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CHIP BOOM BUSTS

The manufacture of integrated circuits is a highly competitive business. As such, it remains vulnerable to unpredictable booms and busts. Despite record high shipments to U.S. customers in the third quarter in 1984, the predictive "book-to-bill" ratio fell to its lowest level since the Semiconductor Industry Association established the measure in 1978.

The book-to-bill ratio compares new orders with shipments. In October, chipmakers were taking orders worth \$67 for every \$100 in products shipped, compared to a record high of \$165 per \$100 a year earlier.

Mathematically, growing shipments push down the ratio because shipments form the denominator of the statistic. But the real implication of the book-to-bill shift is that component buyers, such as personal computer manufacturers, over-ordered over the last two years to avoid shortages of critical parts. Now, with computer sales below expectations, they are slashing inventories.

It is likely that semiconductor sales will continue to grow next year, but not nearly as fast as capacity. The resulting glut in many product lines will force down prices. Lay-offs, such as those announced by Texas Instruments in early December, will become more common.

CONSUMER ELECTRONICS

Foreign suppliers, particularly those based in Japan, are increasing their dominance of the American market in consumer electronics. This category includes stereos, audio and video tape recorders, and various combination units. (Televisions, unless part of multi-function consoles, are in a different classification. See Issue No. 47.)

The number of U.S. consumer electronic companies declined from 62 firms in 1981 to less than 60 in 1983. Domestic employment dropped in that period from 26,000 to 22,000. U.S. firms concentrate on expensive combination units and high quality audio equipment for radio and recording studios.

U.S. consumer electronics consumption jumped from \$3 billion in 1979 to \$4.6 billion in 1983. Imports rose from \$2.4 billion (80% of consumption) to \$4.2 billion (92%). Japan was by far the biggest supplier, doubling its shipments from \$1.5 billion worth of consumer electronics products in 1979 to \$3.1 billion in 1983. The explosion in video cassette recorder sales accounted for the bulk of the increase. ("Certain Consumer and Industrial Electrical Products," **Summary of Trade and Tariff Information**, U.S. International Trade Commission Publication 841, Control No. 6-4,5-21 [Supp.], July, 1984)

MILITARY ELECTRONICS

Defense Electronics magazine (November, 1984) has compiled its annual list of the top fifty American military electronics manufacturers. As usual, the list is topped by aerospace companies not generally viewed as electronics manufacturers. Here are the twelve firms with military electronics sales exceeding one billion dollars in 1983:

Company	Mil. Elec. Sales	Total Sales
Hughes Aircraft	\$4,444	\$4,938
Lockheed	2,600	6,400
Raytheon	2,582	5,937
Litton Industries	1,563	4,606
Honeywell	1,540	5,753
Rockwell Int'l.	1,540	8,098
General Electric	1,500	26,797
Sperry	1,365	4,910
RCA	1,299	8,977
Texas Instruments	1,236	4,580
Westinghouse	1,200	9,500
IBM	1,176	40,180

PRODUCTION WORKERS

Silicon Valley is home to a remarkably high concentration of high-tech professionals, but the Valley's reknowned electronics firms employ large numbers of poorly paid production workers as well. The **San Jose Mercury News** (November 5, 1984) quoted the head of a custom printed circuit board shop, who said, "We start people out at \$4.50 an hour. . . . Obviously no one can live on that in this area." A compensation manager at Intel agreed, "I hate to admit it, but I don't see how people do it."

The **Mercury News** cited a July, 1984 survey by Radford Associates, who reported that the average pay for "Assembler 1" was \$5.22 an hour, ranging between \$4.80 and \$6.72. The average for the "Assembler 4" classification was \$8.82, with a minimum of \$7.25 and a top

of \$10.46.

The **Mercury News** also checked into Census Bureau data on the Valley workforce. In 1983, 75% of the assemblers and 44% of the inspectors, testers, and graders were women. Racial minorities made up 61% of the assemblers and 42% of the inspector, tester, and grader classification.

In addition, the paper reported that numerous printed circuit board subcontractors are known to hire people at the minimum wage without benefits. Many hire "illegal" aliens and refugees. Joe Weber, human resources manager at the American Electronics Association told the reporter, "Many of the printed circuit board companies are pretty much sweat shops. . . . They pay what they have to to stay in business." Of course, AEA member companies, many of which have earned reputations for "progressive" employee relations and high pay benefits for professional, technical, and skilled workers, are the manufacturers which farm out their dirty work to the sweat shops.

SYNERTEK TO CLOSE

Synertek, Honeywell's merchant semiconductor subsidiary, plans to cease operations soon unless a buyer can be found. The company has laid off 1,000 of its 1,200 employees in Silicon Valley and nearby Santa Cruz, and it is retrenching most of its 500-strong assembly workforce in Singapore as well. Synertek also has an assembly plant in Bangkok, Thailand, and a design center in Munich, West Germany.

Synertek specialized in the manufacture of read-only memory (ROM) chips for video games, and its fortunes fell with the video game industry, particularly its major customer, Atari. An attempt to diversify came too little, too late.

Honeywell, a diversified computer, electronics, and instrument firm bought Synertek in March, 1978. Synertek was formed in 1974. (**San Jose Mercury News**, December 4, 1984)

ELECTRONIC WARRIORS

Many observers of the American electronics industry have suggested that the recent explosion in military electronics contracting will create a shortage of critical high-tech personnel in the civilian sector. However, personnel specialists in the electronic warfare industry appear worried about the converse.

Robert Brudno, a partner at Leon A. Farley Associates, an executive search firm, writes "There is a definite and insoluble shortage of technical and professional managers in the electronic warfare industry. One observer sums up the problem: 'We stopped making them' in the 1960s and 1970s. While the Old Crows [members of the leading electronic warfare fraternity] get older, the younger managers are not there to succeed them." ("We Stopped Making Them": The EW Manpower Gap," *Journal of Electronic Defense*, November, 1984)

Indeed, in Silicon Valley, numerous young engineers and programmers who felt trapped working for military contractors five or ten years ago are now part of the thriving civilian sector of computer, communications, and component production.

Brudno blames both the political stigma of working on defense and the financial rewards of commercial work for the shortage of electronic warriors. He says, "In the late sixties, young engineering students, like others on campus, were told that it was not *right* to work for military contractors." He also notes that government auditors would not look kindly upon the stock options and bonuses that civilian firms routinely offer when recruiting technical managers.

SEMI TARIFFS

Congress this year authorized the elimination of the U.S. 4.2% tariff on semiconductor imports, but the President is unlikely to take action until Congress corrects a typographical error in the legislation. The planned reduction grew out of trade negotiations with Japan, which also will drop its tariffs on integrated circuits and transistors.

U.S. firms expect to benefit directly from the tariff reduction. *Electronics Week* (December 3, 1984) reports that U.S. firms will save \$100 million in duties on chips assembled overseas.

Presently, American chipmakers pay duties only on the value added offshore. Under tariff items 806.30 and 807.00, parts which originate in the U.S., such as die from silicon wafers, are already exempt from duties. Ironically, the zero tariff will wipe out semiconductors as the leading product brought into the U.S. under 806.30 and 807.

The zero tariff is opposed by the U.S. International Trade Commission, which sees the reduction as a reward for offshore production, and by Micron Technology, a young, Boise, Idaho manufacturer of memory chips. Micron President Joe Parkinson says that Japanese semiconductor firms will use the reduction to cement their dominance of the U.S. memory chip market, and he told *Electronics Weeks*, "Most SIA [Semiconductor Industry Association] members have conceded defeat [to Japan] and are after anything that will reduce their business costs." Parkinson argues that Japanese tariff reductions will do little to open the Japanese market up to U.S. firms, since non-tariff barriers will remain.

JAPAN - U.S. SCHOOLS

For many years U.S. companies have funded scientific research on American university campuses, and they have reaped the benefits of the partnership. Now, reports **Business Week** (September 24, 1984), "Despite increasingly strident calls to keep U.S. technology out of the hands of foreign competitors, an alliance is forming between cash-strapped American universities and Japanese manufacturers. Nearly every major Japanese corporation - from NTT to Sony, Mitsui, and Toyota - is funding research at one or more American campuses. The Japanese are deeply involved in virtually every aspect of U.S. technology, from the development of advanced computers at Stanford University to diesel engine design at Princeton University."

One influential American high-tech executive, billionaire David Packard, endorses the practice. He told **Business Week**, "The Japanese are very much aware they benefit greatly from U.S. research. It's about time we found some way for them to help pay for it."

INFLATION

The basic subscription rate for the **Global Electronics Information Newsletter**, which has remained US\$5.00 per year since we first published it in 1980, will rise to US\$10 per year effective January, 1985. There will also be a slight additional increase in subscriptions to Canada and Mexico, to cover actual postage costs. The new rates are:

United States: \$10.00

Canada and Mexico: US\$12.00

Overseas: US\$15.00

We also plan to expand the coverage of the newsletter to include reports on the use of computers and semiconductors, in addition to design and production issues. Furthermore, at some time early in 1985 we hope to enlarge the format as well.

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