

# Japan's Competitiveness in Industrial Technology

By Tanzawa Yoshio

The view that there has been a reversal in Japanese and American competitive strength in the automotive, electronics, and other industries in which Japan has held the lead is gaining more

credibility. No formula to overcome the Japanese recession, which has lasted four years, has come to the fore and one hears the pessimistic view that industry, which cannot bring itself to take drastic

U.S.-style restructuring and reengineering measures, will simply go under. It appears that Japanese corporate executives, who until just recently had been confident that they had overtaken



Photo: PRAP Japan, Inc.

The Chrysler Neon



Europe and the U.S. and had nothing more to learn from the West, have suddenly been struck by symptoms of waning competitive advantage and have lost confidence in their ability to compete.

It is true that the U.S. companies in the automotive and electronics industries have had a remarkable recovery. Take, for example, cars. The U.S. market share for Japanese models has steadily fallen, dipping well below 30%. The Big Three (Chrysler, Ford and General Motors) have put one low-priced "Japanese car killer" after another on the market and one has the feeling that the former myths surrounding Japanese autos have already become a thing of the past. The introduction of the Chrysler Neon dealt an especially heavy blow not just due to its low price, but also because of the reduced number of parts and novel design concept. In this, the Big Three have thoroughly researched Japanese manufacturing methods, reworking their usual work patterns and actively implementing the better facets of Japanese techniques, demonstrating success in broadly improved quality and cost cutting. As a result, the U.S. regained the top position internationally in the number of car production units manufactured in fiscal 1993 after a 15-year interval.

The situation is the same in the electronics industry. Last year a Japan-U.S. reversal also occurred in semiconductor sale shares, placing the U.S. back on top for the first time in eight years. Further, looking into details, U.S. companies shone in their specialties, microprocessors and other high-value added products, whereas Japanese firms concentrated on general purpose products such as DRAMs and, hotly pursued by South Korean manufacturers as well, faced a deteriorating situation. Moreover, in software, multimedia and other areas where future growth is forecast U.S. firms have taken an early lead and it goes without saying that they possess overwhelming competitive strength.

Changes are also occurring in the field of patents, where Japanese companies have monopolized the top position up to now. In the number of patents obtained in the U.S. in 1993, IBM, as a

U.S. firm, regained the top spot for the first time in eight years. Of the top 10 companies, four were U.S. firms and although this number was unchanged from the previous year two of those moved up in rank. It hardly needs noting that profitability has declined at Japanese companies and has continued to decline over several years as a result while the Big Three, Intel and other U.S. companies have continued to show high profits. This U.S. corporate return to form has been striking in many ways and, compared to the renewed confidence among U.S. corporate executives, Japanese managers have lost confidence during the greatest postwar recession.

### Why the U.S. recovery?

Alarms originally sounded regarding the weakening of U.S. industrial competitiveness with the January 1985 release of the report of the President's Commission on Industrial Competitiveness entitled "Global Competition: The New Reality" (referred to as the Young Report). Based on a request from then President Ronald Reagan, this 30-member commission, chaired by John A. Young former president of Hewlett-Packard, was composed of representatives from American industry, labor unions, government and academia and compiled recommendations regarding ways to improve U.S. competitiveness. To achieve the goal of boosting U.S. competitiveness, the importance of lowering capital costs, and promotion of labor force training and exports, along with technological renovations were emphasized. It was also recommended that support for manufacturing technology and protection of intellectual property rights be strengthened.

Special heed should be paid to a statement found with the report, "[saying] Americans would have to face the economic issue of competitive challenges for the next 10 years." The report stressed the importance of cooperation among industry, government and academia in order to achieve improved competitiveness, and stated this would require 10 years. Ironically, in the 10 years since the drafting of this report, the U.S. automotive, electronics and

other manufacturing industries have made a marvelous comeback. So, what exactly were the factors that led to this U.S. corporate recovery?

First, as noted in the Young Report, it is private companies that must confront the challenges of international competitiveness and, needless to say, this requires efforts by corporate management. In particular corporate executives who sought to become world leaders in product and manufacturing technologies referred to MIT's "Made in America" and other comparative studies of Japanese and U.S. industries, analyzing superior Japanese manufacturing technologies in detail, and actively employed these concepts to recover competitiveness.

Government can also be said to play a large role. Under the Republican administrations of Reagan and George Bush, "industrial policy" was a unacceptable phrase and comprehensive policies to strengthen competitiveness were not set forth. Even so, in addition to the promotion of technology transfers from the National Research Center to the private sector, doubling of the National Science Foundation's budget over five years and other competitiveness initiatives produced by President Reagan in 1987, Sematech was established under Pentagon leadership with the objective of developing leading edge semiconductor production technology. President Bush also named Vice President Dan Quayle to chair the Council on Competitiveness which he established and at the same time implemented, among others, the Advanced Technology Program (ATP) and Manufacturing Technology Center.

President Bill Clinton, however, for whom "change" was the keynote in the establishment of the first Democratic administration in 12 years, perceives that strengthened U.S. competitiveness is an essential element in the maintenance of national security and is aggressively devising industrial technology measures to boost economic strength. In particular he has aggressively developed technology policies, expanding the ATP and Sematech, launched the "New Generation American Vehicle Initiative





Competitive strength, such as in the semiconductor industry, is needed on the corporate level in order to compete successfully internationally.

Photo: Toyota Motor Corporation

However, all were published prior to this latest recession and on the whole rated Japan's competitiveness highly. For example, in "Key Technology Plan," a report released by the Pentagon in 1992, 11 basic technologies were compared by country and Japan was only considered to lag in two sectors, energy stockpiles and human interface.

Conversely, recent studies on the effects of the recession show, for example in "The World Competitiveness Report 1993" by IMD and The World Economic Forum, both in Switzerland, that Japan is seen to be the most competitive of the Organization for Economic Cooperation and Development nations overall, but by sector held the number one position in only three of eight sectors, down from sixth place in 1991 and number four in 1992. Further, the U.S. rose to the number two position last year from fifth place in 1992, results which were reported as "Japan—The End of a Miracle?" and "The USA Strikes Back." Again, a November 21, 1993 *New York Times* article points out that Japan lags behind the U.S. in the use of telecommunications technology, saying that, "It's Japan's turn to play catch-up."

## Too soon for conclusions

With the continuing strengthening of the yen, compounded with the effects of the lengthening recession and other factors, Japan's corporate competitiveness has declined over the past several years. It has been pointed out that, due mainly to the delay of deregulation and for other reasons, there are also sectors in which Japanese technological levels has great-

ly lagged behind those of other countries, especially those of the U.S., as can be seen in the information and telecommunications industries. However, this does not necessarily mean that Japanese companies will lose their competitiveness and it is undoubtedly premature to think that they will go under forever.

For example, the quality and performance of Japanese products have long been highly rated and physical productivity is also high. Japanese patent registrations in the U.S. and their cited counts are on the rise and this reflects Japan's technological capabilities. In dealing with the yen's recent abrupt rise, along with broad cost-cutting efforts, there have been attempts to expand overseas procurement of parts and materials and to shift the production of low value added items overseas, measures which appear to be bearing fruit. Moreover, Japan still retains the position of superiority in the high quality of its labor force, educational standards and high savings rate compared with other countries.

With an accurate understanding of these conditions and an appearance of results, Japanese companies should regain their confidence. As markets become more global, competition should become steadily more severe, but it is still too early to name the victors. The concept of national or national industry's competitiveness is now inadequate. It is individual companies that now face competitiveness; "countries" and "industries" have no direct relevance. On the corporate level, with global competition in the background, moves toward international tie-ups and overseas investments are in full swing. Under these severe conditions the decisions of top executives are becoming more important and international companies will continue to struggle for survival. It will undoubtedly be the best companies, regardless of nationality, which survive.

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(Clean Car Initiative)", and implemented the High Performance Computing and Communications Program. Some of these components were inaugurated by the Democratic majority Congress under a Republican administration, but President Clinton himself believes that "investment in technology is an investment in America's future," and his perception that government should play an active role differs greatly from previous administrations.

## International comparison

Following the Young Report, between 1989 and 1992, a variety of sectors in the U.S. published reports calling for strengthened competitiveness. For example, in addition to individual reports by the Pentagon, Commerce Department, Office of Science and Technology Planning, Board of Audit and Competitiveness Policy Council (established as a presidential and congressional advisory organ in accordance with the 1988 Trade and Competitiveness Act), the Council on Competitiveness, a private, non-profit organization, released reports referred to as the "New Young Report" and "Third Young Report." Several of these reports offered international technology comparisons.