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House Committee on Science and Technology  
House Committee on Interstate and Foreign Commerce  
House Committee on Banking, Finance, and Urban Affairs  
House Task Force on Industrial Innovation

on

[ Perspectives on Trade and International Payments ]

Mr. Chairman and Members:

We appreciate the opportunity to testify today on our report, "Perspectives on Trade and International Payments" (ID-79-11 and 11a), (October 10, 1979). The report was an effort to pull together the results of our work in the area over the past 5 years and to identify the key questions and issues which the Congress and the Administration should consider when establishing policies and programs designed to improve the U.S. balances on trade and current account.



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The growing interdependence between the U.S. economy and the economies of its trading partners is likely to increase in the coming decades. There are no simple answers for dealing with the cross pressures which develop in an economy with large numbers of people affected by both exports and imports.

U.S. policy is one of promoting the development of an open, nondiscriminatory, and fair world economic system to stimulate fair and free competition between the United States and foreign countries. The establishment and enforcement of fair and equitable trade rules to govern the relationships between trading partners is important to open and expanding trade.

It has been increasingly recognized that trade must be placed sufficiently high on the Government list of priorities. Accordingly, in September 1979, the President submitted a reorganization plan for international trade functions. The plan gives primary responsibility for developing U.S. international trade policy to the United States Trade Representative (USTR). The USTR is to coordinate policy implementation and to carry on negotiations in both multilateral and bilateral forums. In addition, the plan makes the Department of Commerce the focal point of operational responsibilities for non-agricultural trade. The plan was approved and implemented in January 1980.

Because of the continuing U.S. balance of trade deficits, the Government attaches importance to programs to stimulate exports. Most of these programs fall into three major categories; export financing, direct support and services to exporters, and export tax incentives.

The Government's export promotion policy goals are not pursued in a vacuum. Their realization is impeded both intentionally and unintentionally by other policies with different goals. To meet some of these goals, the Government deliberately restricts certain exports. Unintended barriers to exports are the most troublesome; otherwise laudable policy goals can collide with and adversely affect export promotion objectives.

The effect of rapidly rising imports on domestic industry cannot be ignored. Consequently, legislative provisions over the years have been enacted and strengthened to help alleviate injury resulting from both fair and unfair foreign competition.

Over the years, we have made numerous recommendations to the executive branch and to Congress for improving the U.S. trade and current account performance. Major recommendations concerned:

--The possible need for legislation to establish a centralized mechanism for developing and coordinating long-term economic policy planning.

--Strategies for guiding U.S. commercial activities in foreign countries. Agriculture, Commerce, and State should develop trade objectives for market development.

--Fragmentation of responsibilities. We asked Congress to consider establishing a joint executive-congressional group to consult on a variety of East-West trade matters.

--Difficulties in the timely processing of export license applications. We suggested that Congress have export license application management responsibilities centralized in Commerce and

have a multiagency group established to provide guidance to Commerce to make the system more responsive.

--Imports. We made a series of recommendations to (1) improve administration of the Antidumping Act and (2) provide for a better information base to permit a more comprehensive analysis of the effects of antidumping actions on prices, U.S. trade, and other interests.

--Productivity. We concluded that the United States needs to make manufacturing productivity a national priority in order to remain internationally competitive and to maintain strong industries.

--U.S. technology transfer policies. We recommended a change in the method of accumulating statistics so that the implications of U.S. transfer policies can be better evaluated.

--Foreign investment in U.S. agricultural land. Our work with the Congress resulted in the establishment of the current registration system for foreign investment.

In the trade area, we believe there is a need for a national economic objective with conscious support for attaining agreed upon goals. The U.S. approach to trade should emphasize a cooperative, rather than an adversary, relationship among Government, business, labor, and consumers. The nature and extent of this relationship will have to evolve.

We do not have in mind a parallel to the closely integrated planning systems used by Japan and some European countries. But a program which effectively balances these constituent interests, domestically and internationally, will be required to guide activities in this area. A discipline should be encouraged and followed so that greater attention will be given trade matters than has been done in the past. We believe there is wide support in the private sector for Government change in the trade area.

Many interrelated issues and questions will need to be considered in developing such a program. These issues and questions as presented in our report encompass trade policy coherence, organizational adequacy, exchange rates, export control administration, foreign trade barriers, U.S. imports, investment flows, productivity, technology transfers, Government regulations, export promotion, export financing, and the administration of U.S. international collections and payments. Today, I will discuss three of these issues--productivity, technology transfer, and export controls.

#### PRODUCTIVITY

The words productivity and competitiveness carry greater emotional content today because of heightened concern over the decline in U.S. productivity growth rates and the deficit position of the United States in merchandise trade. Generally speaking, productivity reflects the efficiency of the U.S. economy.

Competitiveness derives from the interaction of a host of factors bearing on whether goods and services are sold or not, including pricing, financing arrangements for production and sales, after-sale service, quality of the goods, availability, and embodied technology. Thus, increased productivity, although absolutely necessary, cannot by itself ensure increased U.S. competitiveness in international trade.

U.S. productivity gains have slowed to 50 percent of what they were, roughly a 1.6-percent a year increase since 1967 compared to about a 3.2-percent increase during the years 1947-66. The 1980 annual report of the Council of Economic Advisers said that developments in productivity have been another important source of the upward trend of cost and price increases. Adjusted for cyclical developments, U.S. productivity growth in the 2 years ending with the fourth quarter of 1978 was only one-half of 1 percent. During 1979, cyclically adjusted U.S. productivity further declined. Department of Labor data on productivity in selected industrial countries shows that although the trend in productivity growth in all countries is declining, the U.S. decline started earlier and has lasted longer.

The reasons frequently cited for the decline in U.S. productivity are (1) fall-off in capital investment in productivity-related technologies and equipment, (2) increase in service occupations, (3) decrease in research and development funds for new technologies, (4) transfer of

productive technologies to foreign countries, (5) heavy cost of regulation, (6) slackening in the introduction of new techniques and equipment, and (7) need for a better business environment in general.

Past GAO reports have addressed some of these issues. For example, our report, "Manufacturing Technology--A Changing Challenge to Improved Productivity" (LCD-75-436), concluded that the United States must make manufacturing productivity a national priority in order to remain internationally competitive and to maintain strong industries.

It seems that while the United States was to some extent resting on past successes, other nations were selecting the best technologies. These nations were also imitating past U.S. successes with government, industry, university, and labor partnerships; developing their own strengthened version of these relationships; and focusing their energies on applying those technologies to domestic and international markets. Competitor countries have been able to concentrate on nondefense, commercial applications of the best available technologies. Moreover, they have developed a formidable array of planning mechanisms, incentives, and disincentives to support rapid industrial growth. These arrangements are difficult for U.S. industry to compete against.

The U.S. international competitive situation has been complicated by relationships between Government and industry. It has been demonstrated in selected areas that a close partnership between industry, Government, universities, and labor was essential to rapid, focused, economic growth. Where such partnerships exist, the linkage was formed to advance technological change and was most prominent in defense, aerospace, and agriculture. The

more recent successful arrangements have been associated with products for which the Government itself has represented a major market share, such as computers, numerically controlled machinery, and aircraft. Incidentally, these industries contribute to a positive U.S. manufacturing trade balance and have impressive productivity growth records.

The detached relationship in the U.S. and close working relationship between government and industry abroad has caused domestic industrialists to perceive today's marketplace as being risky. Consequently, they are reluctant to make financial commitments to technological innovations whose profitability will not be known for 8 to 10 years. Industrialists view increasing Government control actions as a sign of their inability to influence their own market destinies and, equally important, as a precedent both for further Government market involvement and mandated expenditures of their profits.

The method and degree of Government involvement, regardless of its social merits, appears to have inhibited U.S. innovative economic growth. Federal Government involvement has heightened industry views on the perceived risks of bringing innovations into commercial production; reduced commitments to research and development; caused a retrenchment in venture capital; encouraged the foreign licensing of technologies and relocation

of manufacturing facilities outside the United States; exacerbated a domestic slowdown in productivity growth; and indirectly fostered an increasing reliance on foreign materials and products.

There is no clear explanation of why productivity has declined. Although many reasons have been given, a Department of Commerce study could not single out from two dozen possible causes the explanation for the productivity decline. Thus, the solution will be difficult to devise and implement.

One way is to establish a better working relationship and cooperation between the elements of society now separated by an adversary relationship. A first step in establishing a proper relationship would be to facilitate greater cooperation in the systematic development of technologies which will significantly enhance both productivity and competitiveness of U.S. products. This process would require the cooperative assessment of the technologies, together with the existing array of incentives and disincentives for their innovation, and appropriate mechanisms for translating the technologies into competitive products. It would also require close cooperation with labor as some productivity-related technologies have the prospect of seriously disrupting industry employment levels. Thus, an integrated approach is necessary. There are other steps, such as tax incentives.

It should be noted that a bill--the National Technology Foundation Act of 1980--was introduced to facilitate technology development for the national welfare. One reason for such a bill was the belief that

without a coherent Federal policy of technology development and promotion, the U.S. will not be able to compete effectively in future world trade.

WHAT IS THE RELATIONSHIP BETWEEN  
TECHNOLOGY TRANSFER AND TRADE?

Science and technology have always affected relations among nations and, likewise, diplomatic considerations have influenced the movement of technology across national boundaries. No nation has been more extensively altered technologically than the United States. The United States has been in the forefront of developing new technology and of transferring it internationally. As a consequence of U.S. technological growth and development, we have increased our dependence on supplies of industrial and energy materials from foreign sources and other nations have increased their dependence on us for food, educational facilities, technical assistance and economic stability. Thus, the United States is the leading force in bringing about a global structure of international interdependence. As other Western economies have developed, they have followed the American lead in technological growth and have adopted U.S. commercial developments to facilitate the international flow of technology. The principal commercial development is the formation and expansion of multinational corporations.

In the more competitive world economic situation today, the United States faces increased competition from other advanced economies for export markets and supplies of industrial and energy materials. At the same time, technology is becoming more important in the diplomacy of other countries. Communist and other non-market economies have recognized the

importance of technology in productivity growth and have initiated policies of importing technology. The developing countries are also taking the view that the acquisition of science and technology is the key to an improved economy in their impoverished world. Thus, U.S. technology rather than U.S. goods and services may play an increasingly important role in foreign policy. Traditionally, U.S. national policies on technology transfer allowed individual firms the freedom to transfer technology as they saw fit subject only to national security controls. However, U.S. policies in the future may need to be changed as a result of the increasing governmental attention to technology in terms of national interest not only of security, but also of economic/commercial well-being and social/environmental values.

Technology is a term of many uses, but basically refers to qualitative advances in capability. In assessing the impact of governmental policies on international transfers of technology, one must realize that there is no agreed upon definition of technology, nor knowledge of how to measure the amount transferred and its impact.

From the viewpoint of U.S. Government policy, one useful definition of technology is that of the National Science Foundation's report, "Technology Transfer and U.S. Foreign Policy." The report states that technology is most usefully defined in terms of a spectrum ranging from scientific publications and exchanges, at one end, to proprietary information and professionally-qualified people, at the other. The report argues that technology is always embodied in one of four primary

forms: publications, products, proprietary information, and people; and it suggests that the different forms incorporate higher and higher levels of technology and thus represent increasing value. For example, technical assistance agreements are probably more valuable to a buying country over the long run than specific products or license agreements without know-how provisions. Technology transfer can roughly be defined as the process by which a given technique of know-how that transforms laboratory discoveries into industrial production is substantially moved from one set of users to another.

During the past decade the U.S. technological lead has been reduced in some fields due to increased foreign research expenditures and the transfer of U.S. technology abroad through direct foreign investment, licensing, and other channels. These developments have important ramifications for the United States because they affect the composition of future world trade, domestic employment levels and skills, and the continuation of innovative economic growth. Much of the concern about U.S. nonstrategic technology centers around transfers to foreign competitors while U.S. productivity and competitiveness languish.

The United States has long favored an open international economic system, including an open system for technology transfer (except for weapons systems, military equipment, or strategically significant technology). This reflects the basic belief that U.S. economic interests are served by an expanding world economy in which other countries are increasingly able to buy U.S. products and the United States is able to receive and use technological advances made abroad.

U.S. leadership in various technologies is an important source of U.S. political and economic strength. U.S. political relations with other countries have been strengthened through active technological exchange programs, while strong support of research and development by the Government and the private sector have assured technological advances. Traditionally, U.S. exports of high-technology-intensive goods have been an important factor in a positive trade position.

The United States Government knows very little about international transfers of its technology and their net effects on the domestic economy. A comprehensive data base and understanding of what is happening is vital. However, because of the varying definitions of technology and technology transfer and the broad array of mechanisms through which technology can be transferred, there is no single set of records or statistics documenting the complete flow of technology to or from the United States. As described in our March 27, 1978, report, "U.S. Statistics on International Technology Transfer--Need for Additional Measures" (ID-78-24), the only national technology transfer data comes from receipts and payments for royalty and licensing fees, which tell very little about the nature of the technology transferred.

Agreement does not exist on whether the transfer of U.S. technology overseas has, historically, resulted in a net loss of U.S. jobs. Some people fear that outflows of technology which substantially substitute for U.S. exports can lead to relative gains in other countries' technological capabilities. Others argue that U.S. technology exports are

not necessarily detrimental to the United States and, in fact, have important economic benefits, such as new export markets for related equipment.

The Government must address the question of what to do about technology transfers, but it must also address the issue of how to keep advancing its technology. Although demand for U.S. technology remains substantial, there is a clear perception that U.S. innovativeness has declined. The rate of increase in U.S. productivity has slumped severely, while investment in research by both U.S. public and private sectors over the past 8 years has shown essentially no growth in constant dollars.

Spending for U.S. public and private research and development investment has decreased from a peak of 3 percent of gross national product in 1964 to about 2.3 percent today. This is comparable to research and development spending in other countries. Total funding for industrial research and development has barely kept up with inflation and increases in private industry funding have been offset by decreases in Federal funding.

There is also growing concern over the diversion of industrial research and development from starting new and improved products, processes, and services toward satisfaction of regulatory requirements. For example, the Industrial Research Institute reported the following average growth rates during 1974-1977 in research and development efforts devoted to satisfying regulatory requirements: 16.0 percent for OSHA; 15.4 percent

for environmental; 10.0 percent for product safety; and 11.9 percent for other regulations.

Other factors have impinged on U.S. innovativeness. Government regulations have increased. Uncertainty and the long process of obtaining the necessary waiver from the head of an agency to secure an exclusive patent on Government-sponsored research affects the extent to which some technologies are actually applied. Also, investment capital has not been as available to finance the risks of innovation. According to one Government study of such companies, 204 small technical companies found public financing in 1969 but only 4 were able to raise money publicly in 1974. Established companies have also experienced difficulty in raising venture capital, and some have canceled plans to start small operations built around interesting new technology. Between 1969 and 1976, tax law changes cut the gains on high-risk investments to an effective return of about one-half and dampened enthusiasm for such investment. In 1979, the Congress reduced the capital gains tax in an effort to increase availability of capital for investment. Hopefully, this will contribute to making venture capital more abundant.

#### GOVERNMENT RESPONSE

In response to U.S. technology slowdowns, the administration in early 1978 ordered a domestic policy review of the Government's role in helping or hindering industrial innovation. This review, involving 28 agencies,

produced meaningful options for corrective action by the President, and input was obtained from private companies, universities, labor unions, and public interest groups. In October 1979, the Presidential industrial innovation initiatives were announced. The President had reviewed and analyzed the recommendations embodied in task force reports and his initiatives were designed to be first steps in meeting the Nation's commitment to innovation and the continuing challenge to maintain the technological strength of the American economy.

However, progress in implementing these initiatives has been slow and other elements of the plan have been scaled back by budget cuts. The proposals making the most progress are patent-reform bills which would establish a consistent Government-wide policy on exclusive marketing rights in specific fields of use for products invented with Government research funds.

#### EXPORT CONTROLS

Sweeping and significant regulations govern the export of technology. Because access to technological know-how is often of greater strategic significance than possession of the products of such technology, it is more important to control technical data than commodities. When design and production data are exported, the end product can be produced in unlimited amounts and is removed from end use control by the U.S.

Effective regulation of technology exports is probably the most complex control problem. It is extremely difficult to pinpoint areas of technology which should be controlled and to establish effective controls. Technology may be transferred in numerous and varied ways. It can be exported in the form of a prototype, a blue print, or knowledge in a technician's mind. It may leave the country in the mind of a foreign visitor, or as a package in the mail, a sales symposium held for prospective customers, or as a result of foreign visitors viewing discrete engineering phases which collectively encompass an entire technology process.

Commerce has licensing jurisdiction over all export commodities and unclassified technical data, except for certain specialized items under the jurisdiction of other Government agencies. For example, munitions are controlled by the Department of State, gold and foreign currency by the Department of the Treasury and atomic materials and equipment by the Nuclear Regulatory Commission.

Although no special authorization is required for engaging in export-import trade, exports must be authorized by either general or validated licenses.

- A general license permits the export of certain commodities and technical data and does not require a license document for each transaction. The bulk of all U.S. exports move under a general license.
- A validated license authorizes the export of commodities within special limitations as set forth in the license document. It is issued only through formal application to Commerce.

Most exports of items or technical data to Communist countries require validated export licenses. Applications for validated licenses to export controlled commodities to non-Communist countries are required primarily to insure against diversion to Communist countries. Generally, the documentation required for a validated license creates a continuous chain of legal responsibility necessary to enforce compliance liability. The applicant for an export license must be subject to U.S. jurisdiction.

Unclassified technical data not subject to control by other departments may be exported under either of two Department of Commerce general licenses. One is a general license permitting the export of technical data to any designation if it is

- (1) generally available to the public in any form, or
- (2) educational or scientific in nature and unrelated to the design, production, or operation of plants and equipment, or
- (3) contained in a patent application filed in a Free World country.

The second is for exports to most non-Communist countries, but is designed to prevent reexport to Communist countries. However, under this license, technical data may be exported to Communist countries providing it is necessary

- (1) for installing, operating, or repairing commodities already licensed for export to them, or
- (2) in making a bid or offer "customarily transmitted with a prospective or actual quotation, bid, or offer" provided "the

export will not disclose the detailed design, production, or manufacture, or means of reconstruction, of either the quoted item or its product."

All data not exportable under these two general licenses is supposed to require validated export licenses. However, in certain cases, such as under agreements with the Soviet Union--the scientific and cultural exchanges signed in 1958 and the Scientific and Technical Cooperation Agreement in 1972--Commerce has an "arrangement" with the responsible executive departments whereby exchanges can be authorized by the departments without export licenses. These exchange agreements are under the general policy direction and administration of the Department of State, but other departments are individually responsible for administering specific technical agreements.

Mr. Chairman, this concludes our prepared testimony. We would be pleased to answer any questions you or other members may have at this time.