
GLOBAL ELECTRONICS

INFORMATION NEWSLETTER

#1

June, 1980

NEW PHILIPPINE ZONES

Some of the lowest labor costs in Asia, a vast supply of female, high school-educated, English-speaking and unemployed labor, and attractive government incentives have made the Philippines an ideal investment climate for foreign (mostly American) semiconductor manufacturers. The first foreign firm to open a subsidiary in the Philippines was Intel, which moved there in 1974. Since that time such companies as National Semiconductor, Advanced Micro Devices, Signetics, Zilog, Motorola, and Raytheon have followed its lead. All of these firms have located their plants in the Metro Manila area, close to Manila International Airport. The most recent wave of arrivals, however, are setting up shop in two new Export Processing Zones established by the government in provincial cities, as part of its effort at decentralization of industry. Fairchild and TMX (a Timex subsidiary) have constructed new assembly plants in the Mactan Export Processing Zone in Cebu City. The zone is right next to an international airport. In Baguio City, Texas Instruments is starting up operations at a plant in the Baguio Export Processing Zone (again right next to an airport). The TI plant is expected to employ 3000 people eventually.

DOMESTIC ASSEMBLY SUBCONTRACTOR ESTABLISHED

Interlek, the San Francisco Bay Area marketing arm of Dynetics, the independent Philippine semiconductor assembly subcontractor, has established another assembly subcontractor, Indy Electronics. The new firm, however, will conduct "highly sophisticated integrated circuit assembly" in the U.S., in the California Central Valley agricultural town of Manteca, some 60 miles east of Silicon Valley.

The company expects to start up operations by September, 1980, and plans to employ 300-500 workers this year. *Northern California Electronics News, May 12, 1980*

CONTRIBUTIONS WELCOME

The Pacific Studies Center considers the "Global Electronics Information Newsletter" to be a vehicle linking together activists and researchers throughout the world. If you have data, bibliographical information, or organizing reports that you believe would be useful to others, please send them in.

RE-IMPORT DATA SHOWS NEW TREND

Most semiconductor production in non-Japan Asia consists of the assembly of U.S. fabricated components in plants wholly owned by U.S.-based companies. Most of these assembled semiconductors are re-exported back to the U.S., where they are tested and marketed, or in some cases, marketed directly following testing in Asia. Most of these re-exports qualify for special treatment under tariff code items 806.30 and 807, which, in essence, exclude from duty the U.S.-produced content of the assembled goods.

The U.S. Commerce Department has

recently made available data on 806.3 and 807 semiconductor imports to the U.S. This data, collected in 1977, gives a detailed picture of the international flow of semiconductors and their sub-components. [*U.S. Semiconductor Industry*, U.S. DOC Industry and Trade Administration, Office of Producer Goods, September, 1979. (GPO Stock No. 003-609-00327-0)].

In reviewing this data, one should recognize two drawbacks. First, the industry has been growing rapidly in many places. These figures greatly underestimate production

TABLE 1.

Exports of Semiconductors by Selected
Less Developed Countries, 1976
(millions of dollars)

| <u>Exporting Countries</u> | <u>Total Exports</u> | <u>Exports to U.S.</u> | <u>806/807 Portion</u> | <u>Exports to Japan</u> | <u>Exports to Other Third Countries</u> |
|----------------------------|----------------------|------------------------|------------------------|-------------------------|---|
| Singapore | 339.5 | 237.0 | 197.1 | 4.3 | 98.2 |
| Mexico | 102.5 | 100.7 | 83.4 | - | 1.8 |
| Korea | 298.6 | 164.8 | 148.3 | 47.9 | 85.9 |
| Hong Kong | 126.2 | 90.6 | 71.2 | 5.2 | 30.4 |
| Taiwan | 197.7 | 68.6 | 36.9 | 17.5 | 111.6 |
| Malaysia ^{1/} | na | 206.0 | 192.2 | 16.5 | na |

^{1/} Complete data for Malaysia was not available.

Source: BIC Country Market Surveys, Electronic Components, 1978; Japan Tariff Association, computed by Ministry of Finance, 1976.

TABLE 2.

Comparison of U.S. and Foreign Contents In
Imports Under TSUSA Items 806.30/807.00, 1977
(\$000)

| Country | Total 806.30 & 807.00 | Foreign Content | Percent | U.S. Content | Percent |
|--------------------------|-----------------------------|--------------------|---------|-----------------|---------|
| Malaysia | \$269,936 | \$120,313 | 45 | \$149,623 | 55 |
| Singapore | 234,616 | 108,958 | 46 | 125,659 | 54 |
| Korea | 208,971 | 81,413 | 39 | 127,558 | 61 |
| Taiwan | 72,720 | 33,286 | 46 | 39,434 | 54 |
| Hong Kong | 63,885 | 35,895 | 56 | 27,989 | 44 |
| Mexico | 63,286 | 21,785 | 38 | 41,501 | 62 |
| Philippines | 52,182 | 16,579 | 32 | 35,603 | 68 |
| Total seven countries | 965,596 | 418,230 | 43 | 547,366 | 57 |
| Other countries | 154,525 | 85,031 | 55 | 69,494 | 45 |
| TOTAL | \$1,120,121 | \$503,261 | 45 | \$616,860 | 55 |

Source: Bureau of Census, Foreign Trade Data Printouts/TSUSA
806/807

in the Philippines, for instance. Secondly, the value of the imported semiconductors does not represent the final price. Before marketing, the costs of research and development, overhead, and sales, as well as profit, must be added to the value.

The Commerce Department report notes the rise and decline of foreign content, as shown in Table 3 (column g). The authors suggest three explanations of the rise from 1973 to 1976: 1) rising wage levels abroad; 2) the availability of locally produced parts in some countries; and 3) the availability of parts from third countries.

More significant is the 1977 drop in foreign

content, which, if it continues, may lead to a leveling, or even drop, in Asian semiconductor employment. As the complexity of circuitry increases, more value is produced in the early wafer-fabrication stage. Furthermore, the more complex circuits require much more complex, computerized final testing, which is usually done in the United States. There does not appear, however, to be a substantial shift of assembly back to the United States, despite the gradual automation of that process.

Industry pioneer Robert Noyce, Vice-Chairman of Intel Corporation, told Congress early this year [Subcommittee on International

TABLE 3.

Imports of Semiconductors Under the Provisions of
 TSUSA Items 806.30 and 807.00, By Year, 1970-77
 (thousands of dollars)

| <u>Year</u> | <u>a</u> <u>Total</u> <u>Imports</u> | <u>b</u> <u>Total</u> <u>806.30/</u> <u>807.00</u> <u>Imports</u> | <u>c</u> <u>b/a</u> | <u>d</u> <u>U.S.</u> <u>Content</u> | <u>e</u> <u>d/b</u> | <u>f</u> <u>Dutiable</u> <u>Value</u> | <u>g</u> <u>f/b</u> |
|-------------|--|---|------------------------|---|------------------------|---|------------------------|
| 1970 | 157,464 | 139,071 | 88% | 78,409 | 56% | 60,662 | 44% |
| 1971 | 179,092 | 152,204 | 85% | 81,255 | 53% | 70,949 | 47% |
| 1972 | 330,277 | 249,717 | 76% | 127,346 | 51% | 122,371 | 49% |
| 1973 | 618,613 | 410,207 | 66% | 185,637 | 45% | 224,570 | 55% |
| 1974 | 961,338 | 681,844 | 71% | 310,359 | 46% | 371,485 | 54% |
| 1975 | 802,687 | 617,276 | 77% | 291,718 | 47% | 325,558 | 53% |
| 1976 | 1,107,399 | 877,648 | 80% | 400,908 | 46% | 476,740 | 54% |
| 1977 | 1,352,317 | 1,120,121 | 83% | 616,860 | 55% | 503,261 | 45% |

Source: Census Bureau Foreign Trade Data Printouts/TSUSA 806/807

Finance of the Senate Committee on Banking Housing, and Urban Affairs, January 15, 1980]:

As progressively higher thresholds are reached by the U.S. semiconductor industry in product and process technology, the tendency appears to be a decrease of foreign employees as a percent of total employees. This trend is enhanced by the increased use of automatic bonding equipment in the offshore assembly plants. Intel, for instance, more than tripled total corporate employment from 1975 to 1979, but the proportion of foreign employees dropped from a peak of 41% in 1976 to 30% in 1979 even though a higher percentage of sales were abroad and a higher percentage of our total employees were foreign sales and marketing personnel.

Intel, which currently employs about 14,000 worldwide, may not be entirely representative of the industry, however, since it concentrates on microprocessor production, one of the most sophisticated branches of the semiconductor industry. Other semiconductor operations (when separated from non-semiconductor activities of the same companies) tend to employ

larger percentages of employees abroad. However, the trend cited by Noyce is probably general.

Numerous other factors may reverse or accelerate this trend, including the increasing value to size ratio in integrated circuitry, increased transportation rates, and the shifting of productive processes abroad as the technology matures.

TABLE 4. INTEL EMPLOYMENT

| | Yearly Employment Increase | Foreign Employment |
|------|----------------------------|--------------------|
| 1975 | -- | 36% |
| 1976 | 58% | 41% |
| 1977 | 11% | 39% |
| 1978 | 34% | 33% |
| 1979 | 31% | 30% |

Source: Intel Corporation

SEMICONDUCTOR THEFT PROBLEM

Electronic News (May 12, 1980) reports a growing problem for Asian manufacturers of semiconductors, the theft of parts by employees.

Most semiconductor plants are set up to take advantage of cheap labor, found in Malaysia, the Philippines, and Thailand, but it's exactly in those areas that cheap parts have magnified value.

"If a worker takes one memory circuit that's worth maybe \$6 U.S., on the market he can sell it for a dollar or so. Well, that might be a half-day's wages for someone out here, so it's easy to get cooperation from the factory," pointed out the [anonymous] dealer.

Electronic News also reports that the companies claim that the theft rate is "below dangerous levels."

NEW CONTACTS SOUGHT

If you know of people or groups who might wish to receive this newsletter, please send their names and addresses to PSC.

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CHEAP BRITISH LABOR?

Asian governments are not alone in their attempts to offer cheap, docile labor to the American semiconductor industry. Recently, Sir Keith Joseph, Conservative Minister of State for Industry in the U.K., visited Silicon Valley seeking manufacturing investment in Great Britain.

Joseph pointed out that skilled worker salaries are lower in Britain than in the U.S. *The Peninsula Times Tribune* (June 3, 1980) reported:

Knowing that there are no unions in Silicon Valley companies and few anywhere in American electronics, Sir Keith pointed out that non-union shops are legal in England. Many U.S. companies there operate that way and still enjoy excellent relations with their employees, he said.

David Packard of Hewlett-Packard and Robert Noyce of Intel joined Joseph's presentation, praising the British business climate. Hewlett-Packard operates a manufacturing plant in South Queensferry, Scotland, and Intel has one in South Wales. In addition, the following American semiconductor manufacturers operate plants in Britain: Applied Materials, Fairchild, and Texas Instruments in England; National Semiconductor and Signetics in Scotland; and Siliconix and ITT semiconductor in Wales.

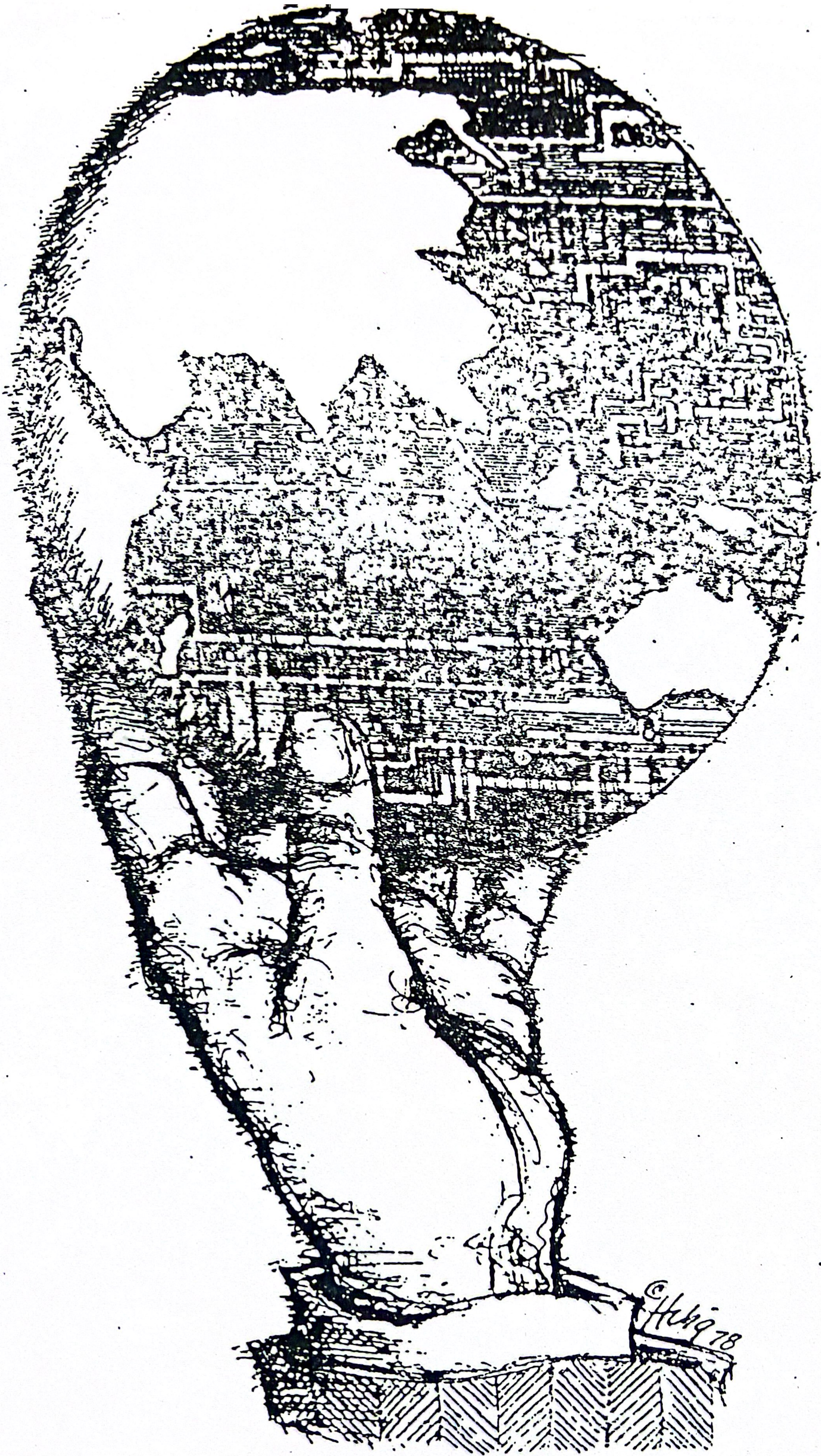


FIGURE 1. AFRICA

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