Coordinating Market Forces: The Anatomy of Investment Decisions in the Japanese Steel Industry, 1945-1975

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With a legacy of legal cartels, protectionism and government intervention in private economic activity, Japan endorses a different system of competitive capitalism from that which prevails in the United States. This research examines the effect of Japan's competition policies on the development of Japan's postwar steel industry. In this paper, I describe my findings on the Japanese system of industrial conduct and use them to elucidate some of the important issues surrounding the subject of competition and company strategy in the history of the US steel industry.[1]

Through its antitrust policy the United States endorses the basic notion that arm's length transactions are the route to maximizing efficiency. The logic is that rivalry between firms drives companies to minimize costs, innovate and invest in the most efficient means of production. Therefore, in the US, firms in the same business are prohibited from colluding on pricing, production or investment decisions.

In sharp contrast, Japan never bought Adam Smith's notion of the supremacy of the market mechanism. Japan has allowed--even encouraged--cooperation among rival firms. Although, Japan maintained an anti-monopoly

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[1]This research is concerned with the basic carbon steel industry which accounts for 85 percent of all steel produced and is composed mainly of large, integrated steelmakers, not minimills or specialty steel producers.

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law, originally imposed upon the country by the Allied Powers in 1947, most Japanese considered this policy to be part of the Allies' reparation strategy or a means of ensuring that Japan could never again wage war. Rather, the espoused route to efficiency in Japan has been through government-limited competition and politically sanctioned cartels, joint ventures and horizontal mergers.

Yet in the postwar decades, Japanese manufacturing industries led the world in growth and productivity. Despite, or maybe because of, its legacy of government-sanctioned inter-firm cooperation, Japan developed the most modern, low-cost steel industry in the world. By the mid-1970s, Japanese steel producers had attained a cost advantage of between $61 and $120 per ton over American and European producers [2, 61].

On the other hand, despite an antitrust law intended to promote rivalry and efficiency, the US steel industry became the world's high cost producer with old, debilitated equipment and steadily declining market share. By the late 1970s, more than 50 percent of US steel capacity stood idle and the industry's net income had fallen to zero. The question, of course, was how had this happened?

To begin with, Japan's cost advantage stemmed, in large part, from the industry's modern facilities and full exploitation of economies of scale. Of course, Japan's rapid GNP growth and low labor costs also benefited the steel industry. But industry analysts and researchers agree that neither Japan's steadily rising steel demand nor low labor costs fully account for the industry's cost advantage. In addition, Japanese steel firms had huge, modern plants, modern basic oxygen furnaces, continuous casting and computer controlled manufacturing processes [3, 72; 4, 5].

In 1977, the US and Japan had equivalent steel capacity. But Japan's capacity was in 19 integrated plants while US capacity was spread over 44 facilities, 40 of which were smaller than the generally accepted minimum efficient scale in steelmaking--six to seven million tons. Eleven of Japan's 19 plants were equal to or larger than the minimum efficient scale. As reflected in Table 1, Japan's ten largest plants averaged more than twice the size of the US's ten largest plants. The Fukuyama plant, Japan's largest, had the capacity to produce a staggering 17.6 million tons a year, more than twice what any US steel plant could produce.

Japanese steel firms invested in these large, modern facilities in a market environment that differed from that of the West in three critical ways. First, the Japanese steel market was closed to foreign competitors. Protectionism aided the newly developed steel companies in part by buying them time to build experience and expertise in steel production. But, more importantly, ex-

TABLE 1
Crude Steel Capacity, 1977-1978
(millions of net tons)

JAPAN		UNITED STATES	
Fukuyama (NKK)	17.6	Indiana (Inland)	8.5
Mizushima (Kawasaki)	14.0	Gary, IN (USS)	8.0
Chiba (Kawasaki)	10.0	Sparrows Pt., MD (Bethlehem)	7.0
Kimitsu (Nippon Steel)	10.5	Great Lakes, MI (National)	6.6
Wakayama (Sumitomo)	10.2	E. Chicago, IN (Laughlin)	5.5
Kashima (Sumitomo)	9.9	Burns Harbor, IN (Bethlehem)	5.3
Yawata (Nippon Steel)	9.9	S. Chicago, IL (USS)	5.2
Oita (Nippon Steel)	9.3	Fairless, PA (USS)	4.4
Nagoya (Nippon Steel)	8.3	Cleveland, OH (Republic)	4.4
Kakogawa (Kobe)	7.1	Wierton, WV (National)	4.0
TOTAL (10)	106.5		58.9

Source: Japan data from IISS, Steel Industry in Brief: Japan (1977);
US data from IISS Commentary: Steel Plants USA 1960-1980.

cluding foreign producers from the market limited supply and protected Japanese companies from the risk of overcapacity and price cutting. By limiting supply, Japan could ensure steelmakers that they would have high, steady throughput and, thereby, minimize operating costs.

Second, the Japanese steel industry coordinated domestic capacity decisions to prohibit excess supply from entering the market. From 1950 until 1964, the government, through the Ministry of International Trade and Industry, monitored new steel capacity investment decisions, ensuring that new supply would be balanced with estimated new (domestic and export) steel demand. After 1964, the steel companies together assumed responsibility for ensuring that new investments would balance capacity with demand to avoid cycles of overcapacity, rising production costs, and market instability. In this way, Japanese steel companies were protected from the risks inherent in industries with high fixed costs and cyclical demand.

Third, the Japanese steel industry's system of allocating new capacity rights was based on a company's market share and its perceived efficiency, as defined by its technology and productivity. Consequently, to obtain the right

to build new capacity companies were expected to possess state-of-the-art technology in existing facilities. Thus, companies were directed away from short-term profit maximization and toward increased productivity. Companies raced to outrationalize each other, developing the most technologically sophisticated steel plants in the world. During the 1960s and 1970s, Japanese steel firms removed 150 open-hearth furnaces, more than half of which had been constructed since 1950, and replaced them with the more efficient basic oxygen furnace. Companies also rationalized relatively new blast furnaces. From 1969-1979, the number of blast furnaces under 2,000 cubic meters fell from 44 to 26. In one dramatic case, a Japanese steel company, Nippon Kokan, actually razed a fully operational 5.5 million ton facility and replaced it with a new 6 million ton, ultra-modern plant [5].

In this way, the Japanese steel industry developed through a unique combination of government-sanctioned concerted action and intense inter-firm rivalry. Through protectionism and a capacity investment cartel, firms were protected from the risk of overcapacity and price cutting. Yet through a capacity allocation system that was linked to efficiency, firms were driven to invest continually in modern means of production. This combination of high, steady throughput and continuous investment is the route to success in steel.

In many ways, this pattern is the mirror image of the US steel industry's postwar history. According to most researchers, the US industry's competitive decline can be traced to its inadequate investment in plants and equipment [1, 37]. Moreover, since at least the 1930s, US steel company managers were obsessed by the fear of overcapacity. Such fear was well-founded: for the better part of two decades, from 1919 until 1940, the US steel industry had operated at between 30 and 70 percent of capacity. In this context, the steel industry's caution is hardly surprising. Over time, US steel companies had ceased to invest aggressively in new technology or production processes. Instead, firms were managed with an eye to minimizing the risk of losses during a market downturn.

In an environment in which coordinated decision-making was illegal, managers became preoccupied with stabilizing prices and costs. US managers quite rationally eschewed large capital investments and turned their attention to maximizing short-term profits. Compared to the market dynamic in Japan, there is simply nothing whatsoever in the US system of competitive capitalism to motivate a rational manager with functioning equipment to invest continually in upgrading long-run productivity.

Of course, other factors also affect US managers' investment decisions. In steel, rates of return appeared to be falling and alternative investments looked more attractive to steel companies. Likewise, capital and labor costs

continued to rise. Consequently, protection from imports and coordinated capacity decision alone may not have rescued America's ailing steel industry.

Nevertheless, Japan's success in steel was engineered with economic tools that most Western economies reject out of hand: protectionism, cartels and interfirm agreements. These policies together produced rapid growth, economies of scale and technological efficiency rather than a conspiracy against the consumer. In the US, where explicit interfirm negotiations were prohibited, companies minimized their risk by resolutely avoiding increased investment. This contrast between the US and Japanese systems of competitive capitalism suggests that--either for steel or for other industries--growth and efficiency might be achieved through new and, as yet, untried methods of industrial organization.

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