

total world production in semiconductors and related materials was \$25 billion in 1986. By 1988 this area is forecast to grow to \$37 billion and by 1990 it is estimated at \$60 billion. Japan's stated goal is to become the largest supplier in the world in semiconductor and other microelectronics areas. At present, MITI predicts a 20 per cent growth rate in the semiconductor sector based principally on their use in VCRs, liquid crystal T.V., CAD/CAM, pseudo-digital T.V., foreign-language word processors, PBXs, video disks and other products.

There are five fundamental reasons why Japan's growth in electronics and microelectronics has been so impressive. First, Japan has successfully identified, acquired, applied and adapted technology from other countries through licensing agreements and technology transfer. Second, there is a unique cooperative arrangement in Japan between government, universities, banks and private companies which allows for the sharing of R&D, engineering and financial loads involved in developing advanced technology. This sharing is promoted as a result of the clear appreciation by all parties of the nation's aims and objectives for electronics and the methods by which they will be achieved. Japan has focused its resources on manufacturing excellence based on a thorough appreciation of the basics of the technology in use and available for use. Furthermore, it has clear plans to lead in innovation and development in many areas of new technology. The benefits from such an agreed-upon focus are compounded by the third factor - the existence of a relatively protected domestic market. This helps industry during the formative periods of technology and product development. Protection comes both from policies of government as well as from cultural, social and linguistic factors which make Japan's marketplace difficult for foreign companies to penetrate. The fourth factor is seen in industry's successful use of second-sourcing agreements for volume production of integrated circuits. Finally, there are direct financial benefits available in Japan to Japanese companies such as cheap loans for R&D and low/no interest loans for development of manufacturing facilities.

Despite the undoubted success of the electronics sector in Japan and the advantages enjoyed by business, this industry has seen extremely volatile times over the past two years. The basic culprit has been the rapid appreciation of the yen. The exchange rate appreciation from 1985 to 1986 had the effect of making the same item move in price from \$1.00 to \$1.41. This rate of appreciation has continued in 1987. While this would make a company with flat line sales appear to have grown over 40 per cent, in reality the "growth" rate in most cases was far less. In fact, many companies faced large production cutbacks.