

THE FUTURE COST COMPETITIVENESS OF THE AMERICAN STEEL INDUSTRY

Technological developments in iron and steelmaking already in existence are capable of greatly increasing the cost competitiveness of the U.S. steel industry.¹⁹ In the making of iron alone, technological progress already made by the Bureau of Mines is capable of reducing the cost of ironmaking \$2.50 a ton.²⁰ The introduction of the basic oxygen furnace (BOF) will lower operating costs including unit labor costs substantially.²¹ The competitors of the U.S. however are not standing still in technological development. To the contrary, in steelmaking they have a substantial lead.²² The prize, however, will go to the national industry which most rapidly invests in plant and equipment embodying the newest technology. Here is a battleground where the U.S. industry has a substantial advantage in its access to the U.S. capital market if it chooses to exercise it. However, as long as the steel industry relies principally on self-financing of new investment, it is tying its strongest competitive hand behind its back.²³

In the longer run as European capital markets grow in strength, the U.S. steel industry will have to attain and maintain technological superiority in order to maintain its competitive position, although the closing gap between foreign and domestic steel wage costs should offer some assistance. To achieve technological leadership will require a sharp increase in the surprisingly low industry and federal expenditures on research and development made by the steel industry.²⁴

The transportation barrier will not offer permanent protection to the American steel industry. The important role of ocean freight rates, particularly those for finished products, in determining cost competitiveness can be seen on Table 4. If the present declining trend of ocean freights continues, the cost competitiveness of American steel industry may be further threatened. This again highlights the necessity for cost saving, particularly in the direction of increasing labor productivity.

The possibilities for substantial cost reductions are already in existence, as previously mentioned. The introduction of the best existing blast furnace technology can reduce operating costs \$2.50 a ton and the introduction of BOF furnaces another \$5.00 a ton. The BOF furnace is capable of increasing labor productivity in excess of 300 per cent over present methods of production as demonstrated by the actual operating experience of a major steel producer.²⁵ The BOF gives the American industry the possibility of changing the composition of its inputs in a manner to greatly reduce the ratio of labor to other factor inputs. Therefore rapid introduction of the BOF will improve the international cost competitiveness of the American industry by economizing on the factor input in which it is least cost competitive. This advantage to the American industry will occur even as foreign producers increasingly adopt the BOF processes because the new production function will make greater relative use of our lower cost inputs (materials and capital) relative to our higher costs inputs (principally labor), whereas it will have the opposite effect on foreign producers. Similar comments to those made about the BOF also apply to the introduction of continuous casting and other presently available innovations.²⁶ However careful attention must be paid also to management costs which have risen faster than wage costs, 3.8 per cent compared to 2.5 percent per ton for the period 1957-1966, respectively.

¹⁹ For example, a study made by L. F. Rothschild & Co. in 1965 of Republic Steel indicated that savings of \$23 a ton could be made if the most modern technology were introduced in all phases of steelmaking. *Steel Imports*, p. 135. Cf. C.A. Lovgren, op. cit.

²⁰ Based on operation of the Bureau of Mines, Bruceton experimental blast furnace.

²¹ It has been estimated the BOF can reduce operating costs by approximately \$5 a ton. See W. C. Ruechel and J. W. Irwin, op. cit., p. 62. Also, U.S. Bureau of Labor Statistics, *Technological Trends in Major American Industries* (Washington 1966), p. 74.

²² In 1966, Japan produced 63 per cent of its steel with the BOF process. Europe 24 per cent and the United States 25 per cent. (*Quarterly Bulletin & Steel Statistics for Europe*, various issues).

²³ The U.S. steel industry financed approximately 85 per cent of its gross investment from internal funds compared to the 61 per cent average for all manufacturing. See Council of Economic Advisers, op. cit., p. 60.

²⁴ Of the 15 industries for which the National Science Foundation computed the ratio of company financed research and development expenditures (excluding government funds) to sales, in 1964 steel was 12th followed only by textiles, lumber and food products. The steel industry spent only \$.60 of every \$100 of sales on research and development, compared to \$1.90 for all manufacturing industry. The steel industry received less government funds for research than any other major American industry. National Science Foundation, *Basic Research, Applied Research and Development in Industry*, 1964. (Washington, June 1966), p. 62.

²⁵ *Hearings*, op. cit., p. 762.

²⁶ Cf. *Steel Imports*, p. 135.