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STATEMENT OF

CHARLES E. FRITTS

GROUP DIRECTOR FOR PRIVATE SECTOR PRODUCTIVITY

FINANCIAL AND GENERAL MANAGEMENT STUDIES DIVISION

BEFORE THE

SUBCOMMITTEE ON TRADE

COMMITTEE ON WAYS AND MEANS

HOUSE OF REPRESENTATIVES

ON

PRODUCT QUALITY: COMPARISONS OF U.S.

AND

J  
JAPANESE-MADE PRODUCTS

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INTRODUCTION

Mr. Chairman, we are here today to discuss a subject which is both pervasive in our society and of extreme economic importance to the United States. That subject is the quality of products produced in this country and the relationship of the quality of those products to the loss of competitiveness, not only in world markets, but even within our own domestic marketplace.

Globally, our trade deficit in 1979 totaled \$37.3 billion. In our bilateral trade with Japan in the first half of 1980, we imported \$15 billion and exported only \$5.2 billion, an increase of 17 percent in our deficit with Japan. Our national productivity growth rate for 1979 was 1.5 percent, the lowest of all the industrial nations except Canada.

Following World War II, U.S. - made products were said to have set the standards for quality against which the rest of the industrialized world's production was measured. That position began to change during the 1960s. Now Japanese products are viewed by many as setting the standard for quality.

It is evident from available information that our loss of industrial competitiveness cannot be adequately explained by differences in labor cost. Both Japan and West Germany, our chief competitors, pay wages which are comparable to U.S. wages for similar work. Nor can our loss be fully explained by technological content of either the products produced or the processes used to make those products. Virtually all industrialized nations produce and use products that are both low and high in technology content, and basic manufacturing processes are similar. Nor can we describe our market losses, either domestic or international, as being limited to only a few product lines such as steel, automobiles, televisions, apparel and footwear. The list of product lines is long and growing longer. Neither can we say that "dumping" has caused our market loss. Even if there were cases of dumping, and we don't know that such charges are well founded, the market loss is too pervasive, involves too many industrial sectors and the losing trend has gone on too long to assert dumping as an explanation.

The most likely explanation—because it is the most logical one, we believe—is that we are being outperformed at our own game by our international competitors both in efficiency of production and in quality of products. The question is: Why?

At the request of the House Subcommittee on Trade, we began to study the issue of product quality, and Japanese approaches to achieve high levels of productivity and product quality. As part of that study, the General Accounting Office conducted a 1-day roundtable discussion 2 months ago on "Product Quality: Japan vs. the United States." Fifteen well-informed represen-

tatives from industry, labor, academia, and Government participated in that roundtable.

Out of those discussions came some very interesting points which the panelists believe are part of the answer. The concensus was that those points require action—not just by Government, not just by business managers, not just by labor and labor unions, but action by everybody.

One of the most important roles the panelists saw for Government is to begin a public awareness campaign of the many issues which fall under the broad umbrella that we refer to as productivity and product quality. To that extent, Mr. Chairman, I commend this Subcommittee on Trade and the members of the full committee on Ways and Means who are here as well as the individual members representing local Congressional Districts, for taking this first step toward informing the public about some of the difficult issues faced by this Nation; for letting the people know that national policymaking is an intricate and sometimes thankless business; and most of all, for opening lines of communication with citizens outside of Washington, D.C., and, I hope, for instilling in them a sense of their responsibility, that they too are a part of the total policymaking process. As representatives of the Comptroller General of the United States, we are extremely pleased to take part in these hearings.

COMPARING JAPANESE AND U.S.  
PRODUCTIVITY AND PRODUCT QUALITY

It is instructive to look at the Japanese "system," because that system is touted to be one in which the elements of its internal structure are well orchestrated to make Japan economically strong.

The Japanese economic success story seems even more impressive in light of circumstances which prevailed at the end of World War II. Indeed, it is doubtful whether Japan's recovery could have been so dramatic had it not been for the psychological impact of these circumstances on every Japanese citizen.

- It's industrial base was totally devastated,
- It's prewar reputation was that it produced shoddy merchandise,
- It had no natural resources of its own, except for its people, and
- It had no money with which to rebuild.

Few Americans are able to truly appreciate the depths of despair which must have been felt by the average Japanese citizen in 1945 and several years hence.

#### Indicative Economic Planning

An impressive part of its structure, which began in the late 1940s and continues today, is called the "indicative economic planning" system. The system functions so well that it has been dubbed "Japan, Inc."

In essence, the system (1) incorporates a national plan and strategy by identifying technologies for innovation, with large worldwide market potential; (2) identifies a few Japanese firms believed to be capable of innovating and producing new products competitively within targeted technologies; (3) makes sufficient resources available to those favored firms to achieve early design, development, and production; (4) protects those favored firms from excessive competition in the domestic markets during early stages of development; and (5) once the production machinery is humming, it provides worldwide marketing capability through its large trading companies.)

The United States does not have anything like this. Indeed, there are two widely divergent schools of thought as to whether the United States should have anything like this. Those who oppose such a system view it as centralized economic management that would run counter to the precepts of our laissez-faire, free enterprise system.

Others disagree with this view. They believe that much of the success of other industrialized nations to penetrate and obtain growing shares of world markets was enhanced by those nations' ability to obtain high levels of

cooperation between government, industry, academia, and financial institutions, and from those nations' ability to build consensus on national policies and to orchestrate effective plans, mechanisms, and incentives to carry out the policies.

Cooperation of government  
industry, and financial  
institutions

Cooperation among Government, industry, and financial institutions is essential for Japan's indicative planning system to work well. In Japan it is common to find that top managers in all three sectors were colleagues during their school years, have continued their friendships during their careers, share similar concerns for the nation, and continue to look upon each other as colleagues. Cooperation in such a fraternalistic network appears quite natural. Once agreements are reached, the cooperative attitudes seem to extend throughout the Japanese system.

In the United States, a condition, or at least a perception of adversarial attitudes seems to pervade our society: Government versus industry; labor versus management; production departments versus marketing departments; production workers versus quality inspectors, and so forth.

Worldwide Marketing

A critical element in the system is the selection and targeting of technologies which will offer worldwide market potential, not only because this provides continued national economic growth, but equally important, because large volume production offers efficiencies that are simply not achievable in low volume production. Much of Japan's success in high productivity and high quality stems from Japan's world market orientation. For example, there are approximately 50,000 Japanese marketing executives throughout the U.S., all of whom speak English. There are about 1,200 American marketing executives in Japan, all of whom are in Tokyo, and

very few of whom speak Japanese.

Our visits to five Japanese-owned companies in the Los Angeles and San Diego areas confirmed that production in high volume for worldwide markets is essential. These companies produce refrigerators, stereos, pencils and pens, ceramic materials, plasma products, and business machines, all of which encompass worldwide markets.

#### Competition in determining "survival of the fittest"

Once "favored" companies have been selected in the indicative planning system, the task of surviving becomes a clear goal to every individual on a company's payroll. In the Japanese system, being a "favored" company is not synonymous with survival. That is, being favored simply means the company is one of perhaps four or five companies favored to enter the competitive race to develop targeted technologies for the marketplace. In the United States, this form of favoritism could violate our antitrust laws.

To survive in Japan, a company must learn how to be as good or better than all of its competitors. Further, the Japanese system does not preclude other companies, which are not among the favored four or five or six, to enter the competition. Thus, each company's product design, production processes, product quality, and production efficiency must be better than the competitors', because only the best survive in worldwide markets and the Japanese know this. The Japanese system simply does not support "losers."

#### Allocation of limited resources

Japanese allocation of capital resources is also tied into the indicative planning process. Financing for "favored" companies within the targeted industries is assured through the Japanese banking system. Both the company's goals and the bank's goals coincide with national goals--that is, to strengthen the Japanese economy over the long term.

Japanese bank loans are in three classes: Class A loans are for favored companies in targeted industries and are a bank's highest priority. Class B loans are for activities with a high rate of "social" return such as environmental protection, and safety. Class C loans are ordinary business loans.

Because the banks are quasi-partners of the companies, emphasis is on long term growth—not quick return. Planning cycles are as much as 10 to 20 years into the future. Long term planning and financing is greatly enhanced by a personal savings rate in Japan of 26 percent, which provides a continuous flow of investment resources to the banks. This compares to a U.S. savings rate of only slightly over 5 percent.

U.S. banks, as a rule, do not finance new business starts. Each entrepreneur or inventor must find a venture capitalist who is willing to provide the early rounds of business development financing, and venture capital in this country is scarce.

The investment environment in the United States in general is one in which companies as well as financial institutions concentrate on quick returns which, in turn, discourages long term planning and investing.

#### Recognition of workers

Recruiting and selecting employees in Japan is a deadly serious business. There is much selective screening and interviewing. Emphasis is on referrals, reference checks, school recommendations, and grades. Initial training for a production worker lasts up to a year, followed by lengthy apprenticeships. Under lifetime employment, typically found in Japan's largest companies, such care in recruiting and training is fully justified and affordable. The life time asset value of the employee is fully recognized.

Labor unions are typically "company unions" as opposed to industry-wide trade unions. The goals of the company are also the goals of the union—that

is, job security--and this depends on winning the competitive race, not on collective bargaining.

Thus, it is easy to see why surviving as a company is vitally important to every employee from top to bottom. Every employee is highly motivated to work hard and to work smart. Absenteeism is almost nonexistent. In the auto industry, for example, absenteeism runs about 3 to 4 percent, including vacations and sick leave. In the United States, holidays alone represent 3 to 4 percent of the normal work year.

Another important element of recognition of employees is the climate for participation. Employees fully understand and accept this added and equally important responsibility. That is, to be constantly alert to any kind of problem in operations that could adversely affect efficiency or product quality. The Japanese approach for problem solving is through consensus building from bottom up. In the United States, a typical top manager gathers views of other managers and then makes the decision.

At the firms we visited, product quality is one of the most important factors considered by managers for the success of their business. All employees are considered integral to achieving high quality products. When quality problems arise, employees at all levels are brought together to work out solutions. Employee groups are also formed to look at ways of improving quality through the use of better techniques in areas such as production, marketing, and distribution. These groups are referred to as quality circles.

However, this is not unique with Japan. Many American firms have successfully practiced Japanese-style management systems for many years. For example, the quality control (QC) circle concept practiced widely in Japan has been practiced by U.S. firms like Texas Instruments for many years, although by different names. Many American firms are beginning to install QC circles in this country with very positive results.



Japanese dedication to quality is exemplary. At one firm we were told that it is required to send five dozen of its product, <sup>one</sup> ~~out~~ of each production lot, to the parent organization in Japan. At the U.S. site three dozen are tested. The results of the tests, together with the remaining two dozen are sent to the President of the corporation in Japan. He looks over the test results and personally examines the remaining two dozen. If a single unit proves unsatisfactory, the President immediately notifies the firm to halt production until the quality problem is resolved. This has happened two times since the American plant opened 2 years ago.

Employee suggestions are made in exceptionally large numbers by Western standards, and a very high percentage, often as many as 80 to 90 percent, are implemented. Uncovering mistakes or problem areas so that corrective action can be taken is rewarded in Japan. Under Western style, mistakes are often hidden for fear of penalty.

As we have indicated, one of the rewards for Japanese workers for winning the competitive race, at least in the large firms, is lifetime employment. Even during economic downturns, employees feel secure that they will not be laid off. When economic conditions are poor, employees may be assigned to cleaning and painting their work areas and buildings, or to repairing and maintaining their production machinery and equipment. Thus, when full production does resume, the work areas are pleasant and modern, and the machinery and equipment are fine tuned for high efficiency.

U.S. companies do not provide lifetime employment as do roughly 20 percent of Japan's largest manufacturing firms and many of the supplier or vendor firms. American companies typically lay off workers during a cyclical or economic downturn. This adversely affects worker attitude, morale, loyalty to the firm, and attention to quality.

Wage structures are unique in that wages are based almost solely on seniority--not on performance. This appears to pose little or no problem to unions

or workers, since company operational and financial status is known to all and it is common to find companies sharing profits with employees. Depending on profits, bonuses sometimes amount to 100 to 200 percent of wages during a profitable year. Few American firms share profits with employees.

#### Quality Control and Productivity

The Japanese do not view product quality as a compromise to high productivity. Indeed, the two are treated as interdependent.

Japanese quality control procedures are not unique. American companies do many of the same things. What distinguishes Japanese performance appears to be the intensity and devotion of applying these procedures. The results are evident:

- Fewer quality defects
- Lower reject rates
- Lower scrap rates
- Lower rework incidents
- Fewer people directly involved in quality control
- And, of course, the bottom line: lower cost to produce high quality products which do well in the international marketplace.

Some examples of Japanese quality are seen in the following statistics from the automobile manufacturing industry.

- Approximately 96 percent of all vehicles go directly from the assembly line to the haul away lots with no repairs.
- The engine reject rate is 0.01 percent.
- Water leaks for passenger cars average 0.0 percent.
- Typical inventory turnover rates at the assembly points are about three times those in U.S. auto production plants.
- Stores for steel consists of approximately 20 to 30 coils ahead of stamping presses—that equates to a maximum of 3 shifts worth of coils, compared to 15 to 17 days in the United States.

—Tires, engines, seats, and other assemblies are delivered every 2 hours by the vendors directly to the installation point—no receiving docks, no quantity count, and no quality inspection.

The system operates on the basis of having no more than 2 hours worth of stock of any part on hand in the line. This means that all parts must be delivered exactly on time, exactly as specified; and be nearly 100 percent good quality parts.

In addition to lower production costs, another advantage of this low level of inventory of vendor parts is that if a quality problem does surface, it can be identified and corrected immediately, with no large inventory of defective parts to be reworked or scrapped.

The Japanese are meticulous about engineering both products and production processes. A driving force for this is that since almost all raw materials are imported, the Japanese simply cannot afford to waste any of them. Therefore, there is total commitment to designing products that can be made precisely as designed, and to designing production processes in which the workers are able to perform all tasks exactly as designed. Adherence to these two basic principles almost totally eliminates waste.

Automation and robotics are emphasized wherever possible to improve both productivity and quality, and to assure that production processes can be carried out as designed. For example, there are 17,000 industrial robots in use throughout the world—13,000 in Japan and 2,500 in the United States.

Four of the five Japanese firms we visited used high technology, capital intensive production methods. Japanese management stresses capital improvements. One firm received \$7-\$8 million from its Japanese parent organization for capital improvements. This included new facilities and equipment to expand and automate production capabilities some of which are designed to achieve a higher quality.

In the area of quality of vendor products, large Japanese manufacturers have much closer working relationships with their vendors than do typical American manufacturers. There are several reasons for this in Japan which cannot be duplicated in the United States. However, we believe there are ways to improve American vendor product quality and manufacturer-vendor relationships. For example, the Japanese firms we visited indicated that working with suppliers to reduce defect rates and achieve improved vendor quality was an important aspect of their quality programs. Each firm requires high quality component parts and materials, and works with its suppliers to achieve and maintain desired levels of quality. Some firms have provided their suppliers with engineers, tools, education, feedback of defect rates, and so forth to achieve better quality.

We also talked with a number of large American manufacturers, many of whom work closely with their vendors, but with limited success. We learned that a few aerospace firms have designed "vendor ranking systems" which identify vendors whose products have quality problems.

One of the more interesting aspects of this kind of information is that the vendors are made aware, often for the first time, that they have quality problems and how much the poor quality is costing their customers.

With this information, the large firm can now assist its vendors in correcting the causes of quality problems, and the vendors are more receptive to this assistance. This kind of manufacturer-vendor cooperative arrangement is common in Japan, but not so common in the United States.

There is another aspect of product quality in the American industrial environment which should be mentioned. That is, standards which affect both the large manufacturers as well as vendors, and in turn, affect how well American products fare in the marketplace.

A primary function of the National Bureau of Standards is, of course, to develop standards—standards for measuring, functional standards, and performance standards. In the American system, standards are essential. Not to have them would be disastrous.

The National Bureau of Standards, in collaboration with industry, establishes the quality standards acceptable to industry--thus the acronym AQL, "acceptable quality level."

American manufacturers set their quality goals to achieve the AQL precisely. Many manufacturers argue that achieving levels appreciably above the AQL increases production cost and reduces their ability to compete. For a vendor, this argument is hard to refute, since his customer often has other sources for the same parts. On the final assembly line, however, higher quality vendor parts increase both production efficiency and product quality, as amply demonstrated by the Japanese.

The above discussion gives only a thumbnail sketch of the Japanese "system." Comparisons of Japanese and U.S. approaches raise a number of questions about quality in this country. Some of the fundamental questions are:

- How can we arrive at a consensus among Government, industry, labor, academia, and financial institutions on what our national problems are and how can we resolve them?
- Should we establish clear, unambiguous national goals for industrial and economic growth, and develop national plans and mechanisms to carry out those goals?
- Can we develop capital allocation processes that, even under conditions of scarcity, will allow us to have high rates of capital investment, high rates of personal and corporate savings, and higher emphasis on and investment in automation?
- How can we develop business environments which enable and encourage long range planning and investment horizons, and break the quick payback, 1- and 2-year profit and loss orientation?
- How can we develop harmonious labor/management relations, where

workers are encouraged to participate in many of the decisions which affect productivity and product quality, as well as the quality of their own working environment?

- Should our education curricula include courses in productivity, product quality, and the elimination of wasteful practices at the high school level or even earlier, as do other countries?
- How can we get an absolute commitment to basic engineering principles of having quality designed into the product and the process so that products are built right the first time, and waste in the form of defective products, rework cost, or scrap, is eliminated? Can such an absolute commitment to these principles be followed in this country? And do these principles need to be stressed more in engineering courses in our universities?
- How can we begin to instill in managers and workers alike that high productivity and product quality are absolute determinants of competitiveness in the marketplace, and that sales of the products we produce are responsible for the jobs we hold?

These are difficult questions that need to be answered if we are to stay competitive in the worldmarket.

SUMMARY OF ACTIONS AS DESCRIBED  
BY ROUNDTABLE PANEL MEMBERS

The roundtable session provided a number of views as beginning steps toward resolving these questions. We have divided their views into five categories:

- Consensus building
- Industry-labor roles
- Educational system
- Professional associations and societies
- Government involvement

### Consensus building

1. Consensus-building of the type represented in the roundtable is needed to agree on what the problems are. Responsible people from Government, including Congress, industry, labor and others need to come together to diagnose the problems and develop a plan and strategy for their solution. There must be a mechanism to communicate this consensus to the policymaking bodies—both Legislative and Executive.

### Industry and Labor

1. Labor and management must find ways to change adversary relationships into positive relationships in order to successfully launch productivity and quality efforts. This will have to be a deliberate, conscious process.

Democracy in the workplace entails widescale discussion of the issues so that everyone is well informed. Trade unions can play a strong role in this process, because they often represent not only seniority in a company, but significant continuity as well. Top company managers are far more mobile than are the rank and file. Thus, labor is in a unique position to offer leadership and continuity in labor/management relations and in productivity and product quality improvements.

Government can play a supportive role in the area of labor/management relations, but ultimate achievements must come from initiatives of labor and management through cooperative efforts.

2. We must deal with work stability and with cyclical layoffs. Government can provide support and incentives to test new concepts in worker stability. Such tests could include the economics of job maintenance—first by using workers in a nonproductive mode for periods of economic downturn to receive education and problem solving courses, second, by measuring the impact in terms of the problems actually solved and the impact on unemployment insurance, rehiring and retraining, and third, by observing the impact of increased job stability on employee motivation, productivity, product quality, and loyalty to the firm.

This could be a combined labor, industry and government role.

3. We need to adopt some lessons learned from the quality control circle concept, that is, effective communication between managers and workers, effective listening by both parties, and learning problem solving techniques including systematic data collection and analysis so that we do not jump to solutions without first defining the problems.

4. We need to address the area of process technology, including automation and robotics, in a wide range of manufacturing companies. This is an area or a limitation that may have the biggest single impact on productivity and product quality.

5. In the area of research and development, these terms need to be redefined to include training and retraining of workers as part of a company's R&D activities. Incentives such as tax credits for R&D would directly affect the rate of innovation by including training, which helps to speed the results of R&D into production processes, and out of the firm into the marketplace. This matches private benefits with public benefits.

#### Educational System

1. The educational system needs to be looked at. Not for any short term benefits, but to be responsive to longer term needs. We need to be assured, for example, that enough scientists and engineers are educated by our universities to meet future national needs, and that our system does not educate an over-abundance of practitioners in some fields and not enough in others. According to one panel member, for example, there are about 25,000 lawyers in Washington, D.C. compared to 16,000 to 17,000 in the entire nation of Japan. He questions whether we are allocating resources to areas of national concern or in line with national needs.

2. Vocational training in this country as it relates to quality also needs to be looked at. Individuals need to learn to take better care of their property--



children for their toys, adults for their automobiles, homes, or the machinery and equipment they use to be productive. Keeping our property in top condition makes it last longer and perform better.

#### Professional Associations and Societies

1. We need to redefine the roles of specific disciplines and specialties. Other industrialized nations make special efforts to align professional societies and groups into a highly interactive mode, so that individuals in one discipline know what is going on in other disciplines. Here, we tend to confine our professional activities to our own specific disciplines.

#### Government Involvement

1. In managing growth under conditions of scarcity (for the first time in our history), a key area of emphasis must be export performance. Targeting financial and other incentives to export performance of a company brings what is good for the company closer to what is good for the whole country.

2. In targeting incentives such as accelerated depreciation, current-value asset accounting, tax credits, and so forth, the Government's role, with consensus from industry, is to develop the criteria by which companies can have access to those incentives. The role of private firms is to meet the criteria.

3. To generate increases in investment funds, the Japanese and German models may be useful, for example, encouraging both personal and corporate savings through exempting dividends and interest from taxable income, or by helping companies develop employee pension plans which could promote job stability while at the same time generating funds for investment.

4. There is a critical need to examine the capital markets and the financial structures of American businesses as they exist in our social framework vis a vis the international arena. We need to find ways to alter those facets of our system which inhibit or prohibit long term planning.

The Government should determine the kinds of mechanisms needed to encourage long term investment, and to deal with venture funds for high technology, high risk ventures.

5. The Government needs a focal point that can take the lead to foster productivity and quality improvements, to support creation of labor/management committees throughout the country, to support consensus building activities involving Government, industry, labor, and other segments of our economic system, and to disseminate useful information on "best practices" for productivity and product quality improvements.

These are some of the steps the panel members believed were important. There is much for everyone to do.

#### GAO STUDIES UNDERWAY OR PLANNED

Our National Productivity Group in the General Accounting Office has a number of studies underway which address some of the problems in private sector productivity, and we have others planned. I have attached to my statement a list of completed reports and planned assignments in the productivity area.

During the coming year, we will be working with the subcommittee staff to identify other areas we should be studying to clearly define the Government's role in the important area of productivity and product quality.

In summary, Mr. Chairman, the task before all of us is difficult. We know that Americans are creative; we know they can work together and we believe they want to work together in harmony to achieve common goals. Americans respond well to crisis when the challenge is clear.

We believe the crisis is here. The growing threat to our economic security, to our jobs, and to our standard of living is clearly a challenge of national proportions--one that we each have a stake in and one in which we each have a part to play.