.0
AMF	Manufacturing inflated balls	0.855
Caterpillar Far East	Spare parts for machines	2.0
Combustion Eng.	Produce ceramic fiber	0.378
Continental Enterprise	Feedmill, poultry hatcheries	0.900
CW Communications	Publish computer newsletter	0.110
Dresser Industries	Conductor wireline services	4.9
E.R. Squibb	Manufacturing pharmaceuticals	0.900
Essex Group	Modernize cable plant	4.1
Foxboro Co.	Manufacturing industrial process control instruments	4.4
General Foods	Manufacturing dextrin and starches	1.4
Gillette Co.	Manufacturing razors, blades	1.2
Internatl Bechtel	Establish engineering consulting firm	1.3
International Nabisco Brands	Manufacturing biscuits and crackers	4.0
Kowin Development	Establish and operate hotel	9.0
Otis Elevator	Manufacturing elevators, escalators	1.3
Pennzoil	Oil and gas exploration	100.
Smithkline Beckman	Manufacturing pharmaceuticals	3.9
Solid State Science	Manufacturing semiconductors	0.438 ^a
System and Applied Science	Earth satellite station	0.425 ^a
Texaco	Oil and gas exploration	50.
General Foods	Manufacturing beverages	0.873
Smith kline Beckman	Manufacturing pharmaceuticals	0.270
Total		\$209.4

^a—Contractors' letter of credit Insurance

SOURCE: OPIC, August 1986, data supplied to the Office of Technology Assessment

aid-type financing that is available from other supplier countries at lower interest rates. Some believe that the United States should offer more official financing, perhaps in the form of mixed credits. This issue is discussed below.

At any rate, prospects for use of ExIm credits may have improved as U.S. interest rates declined in 1986.¹² In October 1986, ExIm Bank Chairman John Bohn stated that the bank was considering loans for projects in China totaling just under \$1 billion.¹³

OPIC also provides financial services for U.S. firms. In contrast to ExIm programs, OPIC'S goal is to support direct investments in developing countries through loan guarantee and insurance programs. By August 1986

OPIC had insured 20 U.S. investors (covering investments valued at \$209 million) against political risk in China. Table 24 provides a list of those investments.

OPIC has issued only one loan for a project in China, to help finance the design and building of a satellite earth station. Up until January 1986, OPIC was able to fund feasibility studies, but this program has been ended because of budgetary constraints. OPIC supports visits to exchange information about investment opportunities. Examples include sponsorship of a trip in 1984 by U.S. corporate executives and a grant to the National Council for U.S.-China Trade to help assist the Chinese in identifying and facilitating U.S. investment opportunities in China.

But U.S. investment in China remains limited, certainly below Chinese expectations. As mentioned earlier, the United States and China have been unable to reach agreement on an investment treaty, despite prolonged negotia-

¹² See U.S. Export-Import Bank, *Report to the U.S. Congress on Export Credit Competition and The Export-Import Bank of the U. S.*, September 1985, pp. 3-5.

¹³ Bohn Says PRC Eximbank Loans Could Total \$1 Billion, Hits Unfair Use of Mixed Credits, *International Trade Reporter*, Nov. 5, 1986, p. 1330.

tions since 1983. While some question whether a bilateral investment treaty would make much difference, the absence of an agreement is taken by others as an indication that the groundwork has not yet been established for secure investments.

TDP is one of the more successful U.S. promotional programs. Established in 1980, TDP's dual mission is to assist developing countries and to support U.S. business in competing for markets in technology, equipment, and services. TDP is run by the Agency for International Development, but it is quite different from a traditional aid program. TDP accomplishes its dual missions with a modest budget of \$20 million annually, which it uses to provide financial support for project planning services, especially feasibility studies. China-related programs today constitute the largest part of TDP, making up 30 percent of TDP's worldwide program, or about \$4.3 million committed in fiscal year 1986.

TDP, which interacts directly with the Chinese Ministry of Foreign Economic Relations and Trade (MOFERT),¹⁰⁴ has been well received in China. Its approach is to support key project planning activities that often lead to exports many times the value of the original feasibility studies.¹⁰⁵ TDP is now authorized to provide technical assistance (prefeasibility and feasibility studies and technical symposia) but not training. In 1982, TDP financed a feasibility study worth \$440,000 for the Tiansheng Qiao hydropower project carried out by Harza Engineering Company. The study led to more than \$20 million in U.S. exports for the project. A number of firms were involved in these exports. Another example is a \$100,000 TDP study of a silicon materials plant that led to \$8 million worth of equipment exports.

TDP also serves as the coordinating body for other U.S. agencies that provide technical assistance to friendly nations. In China the U.S. Geological Survey, for example, provides seismology equipment and technical assistance, and the Department of Energy provides technical assistance in planning for the Three Gorges project. TDP plans additional funding of studies of the Three Gorges project to assist a combined U.S. Government and private-sector effort.

TDP is particularly important because the United States has no formal aid program and therefore cannot provide concessional financing for large projects.¹⁰⁶ TDP funding is limited, but it can be strategically used to support early planning for key projects. In the context of budgetary constraints, the modest¹⁰⁷ but well-received TDP program is worth considering as a model for future Government efforts to promote technology transfer and trade. The success of its programs is clear in the strong support it receives from the U.S. business community. In recent years, however, MOFERT has identified more potential TDP projects than TDP funding can support. Table 25 provides an overview of TDP in China.

In addition to these U.S. programs, the United States also participates in multilateral programs via the World Bank and the United Nations that promote economic development and technology transfer to China. In both cases, U.S. contributions go to general funding rather than to specific programs in China. Nevertheless, such funding of multilateral programs provides the United States with indirect influence on projects in China that generally involve foreign participation.¹⁰⁸

The multilateral organizations provide significant support for projects in China. The World Bank, for example, has granted loans

¹⁰⁴TDP also works with the Shanghai Municipal Economic Relations and Trade Commission.

¹⁰⁵It should be mentioned that although a grant agreement is signed by TDP with Chinese organizations, no funds are transferred to China. TDP procedures call for the U.S. contractor to submit invoices to the Chinese party, who approves them and sends them to the U.S. Embassy in Beijing or the consulate in Shanghai, for transmittal to TDP in Washington, which authorizes payments to the contractor.

¹⁰⁶In December 1985 President Reagan removed China from the list of countries disqualified to receive aid. The United States, however, has no current plans for an aid program in China.

¹⁰⁷TDP has a staff of 16.

¹⁰⁸The United States is the largest contributor to the United Nations Development Program and the single largest donor to the World Bank. The share of U.S. funding for such programs has, however, declined in recent years.

Table 25.—The Trade and Development Program in China

Project	Company	TDP Contribution
Completed studies:		
Guangdong Dairy Plant	China-Agro	\$44,000
Tianshengqiao Hydropower	Harza	\$400,000
Silicon Materials	Stearns Catalytic	\$100,000
Maanshan Wheel and Tire	Rust Engineering	\$200,000
Zhuhai Industrial Park	MK Ferguson	\$162,000
Shenzhen Airport	Parsons/Lockheed	\$800,000
Completed technical missions:		
Coal Ministry Review of U.S. Technology		\$111,000
MOFERT Review of U.S. Technology		\$ 40,000
Hydropower Protocol Technical Exchanges		\$500,000
Ongoing studies:		
Yuxian Coal Gasification	Kaiser/Lummus	\$750,000
Shanjiasi Heavy Oil Reservoir	SAIC	\$280,000
Huangling Coal Mine	Kaiser/Consolidated	\$550,000
Maanshan Energy Conversion	IIEC	\$250,000
Capital Hospital	American Hospital Supply	\$200,000
Automotive	GM	\$200,000
Xinhua News Agency	Phoenix Associates	\$350,000
Meishan Multichannel Carr. Eq.	Pacific Telesis	\$410,000
Xian High Voltage	Power Tech Inc.	\$460,000
Wujing Trijeneration	Bechtel	\$460,000
Power Plant Conversion	Burns and Roe	\$600,000
Zinc and Aluminum Castings	Kiowa	\$150,000
Steel Building Systems	Thyssen	\$150,000
Shanghai Cement	Kaiser	\$150,000
Shanghai Solid Waste Disposal	Klockner	\$250,000
Shanghai Corn Fermentation	under selection	\$425,000
Shanghai Petroleum Coke	under selection	\$325,000
Ansai Oil Field	CER	\$650,000
Liuahu Oil Field	Core Laboratory	\$500,000
Shenyang Toxic Waste	under selection	\$325,000
Flue Gas Desulfurization	under selection	\$143,000
Shanghai Transportation	under selection	\$380,000
Graphite Electrodes	under selection	\$150,000
Baoshan Management Information	under selection	\$650,000
Zhongyan Pharmaceutical	under selection	\$400,000
Sichuan Gas	under selection	\$550,000
Automotive Sector	under selection	\$500,000

SOURCE TDP, August and November 1986, data supplied to the Office of Technology Assessment

for more than 40 projects in China. In the spring of 1986, the International Development Association of the World Bank announced that \$230 million in credit would be made available to assist China in expanding railways in four southern provinces. The World Bank may supply \$2 billion on concessional terms during the next 5 years for projects in China. log China is making its first credit tranche from the IMF, borrowing more than \$700 million.

¹³W31izabeth Morrison, "Borrowing on World Bond Markets," *China Business Review*, January-February 1986, p. 18.

Multilateral development banks offer opportunities for U.S. exporters that are not fully utilized. A recent study indicates that the U.S. share of procurements from these banks has declined from 29 to 23 percent of the total over the past decade, while Japanese firms have had considerable success. Total procurement worldwide that is financed by these banks amounts to \$15 billion annually. A recent study concludes that U.S. firms could do much better in procurement from these sources, particularly in equipment supply and construction.¹⁴

¹⁴Brettcn Woods Committee, *How U.S. Firms Can Boost Exports Through Overseas Development Projects*, October 1986.

One factor could be that the U.S. Government offers less financing and other forms of support for such projects than do other nations.

Issue: Should the United States Use “Mixed Credits”?

The United States has traditionally opposed mixed credits (financing that combines official export credits and concessional aid) on the basis that this is a “predatory” type of financing that tends to distort trade. Current U.S. policy is to use mixed credits only to counter those of other supplier countries and to support the recent agreement among OECD countries to regulate the use of such financing. Some critics argue that such restrictions effectively put U.S. business at a disadvantage during a period when trade competition is increasing.

The United States has not used mixed credits to finance projects in China, and there is no consensus as to whether it should. On the one hand, some do not accept the notion that U.S. firms are losing export opportunities in China because of inadequate official financing. In recent years, the ExIm Bank has rarely utilized all of its available resources.”

One counter to this argument is that extensive official export financing provided by their Government has helped Japanese, French, Belgian, Swedish, and other firms win contracts in China. The use of export credits in financing for projects in developing countries is, moreover, increasing.¹² The U.S. Government could send a signal to exporters by making more official financing available for China.¹³ Enlarging the amount of official U.S. financ-

ing programs would not contravene the agreement reached among OECD countries.¹⁴

The policy dilemma is that U.S. firms may find themselves less competitive if the United States does not offer mixed credits; but if the United States uses such assistance, other countries can be expected to do likewise. The result would be to “spoil the market by raising the level of supplier country subsidies to financing.

The United States established a “war chest” in the ExIm Bank in 1986 to help U.S. firms compete against foreign firms supported by mixed credit financing. ExIm officials stated in April 1987 that the bank would probably not use all of the war chest in 1988, because of the OECD agreement on mixed Credits.¹⁵ To the extent that the agreement makes it more expensive for governments to offer such financing, the result may be to reduce the use of mixed credits. One potentially important effect of the OECD mixed credit agreement may be to improve reporting on the use of such credits, thereby improving the information base needed to formulate government policy responses.

On the other hand, a number of supplier countries have announced plans to expand official financing programs, and aid programs may also be expanded. In expanding its aid programs, Japan has stressed that untied aid will be given, permitting firms from other countries to participate.¹⁶ *Export financing will likely remain an area of intense competition among the supplier governments.*

Issue: Should the United States Establish an Aid Program for China?

Mixed credits raise the question of whether or not the United States should have an aid program for China, because aid-type conces-

¹²There are a number of possible explanations for this, including the fact that high interest rates in the United States have, up until recently, made such financing less attractive than that of other suppliers. ExIm officials may also not see it as appropriate to initiate discussions with U.S. exporters, who may in some cases be unfamiliar with services that it provides.

¹³The IMF concludes that “Over the near term, it is expected that officially supported export credits will continue to play a growing role in catalyzing financial flows to developing countries.” See Edward Brau, et al., *Export Credits: Development and Prospects* (Washington, DC: IMF, July 1986), p. 2.

¹⁴Statements by ExIm officials in late 1986 indicated a step in this direction; they stated that a number of China projects were under consideration.

¹⁵The OECD arrangement stipulates the terms of the loans.

¹⁶See “Eximbank will not need all of its ‘war chest’ funding as a result of OECD Accord,” Bohn Says, *International Trade Reporter*, Apr. 1, 1987, p. 436. The bank requested \$100 million for fiscal year 1988.

¹⁷The ability of foreign firms to participate will depend on whether they are fully informed of such opportunities and their willingness to compete for these contracts.

sional financing is the source of funding often used in conjunction with official (ExIm-type) funding. The legal prohibition has been removed on a U.S. aid program in China.¹¹⁷ To many, this is a largely symbolic step that shows that the United States sees China as a "friendly" country.

In the context of reduced funding for foreign aid worldwide by the 99th Congress, the question arises about whether bilateral assistance programs will be expanded.¹¹⁸ In a period when the United States cannot meet commitments to some developing countries (mainly in sub-Saharan Africa), some in the aid community would question whether an aid program for China is warranted. Proponents would have to make the case that a China aid program is more important than aid programs in other countries. In addition, there would have to be a clear signal of interest from China.

Advocates can raise a number of arguments in favor of an aid program in China. If carried out effectively, aid funds could assist China in programs that do not promise great profits for private sector firms. Support for "basic human needs" has been the central pillar of aid's philosophy. Aid projects could be a mechanism for deepening the involvement of U.S. firms and organizations at the grass roots level in China.

China is unlike other developing countries where large aid programs have been established in that it still has comparatively large foreign exchange reserves. A large aid program involving economic support funds would not provide the transfers of technology that China's leaders emphasize. *If an aid program is established, it is more likely to take the form of a low-key, modest approach that supports technical assistance and training. Under those conditions, only small amounts of funding would be available to support mixed credits.*

¹¹⁷However, before initiation of such a program the Department of State would have to provide certification concerning human rights practices.

¹¹⁸See Society for International Development, *Development Connections*, December 1986, p. 2.

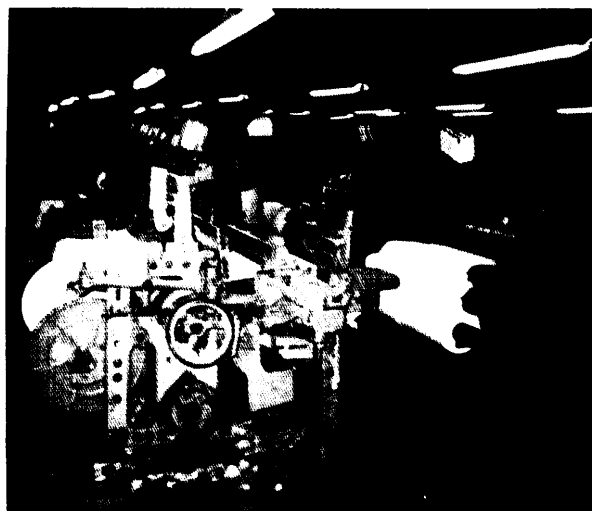


Photo credit: Carel Rupprecht

A recently installed loom in a village factory in Shandong Province. This enterprise is an example of an important trend—increasing industry in rural areas absorbing excess farm labor.

Many aid projects worldwide (such as those involving technical assistance) include participation by U.S. firms. But commercial gain has not, in the past, been the major ostensible goal of U.S. aid programs. Rethinking aid's overall objectives would thus be needed in order to reorient programs toward commercial objectives, and this would be resisted by many who believe that the aid should remain geared to helping the "poorest of the poor." As discussed above, TDP is already playing a critical role today in coupling U.S. commercial interests with Chinese development needs.

If U.S. policy makers decide to establish a formal aid program, the "Spark Program" plan (discussed in ch. 3) offers opportunities.¹¹⁹ The program is designed to create a vibrant industrial sector in China's smaller cities. The Spark program is not one in which most U.S. technical agencies are likely to have an interest, and it would be difficult for American companies to learn about commercial opportunities asso-

¹¹⁹The most complete explanation of the objectives of the Spark Plan is found in the recently released "Science and Technology White Paper" (in Chinese), a translation of which is forthcoming from the Joint Publications Research Service.

ciated with it. Yet, there is a great deal of development experience in U.S. agencies and the private sector that might be shared with the Chinese in a mutually beneficial way if new funding sources were available.

Issue: What Could the U.S. Government Do To Promote Trade and Technology Transfer?

U.S. promotional programs influence the scope and nature of technology transfer and exports to China, although it is important to remember that trade finance, for example, is only one element affecting U.S. competitiveness in foreign markets. As discussed more fully in chapter 5, U.S. trade finance and promotional programs are not as extensive as those of some other supplier countries, such as Japan. Other Governments use aid as well as more extensive official export financing to assist exporters.

In view of the decline in U.S. market share in China, *a key question for U.S. policymakers is whether U.S. promotional programs and policies are adequate to meet the challenge of global competition in the decade ahead.* In years past U.S. officials have taken the view that it is enough for Government to negotiate agreements on fair rules of the trade game, while ensuring that national security is protected through controls on sensitive exports. In the future, U.S. policy makers may want to explore new avenues for trade promotion.

The United States could do more to assist firms and organizations exporting equipment, services, and technology. Relatively modest dollar investments in project planning have significant trade multiplier effects. Such programs sponsored by TDP could be expanded. FCS and other Government agencies could also take a stronger lead in reaching out for new projects and in combining financing from a number of sources (public and private) for large projects. Developing sector-specific plans for exports could also be useful, particularly if the result is greater consistency between U.S. export controls and promotional policies. In the past, U.S. export controls and promotional policies have been developed independently, and

in some areas (such as telecommunications) this has created confusion.

More specifically, the following options could be studied:

1. expand funding for TDP feasibility studies and provide TDP with authorization to support training programs in China;
2. enlarge FCS representation in China;
3. increase efforts to combine financing from various public and private sources;
4. provide information and financial resources to support participation by U.S. firms in projects funded by multinational development banks;
5. expand official financing and guarantees for loans and investments in China; selectively utilize "soft" financing for projects in China where other Governments have provided such financing;
6. develop trade promotion strategies for particular export sectors by combining the resources of various U.S. Government agencies and clarifying export control questions; and
7. establish mechanisms and institutions (that include public and private sectors) for continuing dialogue and consultation between China, the United States, and other major trading partners in order to anticipate problems and seek mutually beneficial solutions.

A high-level mandate would be needed to develop a coordinated and active approach to U.S. trade promotion. Any of the measures listed above, taken alone, would be unlikely to have a significant impact. Other policies that affect the technological capability of U.S. firms and exchange rates are also critical to the overall strength of U.S. exporting firms. *Programs of trade promotion, & "separated from a coherent overall U.S. strategy promoting the competitiveness of U.S. industries in foreign markets, are unlikely to yield significant results.*

Issue: What Choices Does the United States Have in Its Trade Policy vis-a-vis China?

U.S. trade policy has been oriented in the postwar period toward promoting a global

trading system in which firms from many countries can compete fairly. Developing countries have been given special preferences in trade to foster their economic development, which in turn provides export opportunities for the developed countries.

To these ends, the United States has taken a leadership role in establishing multilateral financial institutions such as the IMF and assistance programs such as those of the World Bank. Many of these institutions were built during a period when American economic and military power were preeminent, and U.S. leadership was viewed as natural.

The structure of international trade has changed, and today U.S. firms must work hard to compete against competitors in developing as well as developed countries. Wide-ranging legislation is under consideration in Congress, where concern about import penetration and the overall U.S. trade deficit runs strong. Under pressure from Congress, the administration has made efforts to demonstrate its willingness to aggressively investigate unfair trading practices that hurt U.S. industry.

U.S. trade policy vis-à-vis China reflects these broader tensions and choices. The International Trade Commission initiated 15 antidumping investigations involving imports from China during the 1980-85 period, and in 9 of those cases antidumping orders were made. In 1985 alone there were four antidumping investigations involving goods from China, and in three cases there was a finding of injury to U.S. industry.¹² Growing Chinese textile imports have, as mentioned earlier, led to bilateral frictions and repercussions in other areas, such as U.S. grain exports.

Frustrations with import penetration in the United States could lead to protectionist responses. But such actions could also stimulate retaliatory actions by China. Because China's exports are so strongly concentrated in the textile sector, actions taken to protect U.S. producers (and without specific attention to the

significance of textiles in U.S.-China trade) would strongly affect China. If Chinese leaders were to retaliate by limiting imports from the United States, the result would be to limit bilateral trade. It is also possible that heightened political tensions could limit or reduce cooperation in other areas.

Trade is often viewed in a bilateral context. However, long-term solutions require that policy makers also consider the broader multilateral context. The policies of China's other major trading partners such as Japan affect Chinese export prospects. If other industrial countries erect barriers to Chinese exports, pressure on the U.S. market increases. Informal consultation among the United States, China, and other Asian traders could improve awareness of such interdependencies and perhaps stimulate constructive action.

China has announced its intention to join the GATT, a step toward integration into the world trading system. (This process began earlier with China's participation in other international organizations such as the IMF and the World Bank.) China's entry into the GATT raises issues for U.S. policy makers and other GATT members who will participate in the formal review of the application. To join the GATT, China may need to relinquish certain trade barriers and open its system more to imports. U.S. officials and others will have to carefully review Chinese restrictions that limit the activities of foreign businesses, including stipulations concerning local content and export requirements. In the process, it will also be necessary to review current U.S. policy to withhold Generalized System of Preferences status¹³ on the grounds that China is not a GATT member.

In the near future, U.S. policy makers will consider a number of trade and competitiveness policy alternatives that have important implications for U.S.-China trade. Traditionally, the alternatives have been defined as "free trade" versus a protectionist response to im-

¹²In 1983 and 1984 there were similar numbers of cases involving China. See U.S. ITC, Annual Reports, 1983-85.

¹³Under the Generalized System of Preferences, special trade treatment is provided to developing countries by developed countries.

port penetration by developing countries. With regard to China, U.S. policy makers could alternatively aim to deepen bilateral economic relations. A bilateral strategy would emphasize an expanding U.S. market share in China while minimizing frictions associated with increasing imports of certain types from China. To some who believe that free trade is today more an ideal than a reality and who fear the costs of a protectionist response (in higher prices for the U.S. consumer and potential loss of U.S. influence abroad), bilateral initiatives may be appealing.

U.S. programs supporting technology transfer to and trade with China, to be effective,

should relate to a broader global trade and competitiveness strategy. Controversy continues over the broad goals of U.S. trade policy, and uncertainty may be created among U.S. exporters and Chinese buyers that leads to continued stagnation in U.S.-China trade. While it is true that U.S. Government policies alone may not dramatically increase U.S. exports to China in the short term, a new attitude (shared by business and Government alike) toward global competition may be needed to forge a viable, positive, long-term strategy. From this perspective, China is a test of U.S. competitiveness in the developing country market.

CONGRESSIONAL CHOICES

The United States and China are now entering a new phase in their relationship, and it is appropriate to consider the challenges that lie ahead. In the past, U.S. policy was designed to promote an opening of relations between the two countries consistent with U.S. security, commercial, and other objectives. Now that the foundation has been laid, Congress has an important role to play in evaluating the success of current U.S. China policy and in setting future goals and directions. The absence of a crisis in U.S.-China relations makes this a good time to consider actions that Congress and the U.S. Government could take that would significantly affect the scope and nature of technology transfer and trade between the United States and China, and OTA'S research highlights actions that Congress might consider.

OTA finds general agreement in the United States that economic relations with China should be expanded in the current policy context. Concerns that China's modernization could have potentially negative effects on other countries in Asia and uncertainty about the future course of China's policies, especially in light of recent student demonstrations and shifts in leadership, have not weakened this consensus. Liberalization of controls on exports to China, both in the United States and in COCOM, has been well received.

But agreement on general principles does not constitute a coherent policy. In reviewing U.S. policies toward China, Congress may want to consider whether the proper balance among the five major themes identified at the beginning of the chapter has been established. Another question is whether the United States is effectively using all of the policy instruments available to maximize U.S. interests. Ad hoc decisionmaking on export controls, for example, can produce inconsistent decisions and an uncertain policy context.

During 1986, controversies over China export controls somewhat receded in the wake of loosened restrictions in the United States and COCOM. The process of license approval has been accelerated for many types of equipment and technology covered by the green zone agreed to by COCOM countries. On the other hand, export license applications that must be referred to other agencies and to COCOM still require a long time for review. There are no clear guidelines concerning prohibited exports; case-by-case reviews of military and sophisticated dual-use exports remain the focus of controversy and debate. There are thus a number of reasons why Congress may wish to review China export controls in the months ahead.

One goal of such a reexamination would be to make the system operate more efficiently.



Photo credit: Alan T. Crane

Modern buses parked by an old but still important canal in Suzhou. Famous for its gardens, Suzhou is also a major manufacturing center.

Another goal would be to revise and shorten the list of controlled items to reflect changes in technology and foreign availability while focusing the attention of the export control system on militarily significant items and technologies. These efforts require coordination with COCOM allies. Clearer guidelines specifying which types of military or advanced dual-use equipment and technology cannot be exported could also be developed for use within the U.S. government. Congress and its committees of jurisdiction on export controls have a critical role in these decisions as well.

Congress may wish to consider actions to refine the system of export administration by: 1) tighter administration of existing policy, 2) through modifications within the current policy framework, or by 3) considering actions

that would constitute new policy approaches. The possible actions listed below are grouped according to those categories.

Refine the export administration system, by considering the following possible actions:

1. Tighter administration of existing policy:
 - require periodic reviews from the Operating Committee concerning China cases under interagency review for protracted periods;
 - require DOC to provide more timely information to the public and to Congress about the status of China licensing, particularly concerning the value, status, and nature of exports approved in referred China cases;
 - support expanded use of automated sys-

- terns in order to improve the efficiency of export licensing and to increase consistency in decision making by expanding the accountability of license examiners;
- carefully monitor DOC progress in attaining the goal of processing China licenses (IVLS) in 45 days by July 1987, and set a target, such as 6 days, for processing green zone cases;
2. Modifications within the current policy framework:
- break the deadlock in interagency reviews of China cases by amending the Export Administration Act to give DOC final authority to approve an application unless DoD *formally* appeals to the President with objections;
 - require that DOC remove from active consideration (automatically approve) export applications that have been under review for more than 6 months (such cases could be automatically approved unless the Secretary of Commerce provides the exporter with a written explanation of why the case requires extended policy review);
 - require that DOC, in consultation with DoD, the State Department, and other relevant agencies, develop clearer guide lines for use within the U.S. government that would specify types of exports to be prohibited (red zone);
 - require that DOC, in consultation with the State Department, DoD, and other relevant agencies, develop by the summer of 1987 detailed, sector-specific proposals for expanding the green zone while continuing to preserve Western security;
 - improve information exchange between officials reviewing U.S. munitions exports to China and those reviewing dual-use exports in order to ensure consistency;
 - establish a distribution license procedure for China exports
3. New policy approaches: establish the general principle that the United States will work with COCOM allies to establish uni-

form controls for China and to harmonize export control administrative procedures in various COCOM nations. This would require that the United States relinquish unilateral controls for China if other COCOM countries cannot be persuaded within a reasonable period of time that they are justified, and that the United States, along with other COCOM countries, eliminate gaps in controls—such as different approaches to controls on re-exports.

Barring dramatic changes in China's relations with the Soviet Union or Taiwan, the most challenging problems may arise in the trade arena. There are a number of potential points of friction. China's exports are heavily concentrated in textiles—a threatened U.S. industrial sector. Other trade-related problems concern China's entry into the GATT and other international institutions. The United States and other GATT members will review China's trade and technology transfer regulations to determine whether they are consistent with the GATT. In still another area, there is a need for consultation and agreement among the United States, Western Europe, and Japan to minimize restrictions on imports from China that shift the burdens of adjustment to partners, and cutthroat competition for contracts with "soft" financing.

The United States could benefit from a positive approach to promoting U.S. exports and helping China improve its technological and managerial capabilities. Outlining the possible congressional actions needed to forge a new consensus on U.S. competitiveness is beyond the scope of this study, but nevertheless directly relevant to U.S.-China relations. Whether or not the 100th Congress carries out a full-scale review of U.S. policies toward China, it will importantly influence relations with that country through its trade policy.

The possible steps outlined below are grouped according to whether they would involve: 1) expanded use of existing programs, 2) modifications within the current policy framework, or 3) new policy approaches.

Develop an activist trade promotion strategy in order to improve U.S. competitiveness and ensure fair trade by considering the following possible actions:

1. Expanded use of existing programs:
 - expand funding for TDP feasibility studies and training programs;
 - support enlarged FCS representation in China;
 - expand official financing for loans and guarantees, selectively using “soft” financing to counter such bids by foreign suppliers;
 - continue support for multinational development banks and encourage DOC to provide U.S. firms with additional information so that they can win procurements;
2. Modifications within the existing policy framework:
 - encourage the development of sectoral strategies for promoting trade with China (in line with U.S. export controls);
 - request the State Department to prepare a review of government-to-government programs under the S&T protocols in order to determine which ones could now be left to private-sector action and which would require additional government support;
 - encourage DOS and other U.S. Government agencies involved in S&T protocols to work for expanded access by U.S. scholars and technical personnel to

Chinese research institutions, including those in rural areas;

- require that the Office of the U.S. Trade Representative (USTR) report to Congress on the review of China’s application for entry into the GATT;
 - improve mechanisms for informal consultation on Asian trade among the United States and other countries;
3. New policy approaches—initiate an official development assistance program for China that promotes expanded exports of U.S. goods and services.’22

Many of the options above would require executive action. Congress can, through its oversight of executive branch programs, encourage this process. On the other hand, it may no longer be necessary for the Federal Government to play such a direct role in coordinating technical exchanges. Private organizations and firms, as well as State and local governments, are now independently involved in scholarly and technical exchanges. OTA’S research indicates that there are a number of possible government actions to refine the system of export administration and to promote trade and technical cooperation with China that could contribute significantly to the development of deeper and mutually beneficial relations between the United States and China.

“*Earlier in this chapter, where the issue of an aid program for China is discussed, OTA notes the obstacles to the development of an export-oriented aid program.

APPENDIX C: EXPORT LICENSES PENDING OVER EAA STATUTORY LIMITS

In January 1987 OTA analyzed contributing factors in review process delays by examining cases that were pending beyond the statutory limits. The total number of these cases was 536, valued at more than \$730 million dollars. Only a small number of these cases were cases that had not been referred to other agencies. A significant number were pending in the Coordinating Committee (COCOM), but the overwhelming majority of the cases had not been referred to COCOM but were under review in the inter-agency process.

Table 1.—Numbers of Cases Pending Over Statutory Limit

Type of case	Number of cases	Percentage
Non-referred cases	69	13
COCOM cases	124	23
Cases in interagency review	343	64
Total	536	100

Most of the cases (over 90 percent) had been pending for more than 120 days. These cases also ac-

counted for 99 percent of the dollar value of all pending cases.

Table 2.—Processing Times and Values

Processing time (days)	Number of cases	Total value
61-75,	18	\$ 530,623
76-90 ..,	17	1,745,773
91-105,	15	2,953,609
106-120. ,	3	34,365
over 120.	483	724,748,811
Total	536	\$730,013,181

The 20 oldest cases had been in the system for 700-1169 days. All of those cases except one had been referred to the Operating Committee (OC) at one point, but only three of those were currently waiting for a determination by the OC. Of these cases, 12 had previously been under review by OC, but after OC made a determination, they were sent to the Department of Defense (DoD). In most of those cases, DoD made a recommendation and sent them back to the Department of Commerce (DOC), where they continued to await final determination. Many of the cases pending for the longest periods were under OC consideration. Particularly striking was that a large number of cases were sent back to DoD rather than referred to higher inter-agency review *after* OC completed its review.

Only a handful of the pending cases were actually under review by DoD at the time the data was collected. However, 130 of them had been reviewed by DoD at some point. About half of those 430 cases had been under DoD review for more than 300 days. Many of these had been resubmitted to DoD for review, some as many as four times. Generally speaking, DoD reviews did not account for the major part of total processing time for these cases. In many instances where cases were pend-

ing for long periods, however, they moved back and forth between DOC and DoD, and were not sent to the OC or other higher levels of review in the formal interagency review process.

Inputs from intelligence agencies is another aspect of interagency review that generally added a month or more to the processing time. Of the pending cases over the statutory limit, 237 involved such review.

It should be noted that OTA did not evaluate the military criticality of the technology that was under review, since this would have required study of complete license applications.

OTA'S analysis suggests that exporters as well as licensing officers would benefit from more information concerning the type of technology that has recently been approved for export. Unnecessary delays arise when licensing officials lack complete information concerning precedent-setting cases. The kinds of information that would be useful to exporters include the dollar value and types of technology and equipment approved for exports. Online information concerning precedent-setting cases (such as those completed after extensive inter-agency review), case history information, and improved access to relevant information compiled by other agencies could improve the ability of licensing officers to make timely, consistent decisions.

Providing mm-e information to exporters would require that certain proprietary or sensitive information (e.g., equipment models, applicants names, end users, and end use) be omitted from public dissemination. Brief, periodic summaries of generic types of technologies recently approved for export could reduce uncertainty for U.S. exporters. These data are readily available from the DOC computer systems (ECASS).