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Mini-Mills - A new growth path for the U.S. steel industry ?

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INTRODUCTION

For generations of scholars the U.S. steel industry has represented the prototype of an oligopoly. It has been the perennial subject of anti-trust investigation by Congress, the courts, and economists. The captains of the industry took pride in having overcome the "chaotic" nature of competitive markets. Indeed, steel prices have been extremely predictable.

Today, the steel journals tell of price rebates that exceed 25% of the list price. The cry for protectionism turns our attention to imports as the culprits of the industry's loss of price-setting power. However, students of the U.S. steel industry show that in fact there are two steel industries, one that tries to cling to oligopolistic practices, and one that is highly competitive (Barnett and Schorsch 1983, Acs 1984). The latter is credited with having captured almost 20% of the U.S. steel market. This sector, consisting of the so-called mini-mills, is expected to continue onward and upward. It is believed that it's future prospects will alter the structure of the U.S. steel industry permanently. In contrast to foreign steel producers, who outperform the old indigenous industry on the basis of almost identical structural and technological principles, the mini-mills challenge the large vertical integrated steel mills with a new concept of steel making. They are small, start from scrap, use electrical furnaces, and are supposed to defy the lure of economies-of-scale in favor of the benefits of flexibility.

These findings have not gone unnoticed among those concerned about the future of American manufacturing. The rise of the mini-mills is seen as an indication that competition speeds the process of industrial adjustment. Hence government policies should be directed to create a climate that is conducive to small, innovative companies. Current policies that defend the status quo (Barnett and Schorsch 1983: 286) or policy proposals that call for a government-financed industrial development bank to fund declining industries are rejected on the grounds that they perpetuate poor profitability, lagging competitiveness, and persistent decline (Reich 1983, Thurow 1984, Acs 1984). Furthermore the rise of small firms is hailed by both the right and the left as an opportunity for U.S. citizens to regain some control over their life from centralized institutions (Schumacher 1973, Gilder 1981, Naisbitt 1982, Boyte 1984). Piore and Sabel (1984) go even so far as to suggest that this apparent trend towards flexible, small scale production encourages yeoman democracy.

In this paper I want to explore whether the example of the U.S. steel industry warrants such sweeping conclusions. I will try to provide a framework of history and a narrative of institutional and political change that, according to Heilbroner, is necessary "to endow their [Piore and Sabel, ChS] examples with larger significance" (1985: 9).

My findings cast doubt on the proposition that the encouragement of mini-mill growth represents a viable alternative to strategies of state-led modernization or stabilization of the industry. Rather the mini-mills seem to contribute to a further destabilization of the U.S. economy.

In developing my argument, I will start with a description of mini-mill technology. This will be followed by an

indepth analysis of the factors that facilitated mini-mill growth. Next I will describe the state of the U.S. steel industry in the 1980s and the limits to unqualified mini-mill growth. Finally, I will summarize my findings.

The Rise of the Mini-mills

A comprehensive definition of mini-mills has been put forth by Barnett and Schorsch (1983). They distinguish between mini- and integrated mills along three dimensions: technology, product line, and market.

> "Mini-mills produce carbon steel by melting down scrap in electric furnaces .... This **technology** eliminates the need for the coke ovens and blast furnaces found in integrated plants. In almost all mini-mills, the steel produced in electrical furnaces is then continuously cast into forms suitable for rolling into finished products. This eliminates the need for primary rolling mills.
>
> They have generally been located in smaller regional markets, endowed with local sources of scrap and isolated by transportation costs from competition with other producers or scrap purchasers.
>
> They concentrate on relatively simple, low-value commodity products such as wire rod, concrete reinforcing bar, and merchant-quality bars and shapes." (Barnett and Schorsch 1983: 85).

This description fits nowadays about 44 companies with 63

works in the United States (Nemeth 1984: 257).[1] In 1984, their total net capacity came close to 22.5 million tons a year, up from about 4 million tons in 1960 (Hogan 1983: 396). Their market share rose from 3% in 1960 to around 20% in 1984 (New York Times 9-23-84). The mini-mills' competitive edge also translated into higher-than-average profit rates. Between 1970 and 1979 the annual average net return on assets for a sample of mini-mills was 7.17%, i.e. almost twice as high as for the integrated steel industry that displayed an average of 3.74% (Wyman 1980: 4). The mini-mills' lead also continued through the recession of 1981-1983, when some mini-mills managed to stay profitable although the industry's capacity utilization rate dropped below 50% (Iron Age 9-6-85, Schorsch 1984: 31). How can their success be explained?

Technology accounts for much of the mini's success. The core of a mini-mill is its electric furnace. Invented by Sir Williams Siemens and first put to commercial use by Heroult in France it found, however, no wide spread use at first in the United States. In abscence of hydroelectical power in the major industrial areas the costs of electricity made the electric furnace not a very attractive proposition. Furthermore, in the eyes of American management its operation required initially too much high-level technical supervision (Rosegger 1984: 542). Eventually its suitability for making specialty steel was discovered. Soon electric furnaces became the standard equipment of specialty producers (ibid 550).

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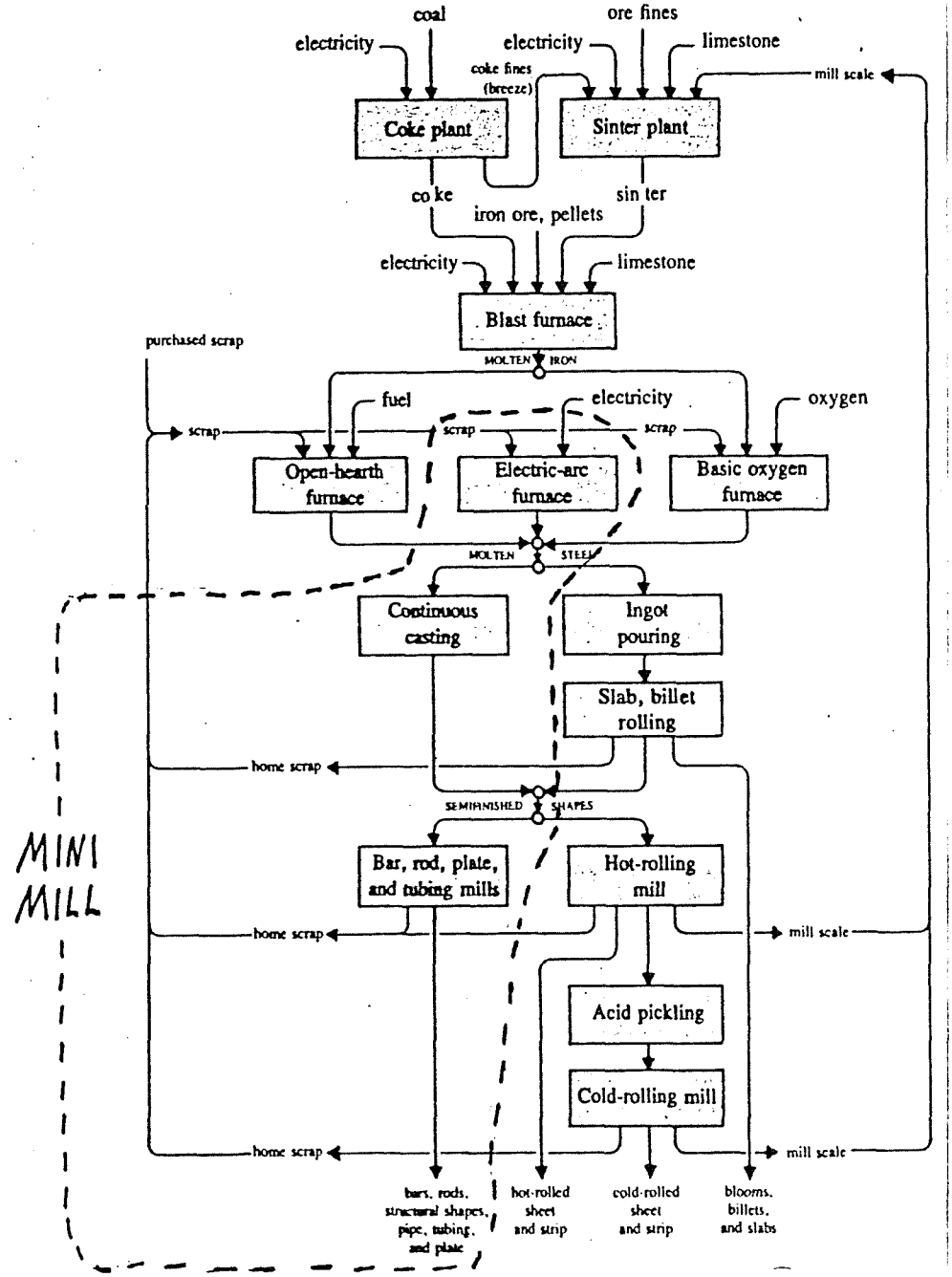
[1] There exist some differences in numbers between following authors due to the diverse nature of the mini-mill sector. As of 1984, Markusen (1985: 149) counts 54 plants, whereas Acs (1984: 98) states the number of 61 mini-mills. I choose Nemeth because he published in the respected AISE Year Book.

Figure 1

Steel Production Processes



Note: A Circle at a junction indicates alternatives

Source: U.S. Council on Wage and Price Stability, Report to the President on Prices and Costs in the United States Steel Industry, 1977 (COWPS, October 1977), p.14.

In the U.S., the electric furnace was first used for the production of carbon steel by Northwestern Steel and Wire. This technology was forced upon Northwestern by the National Recovery Administration (NRA) who had issued a prohibition against integrated capacity expansion. Nevertheless, the firm continuously improved this process[2] as did some European companies[3] so that by the late fifties the cummulated technical refinements had made the electric furnace competitive with the open hearth and the basic oxygen technology for certain low carbon products (Barnett and Schorsch 1983: 86).

Mainly, the benefits of the electric furnace derive from the fact that it does not require all the steps prior to steelmaking, except for scrap preparation. The integrated steel-makers were well aware of these benefits. By 1982 they owned 85 electric furnaces with a combined capacity of 20.5 million annual tons. However, since most of this capacity was either for traditional specialty steel production and for large-scale carbon melting (ibid), the integrated producers did not exploit the versatility of the electric furnace technology to the fullest extent possible. This was taken up by the mini-mills, who by 1982 owned an aggregate capacity of about 22.5 million tons and 124 furnaces, coming close to the traditional users of this technology, the specialty producers, whose 100 furnaces had a combined capacity of 30 million tons (Hogan 1983: 396).

Before mini-mills were able to maximize the benefits of the electric furnace another piece of technology had to become available, the continuous casting process. "This process

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[2] Northwestern is being credited with a major breaktrough in electric furnace technology that made the use of higher voltage possible (United Nations 1979: 37).

[3] Especially in Italy, because of the lack of coking coal and iron ore (Harris 1983: 203).

bypasses several steps in the production of steel, as it eliminates pouring steel into ingot molds, stripping the molds from the ingots, placing the ingots into soaking pits to develop an even temperature and, finally, the primary rolling stage by wich the ingot is rolled down into a semifinished form. [Instead, ChS], the steel is tapped from the furnace into a ladle and then poured directly from the ladle into the continuous caster. It solidifies as it passes through and emerges as a slab, billet or bloom" (Hogan 1972: 42). While in operation additional significant savings occured in form of lower manning levels and improved yields.[4] The mini-mills' fast adoption of continuous casting was facilitated by a) the easier application of this technique to small billet sizes (Hogan 1972: 42, Sharp 1983: 101) and b) the advantages of "greenfield" versus "brownfield" modernization, i.e. it is easier to install a continous caster while a mill is under construction than in an existing facility (Rosegger 1980: 157).

The combination of electric furnace and continuous casting led to substantial savings in capital investments. The capital costs per ton of steel shipment capacity varied for several mini-mills between $154 and $320 in 1978/1979, while estimates for integrated carbon steel plants on greenfield sites ranged from $956 to $1,514 and for roundouts of existing facilities from $520 to $880 (OTA 1980: 315). While part of this great difference is due to a different product mix, capital costs per ton of wire rods, the typical mini-mill product, remained twice as high for integrated steel works (Barnett and Schorsch 1983: 175f). It also translated into lower labor requirements.

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[4] Continuous casting reduces the amount of internally circulating steelworks scrap therefore increasing by approximately 10% the yield of saleable steel from liquid steel (Headworth and Walker 1983: 23).

By 1980 a mini-mill by far outdistanced its integrated counterpart for the production of wire rod: instead of 6.45 men hour per ton (MHPT) they required only 3.51 MHPT (ibid 119). The causes for this difference in productivity were mainly to be found in the lack of primary processes, but also in the advantages of specialization and higher capacity utilization.

To compensate for the lack of scale economies mini-mills specialized in a limited range of products. Most of the mills produced mainly rebars and rounds, and may roll one or more products. Few companies offered more than five different steel makes (Nemeth 1984: 259). The specialization reduced down-time for tool adjustment (Hersch 1984: 85), required less operating skills (Hogan 1971: 1533), and saved on sales and engineering staff (Barnett and Schorsch 1983: 92). On the average skilled tradesmen represented only about 20% of the hourly workforce of a mini-mill. In comparison to integrated mills, more maintenance work was contracted out. However, especially at the non-union mills, fewer trades classifications were common. To some extent this implied that the skilled trade workers had to be more versatile. Due to the more modern equipment, especially in the early seventies, production workers at mini-mills were exposed to more computerization of the work process (Interview with mini-mill workers). Nonetheless production work at mini-mills did not require more skills. In fact, for the early seventies Hogan claimed that "three or four skillful key men can train the remainder crew, which should not be more than 150 men, in a relatively short time" (1971: 1532). Thus the mini-mills appear to be rather a case of rigid specialization than of flexible specialization.

Furthermore higher operating rates can compensate for scale economies. Unlike the integrated sector, where excess

capacity is maintained in order to protect market share for the peak demand, the limited scale of mini-mills is not designed to meet potential market demand but current demand (ibid 193).[5]

In sum, mini-mills enjoy the best of both worlds: their technology allows for high labor savings, thus increasing their capital labor ratio, and yet their capital unit costs are in absolute terms much lower than for integrated works. In 1983, these advantages, together with lower hourly wages and with more freedom to discipline workers (see below) enabled mini-mills to produce a ton of wire rod for $ 284 instead of $ 393 at an integrated steel work (Barnett and Schorsch 1983: 95).

However, these technologically induced cost advantages did not emerge overnight. In fact, labor productivity in mini-mills compared unfavorably with integrated wire rod production in 1958 and only slowly did mini-mills gain their current impressive lead (Barnett and Schorsch 1983: 119). For the full development of the technological potential of mini-mill steel making the mini-mills had to prove themselves successively as a viable alternative to integrated steel mills. While the incremental technological progress reinforced the viability of the minis step by step, their success also critically depended on "environmental" factors.

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[5] The data of Paine Webber does not warrant such mini-mill euphemism: While in bar steel mini-mill showed consistently higher operating rates than the major mills, in wire rod/wire steel mini-mills exceeded the major mills only beginning in 1979 (Marcus and Kirsis 1984: X-8-7/8, X-8-14/15).

The Growth Path of Mini-mills

The emergence of the mini-mills in the U.S. appears to be closely related to the sun-belt migration of U.S. industry, as mini-mill capacity expanded most dynamically in the South (Markusen 1985: 156). This relation, however, is not coincidental because mini-mills were well suited to thrive in the socio-political climate of the South.

Lacking a tradition of mass-production industries the South was governed by a set of social regulations that differed markedly from those in the North or in Europe. As a result of the federal structure of the U.S. and an implicit understanding with Northern industrialists (Domhoff 1972), Southern politicians were able to exempt their states from many social provisions of the New Deal legacy, e.g. Social Security rolls were closed to blacks, local autonomy in administering relief programs led to persistently lower levels of welfare payments in the South than in the Northeast, and the passage of right-to-work laws in the wake of the Taft-Hartley Act in 1947 undercut the previously enacted pro-labor legislation such as the Wagner Act (Cloward and Piven 1972).

The resulting availability of a large and docile labor pool, a low level of taxation, and a high responsiveness to infrastructural requirements made the South attractive for Northern capital in the 1960s. While the closing of the productivity gap challenged the latter's monopolistic market control from abroad, rising working class strength and limitations exercised by the existing capital stock[6] undermined their ability to increase productivity faster than real wages (Aglietta 1979: 203). Furthermore, social

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[6] For a discussion of the restraints exercised by the physical structure of Northern Cities, see Mingione 1981, chpts. 2-3, Gordon 1975.

movements, aided by favorable labor market conditions, were able to extract rising social expenditures (Bowles et al 1983: 84-94). Therefore, production capacity was transferred to the South (Bluestone and Harrison 1982; Cobb 1984).[7]

Unlike many manufacturing industries the integrated steel mills, for a variety of reasons, did not capitalize on the advantages the South offered. First, the slow market growth in the U.S. did not warrant the addition of new integrated capacity. Secondly, the structure of the Southern boom did not require sheet steel for which integrated technology is best suited. Thirdly, the indivisibility of the integrated production process forestalled any dispersion of parts of the production to the South, and fourthly, it would have been impossible to avoid unionization.[8]

This inability of the integrated producers to take part in the migration to the Sunbelt opened up opportunities for steel making on the basis of a different technology as well as organizational principle, the mini-mill:

(1) The low capital requirements of mini-mills allowed outsiders/foreigners to invest into mini-mill steel making capacity at little risk. Without exposure to United Steelworkers at their home plants they were in a better

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[7] Of course, much economic activity in the South is related to its internal growth (esp. the construction and service industry). See, Jusenius and Ledebur 1976: 24.

[8] The automobile industry had opened many parts plants in the South, though with limited success. Their vulnerability to the pressure of the union in their old locations prevented them from making full use of the subordinate position of labor in the South. In fact by the end of the seventies the UAW had succeeded in organizing almost all Southern plants of Detroit's Big Three (Katz 1985: 123).

position to organize the labor process according to their perceptions.

(2) Their product lines met the specific steel demand of the South, e.g. concrete reinforcing bars and light structural steel for the booming construction industry.

(3) The possibility of locating mini-mill steel making capacity close to a regional market minimized transportation costs (shielding them from the more distant competitors in the North). The geographical mobility also allowed to select locations with weak labor markets and to threaten with relocation in the event that labor becomes demanding (maximizing management authority).[9]

The mini-mills' labor relation also differed markedly.[10] Less than half of the mini-mills and perhaps about half of their employees were organized by the USW (USW memo 1984).[11] Among the non-union mills wages varied considerably. At McDonald Steel in Youngstown the workers got only half of the USW wages (Business Week 2-20-84), whereas at Nucor in profitable years workers could earn yearly incomes through high bonus payments that may have exceeded the yearly income of an organized steel worker (Kirkland

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[9] E.g. Nucor had build its plants in non-urban areas on the theory that people there would be more willing to work hard and less willing to unionize (Sease 1981). However, even in the unionized mini-mills average compensation, including benefits, tends to be some 25% lower than in the integrated mills (Business Week 1-23-84).

[10] According to Hersch labor accounts for only 1.9% of the costs per ton (1984: 101). However, this number probably refers only to direct labor costs. Indirect labor costs may be included under the heading of "maintenance". For the U.K. the labor content is put at 6.5% (McBroom 1983: 52).

[11] According to Schneider the USW might have underestimated the total number of employees in the mini-mill sector (1985: 13).

1981: 44). While, thus, at Nucor wages were tied to profitability (in 1982 wages were down by 20 to 25% compared to 1981), Chaparral did not pay production bonuses (Economist 4-2-83: 76). However, even in the unionized mini-mills average compensation, including benefits, tends to be some 25% lower than in the integrated mills (Business Week 1-23-84).[12]

Furthermore, in the open-shop mini-mills management retained the right to allocate work among its workforce freely. Many mini's entertained familial, or paternal, relationships with their workforce. At one of the most successful mini-mill firms, Nucor, the principle of lifetime employment had been formulated (Barnett & Schorsch 1983: 93). Less stringent workrules were also supposed to prevail at many of the unionized plants.[13]

In comparison, the conditions of the North were less favorable for the development of mini-mills. In the absence of lower labor costs and higher labor discipline as well as lower transportation costs the other advantages of mini-mills compared less favorably to the integrated mills' economies-of-scale. Nevertheless, the availability of cheap scrap allowed also for the existence of Northern mini-mills.

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[12] USW official contest that wages are that much different from the basic steel contract (Sease 1981).

[13] To my knowledge there has not been done any study of the work process in U.S. mini-mills. It would be interesting to compare the industrial relations found in those mills with the practices of the Italian Bresciani mini-mills.

The Mini-mills' Expansion Under the Major Mills' Umbrella

While the South provided the socio-political framework for mini-mill expansion, their rise also depended on developments in the integrated sector:

The expansion of any electric furnace capacity, whether under integrated or mini design, relied upon the increased availability of economically priced scrap, which constitutes the main feedstock of electric furnace operations as well as the most costly input of electrically produced steel (at least 50%, Hersch 1984: 101).[14] More scrap became available as the integrated sector's levels of scrap consumption grew disproportionally to increases in raw steel production, because of the transition from open hearth (which can use a scrap charge of more than 50%) to the basic oxygen furnace (for which slightly over 30% was used on the average in the past, Wyman 1980: 9). The loss of a significant part of the U.S. market to imported steel and steel products added a whole new supply of scrap (ibid 14). Lastly, new modern scrap fragmentation processes increased the yield from scrap metal recovery (Headworth and Walker 1983: 26). The net result was that "although volatile, scrap prices, on a relative basis, have trended lower when compared with iron ore, pig iron, and steel prices" (Wyman 1980: 19).

Although the relative decline in scrap prices facilitated also the use of electric furnaces by the integrated producers, mini-mills were better positioned to capitalize on this trend. They were able to locate in areas where

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[14] Though methods have been developed to directly reduce iron ore as arc furnace feedstock, their high energy demand have made them not yet economically competitive with scrap in the U.S. (Headworth and Walker 1983: 40).

scrap was in abundant supply and therefore available at lower prices (Marcus and Kirsis 1984: 4-9).

Theoretically, the integrated mills could have responded by establishing their own mini-mill divisions, but apparently they were unable to manage mini-mills successfully.[15] Two reason may account for their inability:

First, capital spent on mini-mill capacity would have imperiled their investment in existing facilities. Operating considerably below capacity for most of the years in the past decade, the construction of mini-mills would have been at the expense of the profitability of the integrated capacity. However, in the early 1970s integrated firms spent substantial sums for the modernization of their facilities, which competed directly with the mini-mills. These investments proved to be failures, as the large wire rod mill of the United States Steel Corporation (USS) at its South Chicago Works demonstrated. Lacking cost-competitiveness it had to be closed only a decade later (Barnett and Schorsch 1983: 95). Though some investment opportunities existed, the wrong choices were made.

Secondly, there is every reason to believe that the integrated companies would not have succeeded in excluding the union from their mini-mill ventures or that they could have bargained for a more favorable contract. Without the benefits of managements' control on the shop-floor these mini-mills would have been less competitive.

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[15] In the past several of the integrated producers have considered the possibility of constructing a mini-mill or aquiring an existing one. In fact, Armco has built a mini-mill and bought another one, but apparantly without much success, since it soon sold those facilities again. As for now, none of the major integrated producers operates a mini-mill (Hogan 1984: 111f; Barnett and Schorsch 1983: 85).

Another source of mini-mill growth, which was directly related to the integrated mills, was the oligopolistic pricing policy in steel. Substantial price increases on the part of the integrated mills during the fifties were one of the factors that attracted entry on the part of mini-mill producers (Barnett and Schorsch 1983: 84).

When the pricing rigidities of the integrated sector started to fade at the end of the sixties, the implementation of import quotas (Voluntary Restraint Agreement, VRA, of 1968) maintained the general price levels.[16] Because the foreign producers reacted with a shift to higher priced items and with a substantial increase in prices for wire rods (Hogan 1972: 59), the mini-mills became the principal beneficiaries of the integrated firm's push for protectionism. In the first two years after the enactment of the initial VRA the import share of the mini-mill markets declined drastically from about 25% to about 14% (Barnett and Schorsch 1983: 89), while at the same time the total market shares of foreign producers were reduced from 16.7% only to 13.8 (AISI).[17]

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[16] With the exception of Ayoub (1978) studies on the effect of the VRA come to the conclusion that the VRA led to higher domestic steel prices (Takacs 1975, Jondrow 1978, Crandall 1981).

[17] For the years 1973 through 1979 a correlation analysis performed by Schneider, however, seems to confirm to some extent the ability of mini-mills to replace imports. For the relation of change in imports and the dependent variable, change in local mini-mill production, she calculated a mildly strong correlation (regression coefficient of $r^2=.33$, 1985: 29). By 1981 the import share of the mini-mill markets was supposedly down to 9 percent (Barnett and Schorsch 1983: 89). In 1984, however, foreign producers supplied more than 33 percent of domestic wire rod consumption (own calculation based on AISI).

Furthermore, the mini-mill sector was less affected by the introduction of anti-pollution laws. The lack of coke ovens and blast furnaces allowed for much lower environmental expenditures (Barnett and Schorsch 1983: 250).

Finally, the mini-mills may have profited from the lack of a cohesive national steel policy. Public support for the modernization of the steel industry would certainly have gone to the integrated mills, where the political power of some of the largest U.S. corporations combined with the strength of a highly organized industrial union as well as with the local and state governments whose tax base depended on the steel industry.[18] Naturally, this reinvigoration of the integrated mills with public money would have strengthened their competitive position vis-a-vis the mini-mills. Protectionism on the other hand did not lead to levels of investments that would have assured continued technological leadership for the integrated mills, and on top of it, the import quotas seem to have protected the mini-mills more than the integrated mills. Therefore, the U.S. apparently followed unintentionally a strategy of fostering the growth of a new, highly efficient way of steel making.

A comparison with Europe seems to support this argument. The growth of the very efficient mini-mills in Italy, the so-called Bresciani, is retarded by the Eurofer cartel that allocates production quotas on past production volume (Busch 1979: 54). In Germany, the mini-mill pioneer Korf blamed his bankruptcy in 1983 on the quota system and the tight alliances between the integrated producers and the major West German banks (Der Spiegel 1982 #52: 59, 60; Engert und Wolf 1983: 12-17).

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[18] The absence of mini-mill representation in the Steel Tripartite Advisory Committee (DoL, 1980) suggests their minor role in any steel policy deliberations.

Limits to Minimill's Growth

The U.S. steel industry did not participate in the economic recovery after the severe recession of the early 1980s. During this period U.S. steel production fell from 121 million tons in 1981 to 75 million tons in 1982. Yearly production went up only to 91 million tons in 1984 and declined slightly to 87 million tons in 1985 (Iron Age 1-3-1986: 59). A considerable part of the increase in demand was taken up by foreign imports, which boosted their market share from 18.9% in 1981 to 26.4% in 1984 (AISI). Although capacity was reduced by 23 million tons from 1980 t0 1985 (Iron Age 12-6-1985: 26B2), the rate of capacity utilization, which had fallen to a post-war low of 48.2% in 1982, averaged only 64.7% in 1985 (Iron Age 1-3-1986: 60).

Under attack from foreign steel companies and domestic minimills, the major mills were no longer able to sustain its long cherished price discipline. In their efforts to recoup market shares the integrated producers, including USS, engaged in heavy price cutting. While business has been won and lost (McManus 1986: 68), the net effect was "that the entire steel industry has been pricing its products below cost by a margin of more than $7.4 billion" (Iron Age 8-15-86: 93). The price problems in the steel industry have been compounded by a number of steel mills that have used chapter 11 bankruptcy protection to reduce their financial obligations towards their stockholders and financial institutions. Companies like Wheeling-Pittsburgh, McLouth Steel, Phoenix Steel and others have also won substantial wage, fringe benefits, and work rule concessions that brought their labor costs well below the industry's average. Sales lost to such companies are said to have cost the remaining integrated companies 2.4 percentage points in market share in the first quarter of 1986 (Miles 1986: 25). The July 1986 chapter 11 filing of the second biggest U.S. steel producer, LTV, is expected to

intensify the cut-throat competition (ibid; Iron Age 8-15-86: 93).

As the practice of price-cutting shows, the major mills have joined the forces that undermine the former elements of oligopolistic stability. For example, since 1983 a number of new steel companies have been formed by operations spun off from integrated mills (Iron Age 6-20-1986: 69). The most prominent case represents the Weirton Works of National Steel Co., which was sold to its employees. The new enterprise, Weirton Steel Corp. negotiated immediatly for lower wages and fringe benefits (Valdiserri 1986: 32). It set thereby the pattern for all the other spin-offs. These sales of only marginally profitable operations relieved the companies from pension fund obligations and severance payments that were associated with plant closings (Iron Age 6-20-1986: 69).

This splintering of the industry stands in marked contrast to the common practice of further consolidation in capital intensive industries. One reason for this change in strategy seems to rest on anti-trust enforcement. Although the Reagan administration had eased some of the rules (Williamson 1986), in March 1984 the Justice Department successfully opposed a merger between USS and National Steel (Hogan 1984: 30-32, 56). In the same year it consented to the merger between LTV and Republic Steel only under the condition that the new company divest itself from a number of plants (New York Times 11-28-84). Another reason may be that further consolidation would only result in marginal efficiency gains. While a merger could reduce overhead costs, only a new state-of-the-art integrated steel mill would create major scale savings. The declining demand for steel, however, did not warrant a new mill. Rather the retirement of existing capacity was needed. Consolidation was certainly not a prerequisite for plant

closings. Lastly, it could be argued that mergers did not address labor costs, which the industry believed was its mayor problem.

The abandonement of multi-employer bargaining[19] in 1985 indicates that the companies believed that individual bargaining increased their bargaining strength vis-a-vis the USW (New York Times 5-4-1985). Individual bargaining was encouraged by the practice of the USW to grant concessions to the weaker companies. The outcome of the contract negotiations of 1986 has justified this strategy. While the USW balked at granting the financially stronger USS a comparable favorable contract, LTV received substantial concessions (New York Times 7-31-1986).

The decentralized bargaining arrangements extended also to the plant level. Exploiting the fear of plant-closings, the steel producers succeeded in pressuring many union locals to accept sub-standard local contracts (Business Week 4-8-86: 26). Bethlehem Steel, for example, revamped its bar, rod, and wire division along mini-mill concepts. It abandoned the old coke ovens and blastfurnaces, and installed a large 1.2 million ton electric furnace (Hogan 1984: 112). The company also succeeded in extracting major wage and work rule concessions from its workforce. In return for the wage cuts, the employees received preference stocks which tie part of their labor compensation to the performance of this division. Easing of work rules contributed to reductions in manning levels from 2100 to 1600 in production. This was accompanied by a cut of 50 percent in white collar jobs. To make the mini-mill approach complete, Bethlehem even installed a former

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[19] In the 1950s the twelve largest producers had formed a multi-employer bargaining unit which negotiated the labor contract with the USW in behalf of its participating members (Hogan 1970: 1633).

manager of a mini-mill as president, who had never worked for a major mill before (New York Times 4-20-85).

Mini-mills were affected by these changed conditions in the steel industry in various ways. On the one hand they continued to benefit from economic stagnation. The overall decline of demand kept scrap prices low and therefore also their production costs. Furthermore, they started to find political-economic conditions in the North comparable to those in the South. Plant closings and the general crisis of manufacturing in the North had severely weakened organized labor.[20] In the early 1980s, more new mini-mills were constructed in the North-East than in any other region (Schneider 1985: 18).

On the other hand, mini-mills faced stiffer competition. While the integrated mills became more price competitive as a result of labor concessions, foreign producers enjoyed the benefits of an over-valued dollar. However, the rapid increase of mini-mill capacity constituted a third source of competition. The race into mini-mills created conditions of overcapacity in most of the products they produce (New York Times 7-31-1986: 28). Some mills were able to limit their exposure to the volatile steel market through forward integration. For example, Nucor, the industry's price leader used about 40% of its steel production for its other lines of business in 1981 (Kirkland 1981: 43). Some mills maintained also their own steel service centers (Hersch 1984: 86).

Another response was to increase their market range. Chaparral delivered to forty states in 1984 (Hogan 1984: 113). This strategy pitted the mini-mills against each other (Schneider 1985: 40). Until then, most mini-mills

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[20] For the downward assimilation of the North-East, see Bluestone and Harrison 1982.

had not competed with each other because of their geographical isolation.[21] The ultra-modern Bayou Steel works, owned by VOEST of Austria, fell apparently victim to overextension (New York Times 8-5-1986).

A common response was to move into new product lines. Since the mini-mills had captured most of the market for reinforced bar and light shapes by the mid-1980s (see table), some mills started to produce larger structurals and planned for seamless oil country tubular goods as well as for flat-rolled steels (Brown 1986; LaRue 1986b).

Table: Mini-mills market share of bar mill products shipments in percent (New York Times 4-20-85, provided by Paine Webber)

	1969	1979	1983
Reinforced bar	25.1	60.2	78.0
Light shapes	n.a.	71.1	91.8
Cold finished bar	17.7	32.2	44.6
Hot rolled bar	5.7	14.2	44.0
Total mini-mill share	12.2	35.0	59.8

By the mid 1980s, the mini-mills experienced the stiff winds of competition in their pursuit of new market niches, since they were no longer protected by the price umbrella of the major mills. To quote Kirsis: "Interestingly, when a new product opportunity is discovered, a frequent pattern is for the price to drop sharply because the major mills are no longer giving up their markets without a fight and because other minis quickly follow the first one into the new product line. ... as prices have plummeted, the search has gone on for higher-priced specialty items, but, ...

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[21] Except in large markets such as in Chicago (Schneider 1985: 36f).

these require smaller production runs, a larger sales staff and some technical service capabilities--all of which are contrary to the initial concept of a successful mini-mill" (1985: 3,4).

To defend their positions mini-mills resorted to a strategy that used to be reserved mainly for the integrated mills: protectionism.[22] Aided by the strong appreciation of the dollar, Japanese mini-mills, but also some mills in newly industrialized countries, sold mini-mill products for as much as $20 to $40 per ton under U.S. prices (Haflich 1985), i.e. for about 7% to 13% less (own calculation). As a result, considerable capacity tonnage had to be retired. On the West Coast alone, about 200,000 to 300,000 tons had to be closed down in 1985 (Haflich 1986). By the end of that year, when the Voluntary Restraint Agreements (VRA) became effective, even those mini-mills that had argued against restraints on foreign steel were able to reap substantial benefits from the quotas.[23] Again, foreign imports of mini-mill products were reduced in greater proportion as foreign producers shifted to higher priced items. Furthermore, it is believed that the Japanese mini-mills have not been successful in the fight for quota shares with the integrated mills (Haflich 1985).

Specialty producers were facing similar problems. Profits were eroded by heavy price cuts as many producers followed each other into new market segments (Balcerek 1986). Loopholes in the VRAs channeled especially European imports into the specialty sector. Import penetration of stainless

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[22] For example Gilmore Steel in 1977 (Patric and Sato 1981: 19,24) and in 1983 (New York Times 1-26-84). Also Raritan, Atlantic, Continental, North Star, and Georgetown (Hersh 1984: 141). In 1985, Chaparral Steel Co. and Florida Steel (American Metal Market 11-21-1985).

[23] e.g. Nucor, whose mill in Utah had operated at no more than 75% of its capacity (Haflich 1986).

sheet and strip reached a record high of 23.8% in the first quarter of 1986, compared to 9.1% in the same period of 1985. These loopholes were closed only by March 1, 1986, at the request of the specialty industry (Flora 1986: 64). Depressed prices caused many corporations to either close some of their specialty divisions or to sell them. However, market growth prospects, especially the increasing demand for rust-resistant materials for automobiles, attracted some new investors (LaRue 1986a).

Conclusion and Discussion

The U.S. steel industry experienced dramatic changes during the last twenty years. The emergence of new competition undermined the ability of the dominant oligopolistic corporations to insulate their price structure from the volatility of demand. The new uncertainties in the market place call into question the feasibility of the mass production paradigm. This situation is compounded by a stagnation in demand for steel. The benefits of increasing economies-of-scale are outweighed by the risks associated with the huge capital outlays that are required for their achievement.

For these reasons the mini-mills seem to represent a viable alternative to integrated steel making. A closer look, however, reveals a number of problematic aspects of the growths of mini-mills.

For one, mini-mills owe their rise to a protective umbrella which was provided by the integrated producers: the declining demand for scrap, the oligopolistic price policy, and the ability to obtain import restrictions. Their dependency on this umbrella became apparent in the more competitive climate of the eighties. On the one hand, the

integrated producers no longer provided for price stability. Instead these producers engaged in price wars to capture greater market shares and began to reduce costs through targeted investment strategies, concessionary labor contracts, work-rule changes, and outsourcing to non-union shops. On the other hand, many entrepreneurs followed the lure of high profits and thus overcrowded the mini-mill sector. One common response was to move into new product lines. However, since the success of the mini-mills was based on rigid specialization, this strategy frequently led to a loss of their competitiveness. As a result a number of mini-mills started to face the typical steel mill malady, i.e. capacity under-utilization.

Secondly, the U.S. mini-mills' ability to replace imports was rather limited. Therefore, the development of mini-mills occurred mainly at the expense of existing integrated facilities. Their success reduced the financial resources of the integrated sector. Hence, mini-mills made it more difficult for the integrated sector to modernize also those mills, which produced steel makes for which the minis were not suited, i.e. sheet steel. In balance, the total capital stock of the U.S. steel industry became only slightly more modern, although the mini-mills were more modern and efficient than the mills they replaced.

Thirdly, despite the modern technology incorporated in U.S. mini-mills, the mini-mills' technological contributions to the competitiveness of the U.S. industry were rather small. On the one hand, most of their technology was of foreign origin (see Labee and Samways 1985). On the other hand, the mini-mills specialized on simple, low value steel products. They, therefore, contributed little to product innovations.

And finally, the mini-mills did not increase the nation's wealth. Nurtured in the political and economic climate of the South, the mini-mills competed on the basis of sub-standard wages, fringe benefits, and work conditions. Thereby, the mini-mills hastened the decline of many old steel communities. So far, the U.S. steel workers have not benefited from the efficiency gains of mini-mills. For the future it looks more likely that the steel workers will face further rounds of concessionary bargaining than that they will attain the lofty heights of Piore's and Sabel's yeoman democracy.

In sum, the mini-mills do not warrant an optimistic outlook on the future of the U.S. steel industry.

REFERENCES

Acs, Zoltan J., The Changing Structure of the U.S. Economy: Lessons from the Steel Industry (New York: Praeger, 1984).

Aglietta, Michel, A Theory of Capitalist Regulation. The US Experience, (New York: New Left Books, 1979).

Ayoub, Edmund. Comment on Jondrow, "Effects of Trade Restrictions on Imports of Steel," The Impact of International Trade and Investment on Employment. U.S. Department of Labor, Bureau of International Labor Affairs (Washington D.C.: U.S. Govt. Printing Office, 1978).

Balcerek, Tom, "Stainless Bar Producers See Profits Eroding", American Metal Market-Bar, Rod & Structurals, (April 15, 1986) p. 11,16.

Barnett, Donald F., and Louis Schorsch, Steel: Upheaval in a Basic Industry (Cambridge, Mass.: Ballinger, 1983).

Bluestone, Barry, and Bennett Harrison, The Deindustrialization of America: Plant Closings, COmmunity Abandonment, and the Dismanteling of Basic Industries (New York: Basic Books, 1982).

Bowles, Samuel, David M. Gorodon, and Herbert Gintis, Beyond the Waste Land: A Democratic Alternative to Economic Decline (Garden City, N.Y.: Anchor Press/Double Day, 1983).

Boyte, Harry C., Community is possible: Repairing America's Roots, (New York: Harper and Row, 1984).

Brown, Gail W., "Steel Faces Mixed Demand Outlook, Rivalry From 'Reconstituted' Mills, American Metal Market (June 25, 1986).

Busch, Klaus, "Krise der Stahlindustrie und Politik der EG", Prokla 37, 43-58.

Cloward, Richard, and Frances Piven, Regulating the Poor, (New York: Random House, 1972).

Cobb, James C. 1984: Industrialization & Southern Society 1877-1984, Lexington, KY, The University of Kentucky Press.

Crandall, Robert W., the U.S. Steel Industry in Recurrent Crisis: Policy Options in a Competitive World (Washington D.C.: Brookings Institution, 1981).

DoL, U.S. Department of Labor, The Steel Tripartite Committee Report, (Washington D.C.: 1980)

Domhoff, G. William, Fat Cats and Democrats: The Role of the Big Rich in the Party of the Common Man (Englewood Cliffs, N.J.: Prentice Hall, 1972).

Engert, Steffi, and Winfried Wolf, Die Krise in der Stahlindustrie, (Frankfurt: ISP, 1983).

Flora, Whitt, "Has Reagan Held Back The Steel Import Tide?" Iron Age (August 15, 1986).

Gilder, George, Wealth and Poverty (New York: Basic Books, 1981).

Gordon, David, "Capitalism and the Roots of Urban Crisis", The Review of Radical Political Economics (1975).

Haflich, Frank, "Modernization Set on West Coast", American Metal Market-Bar, Rod & Structurals, (April 15, 1986) p. 10,16.

Haflich, Frank, "Mini-Mills Expecting Quota Benefits" American Metal Market (Nov. 7, 1985).

Harris, A.W., U.S. Trade Problems in Steel. Japan, West Germany, & Italy (New York: Praeger, 1983).

Headworth, D.M., and R.D. Walker, "Arc Furnace Feedstock", in R.D. Walker, editor, Small-Scale Steelmaking, (London and New York: Applied Science Publishers, 1983).

Heilbroner, Robert, Review of Piore, Michael J., and Charles Sable, "The Second Industrial Divide" York Times Book Review (January 6, 1985) p.9.

Hersch, Martin, Mini-mill Steelmaking in the U.S. (Cleveland: Predicast, 1984).

Hogan, William Th., Steel in the United States: Restructuring to Compete, (Lexington, Mass.: Lexington Books, 1984).

Hogan, William T., World Steel in the 1980s: A Case of Survival (Lexington, Mass.: 1983)

Hogan, William T. The 1970's: Critical Years for Steel (Lexington, Mass: Lexington Books, 1972).

Hogan, William T., Economic History of the Iron and Steel Industry in the U.S. (Lexington, Mass.: Heath, 1970, 1971) 5 vol.

Jondrow, James M. "Effects of Trade Restrictions on Imports of Steel," Impact of International Trade and Investment on Employment. U.S. Department of Labor, Bureau of Interna-

tional Labor Affairs (Washington D.C.: U.S. Govt. Printing Office, 1978).

Jusenius, C.L., and L.C. Ledebur, A Myth in the Making: The Southern Economic Challenge and Northern Economic Decline, (Washington D.C.: US Department of Commerce, Economic Development Administration, Research Report, 1976).

Katz, Harry C., Shifting Gears: Changing Labor Relations in the U.S. Automobile Industry, (Cambridge, Mass.: The MIT Press, 1985).

Kirkland, Richard Jr., "Pilgrim's Profits at Nucor" Fortune (April 6, 1981) 43-46.

Kirsis, Karlis, "Intensifying Competition among Mini-Mills," Presentation to the Conerence on Steel Industry Problems Eastern Economic Association (New York: Paine Webber, 1985).

LaRue, Gloria T., "Companies 'For Sale`" American Metals Market, Stainless Steels Special Issue (Feb. 10, 1986a) p. 2A.

LaRue, Gloria T., "Mini-Mills Still On Move Into New Steel Areas", American Metal Market (April 24, 1986b).

Marcus, Peter F. and Karlis M. Kirsis, Economics of the Mini-mill (New York: PaineWebber World Steel Dynamics, Sept. 1984).

Markusen, Ann, Steel and Southeast Chicago: Reasons and Opportunities for Industrial Renewal (Chicago: Northwestern University, Center for Urban Affairs and Policy Research, 1985)

McBroom, N.H., "Electric Arc Furnaces in Mini-Steelplants", in R.D. Walker, editor, Small-Scale Steelmaking, (London and New York: Applied Science Publishers, 1983).

McManus, George, "Law and Order in Steel Prices", Iron Age (March 7, 1986) p. 68.

Miles, Gregory L., "Chapter 11 is No Panacea for What's Ailing Steel", Business Week (August 4, 1986) p. 25.

Mingione, Enzo, Social Conflict and the City, (New York: St. Martin's Press, 1981).

Naisbitt, John, Megatrends: Ten New Directions Transforming our Lives (New York: Warner Brothers, 1982).

Nemeth, Edward L., "Mini-midi Mills - U.S., Canada and Mexico" AISE Year Book (1984) 257-288.

OTA, U.S. Congress, Office of Technology Assessment, Technology and Steel Industry Competitiveness, (Washington D.C.: U.S Govtm. Printing Office, June, 1980).

Patrick, Hugh, and Hideo Sato, "The Political Economy of United States - Japan Trade in Steel" Discussion Paper No. 385 (New Haven: Yale University, Economic Growth Center, Sept. 1981).

Piore, Michael J., and Charles Sable, The Second Industrial Divide, (New York: Basic Books, 1984).

Reich, Robert, The Next American Frontier (New York: Time Books, 1983).

Rosegger, Gerhard. "Technological Progress and Economic Effects in Iron and Steel Production", Bela Gold et al, Technological Progress and Industrial Leadership: The Growth of the U.S. Steel Industry, 1900-1970 (Lexington, Mass.: Lexington Books, 1984) 447-606.

Rosegger, Gerhard, "Blast Furnaces", Bela Gold et al, Evaluating Technological Innovations (Lexington, Mass.: Lexington Books, 1980).

Schneider, Judy B., Minimills and Economic Development in Chicago (Chicago: Dept. of Economic Development, Markusen Economic Research Associates, May 1985).

Schorsch, Louis, "The Abdictation of Big Steel," Challenge, (March-April, 1984) pp. 34-44.

Schumacher, E.F., Small Is Beautiful. Economics As If People Mattered (New York: Harper & Row, 1973).

Sease, Douglas, "Little Giants: Mini-mill Steelmakers, No Longer Very Small, Outperform Big Ones" Wall Street Journal (Jan. 12, 1981) 1.

Sharp, J.D., "Casting Methods", in R.D. Walker, editor, Small-Scale Steelmaking, (London and New York: Applied Science Publishers, 1983).

Takacs, Wendy E., Quantitative Restrictions on International Trade Ph. D. Dissertation, John Hopkins University, 1975.

Thurow, Lester, The Case for Industrial Politics (Washington D.C.: Center for National Policies, 1984).

United Nations, Economic Commission for Europe, Structural Changes in the Iron and Steel Industry, (ECE/Steel/20, 1979).

Valdiserri, Carl L., "The Weirton Experiance - People Make the Difference" Iron and Steel Engineer (July 1986) pp. 31-33.

Williamson, Oliver E., "Transforming Merger Policy: the Pound of New Perspectives," The American Economic Review, (May, 1986) pp.114-119.

Wyman, Joseph C., "Mini-mill Outlook" (New York: Shearson Loeb Rhoades Inc., Steel Quarterly, Nov. 20 1980).

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Berlin 1980. DM 22.-

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