Japanese steel firms: investing less and producing more than U.S.

by Leif Johnson

If any Wall Street steel industry analyst applied the same measure to Japanese steel companies that he does to American ones, he would claim that the Japanese companies are heading for disaster.

In the past 20 years Japanese companies taken together have spent 25 percent less on capital equipment—new factories and machinery—than U.S. companies. From 1957 to 1976 U.S. firms spent $34.8 billion but the Japanese spent only $26.9 billion.

In addition, Japanese companies have been forced by their national and municipal governments to spend even more on pollution control devices than U.S. firms. Between 1971 and 1976 U.S. companies spent $1.67 billion but Japanese firms were forced to lay out $2.16 billion in costs that are universally agreed to be burdens on the companies and often unnecessary for the health of the population.

But if anything might crush Japanese steel, our Wall Street analyst would argue, it is wages. Japanese wages have been soaring. Today's Japanese steel worker's wage, expressed in dollars, is 18 times higher than it was in 1956. It is eight and a half times higher than it was as late as 1966 and has increased 46 percent in constant dollars since 1976.

Real take-home wages for a Japanese steel worker with a family of four (with fringe benefits, and taxes excluded, and adjusted for inflation) are only $1.25 less than an American steelworker's, and the pattern of almost continuous wage hikes shows no sign of weakening.

Worse, from the analyst's standpoint, Japanese tradition that almost carries the weight of law prevents the steel employer from dismissing workers even when production demands do not require the full complement of the workforce. Japanese steel today is running at about 65 percent of capacity, the result of the demand collapse after the 1973 Oil Hoax price increases. While capacity usage fell 30 percent, steel employment fell only five percent. The companies kept their employees on.

Will high wages kill the Japanese steel industry? Quite the contrary. High Japanese wages, like the historically high wages in the United States, will produce a workforce capable of even more rapid application of new technology. As Nippon steel explained in a 1981 publication, "[Nippon's] new integrated steelworks can more easily attract young workers who are highly motivated and who have a high degree of adaptability to new working systems." Conversely, crumbling U.S. wages are symptomatic of the American industry's collapse that could wipe out one half of existing production. Within five years, under present economic and industry conditions, the U.S. share of world steel production could slip below 10 percent—from the nearly 50 percent 30 years ago.

How the Japanese are different

The Japanese steel industry is by far the world's most technologically advanced and efficient. Japan's 1976 ability to produce a ton of steel 30 percent cheaper than the U.S. has been boosted to a 40-45 percent cost advantage by 1981.

In 1980 Japan produced 136.4 tons of steel for every 1000 manhours while the United States produced only 96.7 tons in the same labor time. This is all the more remarkable since Japan's yield was only 38.6 tons per 1000 manhours in 1964, when the U.S. was producing 81.2 tons in that same period.

If the Japanese corporations have invested a quarter less than their U.S. counterparts, have spent more on non-productive pollution devices, and have paid steadily rising wages while keeping workers on the payroll despite badly depressed sales, how did Japanese steelmakers become 40 percent more productive than U.S. producers?

Hans Mueller and Kiyoshi Kawahito in their 1978 publication, "Steel Industry Economics" explain the following:

"The most important cause of the Japanese industry's future advantage stems from the outstanding capital efficiency it achieved in the 1960's. The industry constructed a greenfield capacity in excess of 100 million tons, two-thirds of its total production potential in 1976, at a cost of only about $200 per capacity ton. In

technology, layout, and equipment scale, this capacity is equal or superior to that of Bethlehem's Burns Harbor works and is in most respects comparable to the mill U.S. Steel considered putting up at Conneaut, Ohio. As regards scale economies, several modern Japanese plants are superior to even future U.S. greenfield plants. . . . "

The Japanese companies' policy was the precise opposite of U.S. companies'. Instead of replacing individual furnaces, rolling or stamping mills, or other parts of a plant, as the American corporations did—and continue to do—the Japanese built entirely new plants, seizing every opportunity to take advantage not only of the most modern technology and economies of scale, but of plant location to minimize transport costs of raw materials and of shipping the final product.

Thus, between 1957 and 1976, when the present Japanese steel buildup was nearly completed, Japanese companies had built 100 million tons of "greenfield" steel producing capacity. That means they disregarded the location of their old facilities, locating the new plants on new sites or "greenfields" to produce maximum efficiencies. In that same time span, the United States installed only 11 million tons of greenfield capacity. The Conneaut, Ohio mill mentioned by Mueller and Kawahito was scrapped by U.S. Steel two years ago.

As the Japanese companies built greenfield mills they incorporated the 1960s and 1970s technologies of basic oxygen furnaces, giant ore carriers, computer monitoring and operating, and continuous casting.

Eighty-two percent of Japan's steel works—compared to the U.S.'s ten percent—have deepwater (90 foot draft) harbors. Thus, Japanese companies could reduce the cost of iron ore from $17 per ton in 1957 to $16 per ton in 1976 while the cost in the U.S. tripled from $9 to $27 a ton.

Almost all Japanese continuous casting mills—mills that reduce ore to iron, produce steel, and shape it in one process—are computerized. Computers monitor both the steel making energy use, quality control, and, supplies and inventory in the plants, resulting in 25 percent labor cost reductions. No American mill is similarly automated.

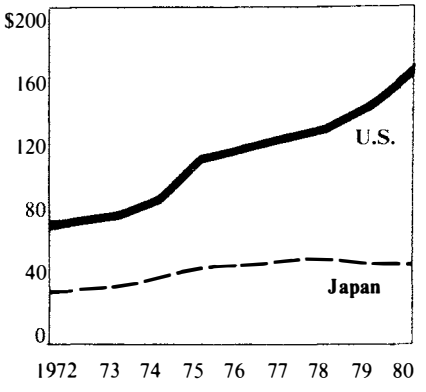
Perhaps most remarkable is that the Japanese companies were able to turn part of the more than $2 billion pollution control expenses into further development of greenfield plants, and reduction of energy use in existing facilities. By capturing waste heat from air and water borne effluents, companies presently use 30 percent less energy per ton of steel produced than American companies. Further, because Japanese steel plants are much larger—the smallest of Japan's top five is a quarter larger than America's biggest—installation of pollution control and heat-recapture equipment was far more efficient.

Technology shapes accounting

A large efficiency in steel making is effected by using continuous casting. Instead of making raw steel and then later reheating it to make shaped or specialty steels, the two processes are combined, saving a substantial amount of fuel. In the summer of 1981, Japanese steel manufacturers were producing 70 percent of their steel by continuous casting, which accounts for about half of the 30 percent higher energy efficiency of Japanese steel production relative to U.S. production. Less than 20 percent of U.S. steel is made by continuous casting—a figure that is lowest of all advanced industrial nations, even Great Britain.

While certain technologies and operating procedures

Labor cost per ton of steel
(U.S. dollars/ton)

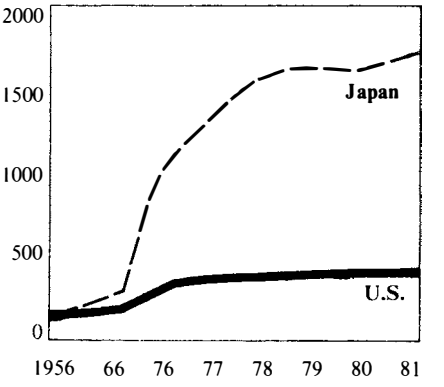


Japanese productivity offsets cost of rapidly rising wages

While Japanese wages increased six times faster than U.S. steel wages, labor costs fell to one-fifth those of the United States.

Sources: "Steel Industry Economics" by Muller and Kawahito (1978) for 1956 and 1966; U.S. Department of Labor Bureau of Labor Statistics for 1976-81; *Steel Industry Quarterly*, June 1981.

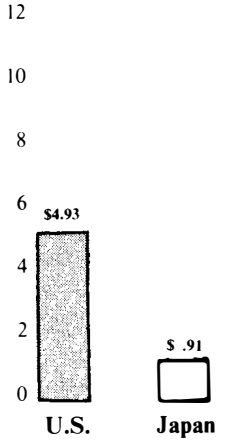
Index of Japanese and U.S. steel wages
(1956 = 100)



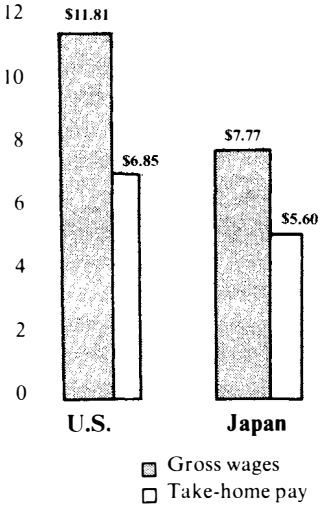
Japanese hourly wages closing in on U.S. rates

In 1966 Japanese steel wages were 18% of the U.S. level. By 1981, Japanese wages were 66% of those in the U.S., but take-home pay was 82%.

Nominal steel wages in 1966
(U.S. dollars/hour)



Gross and real steel wages, 1981
(U.S. dollars/hour)

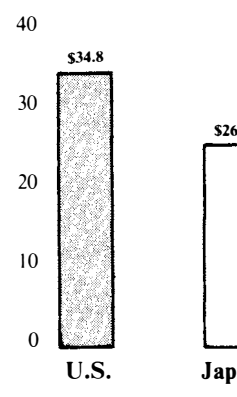


Sources: "Steel Industry Economics," by Muller & Kawahito (1978) for 1966 figures; U.S. Bureau of Labor Statistics for 1981 figures. All 1981 figures are adjusted for 1976-81 inflation. 1981 Japanese gross pay does not include company-paid housing and transportation subsidies. Take-home pay is minus fringe benefits and taxes for a family of four.

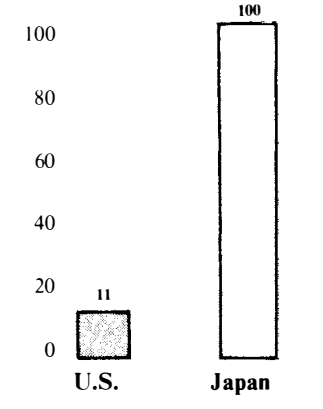
Japan built modern capacity with less investment

Japanese steel investment was 25% less than U.S. investment, but Japan built nine times the "greenfield" capacity.

Total steel investment, 1957-76
(billions of current U.S. dollars)



"Greenfield" capacity installed, 1957-76
(millions of tons)



Source: "Steel Industry Economics" by Muller and Kawahito (1978).

may be considered proprietary information by a particular company, there are no real secrets about how the Japanese steel industry works. It pours back as much capital as it earns and can borrow to achieve "state-of-the-art" technological application and economies of scale. Unlike American companies, they do not treat the computer as a device for simply processing office paper, but as a necessary element in industrial control, inventory and processing, and communication.

Japanese emphasis on greenfield plants shows a healthy disregard for what American accountants call "sunk costs." Japanese companies will replace a plant if it becomes technologically obsolete—no matter how new it is or how much it costs.

American steel management's fixation on "protecting" the value of existing assets by continuing to produce with older plants even when they become obsolete, results in costly piecemeal investment in plants in which the oldest portion of the mill continues to determine the overall productivity. By applying the accounting mentality of landlords who expect higher and higher rentals from aging property, the management of American steel corporations has dropped the U.S. share of world steel production from 50 to 20 percent since 1950.

Ironically, the Japanese have felt strong competition from the modern plants their manufacturers have built in Taiwan and Korea. The Japanese have therefore advanced their production to a much higher mix of specialty steel. In 1981, 40 percent of all Japanese exports to the United States consisted of high cost specialty steels including oil pipeline and related equipment.

Nippon Steel and other Japanese companies are still anxious to sell their technology. Nippon has been selling technical information and procedures to U.S. Steel since 1979 and has 1,200 of its engineers and scientists engaged overseas.

Now, the American steel industry faces a crisis even worse than obsolescence. There may be widespread shutdowns of basic carbon steel manufacturing.

According to the Morgan bank-run *Journal of Commerce,* the U.S. Department of Commerce will make a distinction between U.S. steel manufacturers that are "competitive" and those that are "non-competitive" in ruling on domestic producers' charges of foreign company dumping and unfair subsidization.

The *Journal* claims that the actions brought by specialty steel and the basic steel manufacturers in December and January against foreign imports may result in portions of basic steel manufacturing deemed "non-competitive" and therefore not eligible for any form of protection against foreign imports. Thus the suits brought by the basic steel producers could become the basis for scuttling a major portion of U.S. steel-

making.

That the companies would actually do such a thing is not altogether surprising. Less than one-third of U.S. Steel's assets are in steel-making, and a mere 8 percent of profits came from steel. The company has diversified into ship chartering, real estate, timberlands, African uranium and copper mining, office buildings, financing, and oil.

The company's investment in the last five years, which has nearly equaled that of Nippon Steel's, the largest Japanese manufacturer, has been so wasteful that the company is in fact "non-competitive" not only with Japanese makers but with many European mills as well.

Union aiding capacity shutdown

What is remarkable is that the United Steel Workers union which represents most workers in basic steel—but not in specialty steel which is largely non-union—has joined the specialty steel makers action against European steelmakers. A leading strategist for the union explained that the union believes there is "too much steel being produced in the world and all countries have to cut back."

"We didn't get any satisfaction from the Economic Summit meeting held in Brussels in December even though (Secretary of State) Al Haig was there. So we are taking these suits to force them to cut back along the lines of the Davignon Plan." The Davignon Plan, named for Count Etienne Davignon, one of Europe's leading post-industrial-society advocates and the head of the European Community's Steel Committee, would enforce Depression-level reductions in European steel production.

The union also defends the diversification of the steel companies out of steel. Jack Sheehan, the United Steel Workers top Washington lobbyist says that "diversification has helped the steel companies survive. Sheehan claims that the $6.7 billion that U.S. Steel spent to acquire Marathon Oil Company were "non-steel funds." Ed Hojinacki, a Chicago area UAW vice-president, says diversification doesn't worry him because, he asserted recently, U.S. Steel "has pledged to invest $350 million in a new rail mill here and to add continuous casters."

If the steel union lends uncritical support to the industry's plans for basic steel shutdowns, who will move to change the policies of 20 years of ruinous mismanagement? That question must be answered soon. Presently one-third of the steel workforce is unemployed while the nation's fourth largest producer, Republic Steel, says that its Supplemental Unemployment Benefits fund could be bankrupt by as early as the end of February.

U.S. Steel: a profile

Steel production for America's largest steel firm is hardly its largest concern. U.S. Steel's 1981 finished-steel production was 16.6 million tons, a half a million less than at the time of World War I. Only one-third of its assets and an eighth of the firm's profits now come from steel production. In 1980 U.S. Steel's profits from non-steel enterprises were $419 million; from steel production, $58 million.

Plans for U.S. Steel's $2 billion greenfield plant at Conneaut, Ohio have been scrapped; and the company refuses to reveal the now low percentage of its steel production which is continuously cast.

Created in 1902 when J. P. Morgan and John Meyer wrested control of Carnegie Steel, the firm is still under Morgan control. As of 1979, U.S. Steel's board of directors included David M. Roderick, a member of the International Council of Morgan Guaranty and a director of the Morgan-connected Aetna Life insurance company; John M. Meyer, Jr., son of the turn-of-the-century Meyer and chairman of the Directors Advisory Council of Morgan Guaranty; Robert Scrivener, chairman of Northern Telecom (an affiliate of the Morgan-controlled AT&T), commander of the Knights of Malta and supporter of the Communist Chinese; and William McChesney Martin, former Federal Reserve Board chairman and a director of Royal Dutch Shell.

John deButts, chairman of AT&T; John Filer, chairman of Aetna Life, and Cyrus Vance.

In 1970 U.S. Steel increasingly borrowed on its land assets and invested in high-yield paper. Thirteen percent of the firm's 1981 first-quarter profits came from reinvesting cash from borrowing and liquidations of land including $700 million worth of coal lands sold to British Petroleum-Sohio. Late in 1981 U.S. Steel used some $1.5 billion in ready cash, not to invest in steel production, but to buy Marathon Oil from United Brands' organized-crime-linked Fisher.

U.S. Steel has received over a billion dollars in federal tax subsidies by lease-back arrangements and by running half-billion-dollar quarterly book loses. Despite the extensive subsidies, the firm has complained about foreign company steel "dumping" and steel company "subsidization" by their governments and the firms' "dumping" steel onto the American market. U.S. Steel brought a $1.2 billion suit against the Japanese in 1977, which it dropped a year later.