CHAPTER 6

Government Policy Effects on the Three Industries

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Overview

This chapter outlines some of the more important ways that policies pursued by the U.S. Government have affected the steel, electronics, and automobile industries; chapter 7 will then consider their future prospects based on a variety of factors, including public policies.

Despite the many policies that influence the international competitiveness of American industries—directly, as do U.S. foreign economic policies, or indirectly, as do tax policies—competitiveness itself has rarely been a primary or even a secondary concern of the Government. And, because most policies are pursued for other reasons, judgments or evaluations of the ways in which such policies affect competitiveness are seldom straight forward.

Most of the examples given below are measures with sector-specific impacts. Industry is not only affected by sectoral and macroeconomic policies, but also by other Government actions having largely aggregate objectives—e.g., labor law or support for education. While policies of these types often have significant effects on competitiveness—and a number of policy categories with aggregate goals and outcomes are reviewed in chapter 8—the present chapter focuses on measures with sector-specific outcomes.

Trade policies, for example, particularly those dealing with imports, have been consistent influences on both the steel and the consumer electronics industries since the late 1960”s. Economic and tax policies are importan t for all industries, but have been particularly so for steelmaking because of its high capital needs.

In consumer electronics, a notable aspect of trade policy has been the lack of final resolution of antidumping proceedings, despite a lapse of more than 10 years since the first complaints were filed. In contrast, the semiconductor and computer sectors have not been strongly affected by trade policies—nor in recent years by public policies of any type. At earlier stages in the evolution of both technologies, however, U.S. defense and space programs provided important support—especially Government purchases, but also R&D funding.

Regulatory policy has been the core of Government involvement in the activities of automobile manufacturers. Regulations dealing with safety, emissions, and fuel economy have constrained automobile design-for imports (except for mileage standards) as well as domestically produced vehicles. But regulations have seldom put the U.S. industry at any disadvantage-many regulations are more burdensome for imports than for domestic producers. Other public policies affecting transportation in general—particularly the construction of roads and highways-have had deep and long-lasting effects on the automobile industry, as have U.S. energy policies. Macroeconomic demand management—as manifested, for example, in interest rates-have also been potent forces on this industry.

Industrial competitiveness ultimately depends on the aggregated performance of many individual firms. But public policies in the United States seldom address economic efficiency and competitiveness directly; intervention in private industry has been considered neither desirable, nor even a wholly

legitimate activity for Government. Nevertheless, the Government plays an important role in determining the conditions and environment for the conduct of business—whether purely domestic or involving international trade; public policies often shape corporate strategies and decisions in oblique and indirect ways, acting in parallel with many other factors (see table 13 in ch. 5). Therefore the discussion below is largely descriptive; only in a few cases do the impacts of Government policies on competitiveness seem clear and unambiguous.

Steel

Beyond aggregate policies dealing with matters such as environmental protection, two main streams of Government policy have affected the steel industry in the United States. These have been, first, Government involvement in determining prices and wage levels, and, second, U.S. trade policy, primarily as it has affected imports of steel.

Wages and Prices

Because of the size of the steel industry and the widespread use of its products elsewhere in the economy, steel prices have a highly visible ripple-effect, attracting Government pressure to hold down prices in attempts to moderate inflation. Strikes in the steel industry can likewise disrupt other portions of the economy, leading to efforts by the Government to avoid or minimize their occurrence and length. President Truman's attempt to nationalize the industry during the 1952 steel strike is but the best-known example of this involvement, Thus, the Government has played a role in the determination of both prices and wages in the steel industry, presumably contributing to the pattern of high wages discussed in chapter 4.

Government attempts to influence steel prices have become more common as inflation has worsened. [1] Since the 1960's, "jawboning" has from time to time been aimed at moderating steel price increases. Wage-price controls at several points during the 1970's applied to steel prices as for other commodities.

Coincident with Government attempts to moderate steel price increases have come the relatively low profit levels characterizing the industry since the 1960's—profits substantially below the average for all U.S. manufacturing. Although there were many other factors at work—not the least being import competition—efforts by the Government to hold down steel prices have depressed profits to some extent. According to a recent analysis by the General Accounting Office, informal jawboning had little real effect, but mandatory price controls—in place from 1971 to 1974—did decrease the profits of steel firms, [2]

The steel industry contends that Government attempts to dampen price increases have cut revenues significantly, decreasing the capital available for modernizing plant and equipment—both by reducing internally generated cash flow and by making steel less attractive to investors—and contributing to the industry's slackening competitiveness. Of course, if additional capital had been available, it would not all have been invested in steelmaking; some fraction would have gone toward diversification. But it is also true that public policies to stimulate investment in new process technologies aimed at cutting costs and improving productivity have been lacking in the United States—certainly compared to countries such as Japan.

[1] The industry's position on such matters is outlined in *Steel at the Crossroads The American Steel Industry in the 1980s* (Washington, D. C.: American Iron and Steel Institute, January 1980), especially pp. 79-80.

[2] *New Strategy Required for Aiding Distressed Steel Industry* (Washington, D. C.: General Accounting Office, Jan. 8, 1981), pp. 6-12 to 6-14.

[3] Ibid., p. 2-16. The industry spends roughly $500 million annually on diversification.

Trade Policy

U.S. trade policies have affected all three of the industries under consideration, steel more than any except consumer electronics. The broad context of postwar American trade policy is an important backdrop to effects on sectors such as steel.

After World War II, the United States used its power, then at a peak, to construct the foundations for an open international economic system. This country's trade policy complemented its defense policy by strengthening the economies of America's allies. During those years, and into the 1960's, U.S. industry was preeminent in the world. The American steel industry, for example, produced more than one-quarter of the world's output until 1967,

As U.S. firms became international and multinational (though not in the steel industry), they generally supported free trade. While the commitment to open trade was not unlimited, in general the United States could afford to use access to the American market and assistance to foreign producers to strengthen its allies, But as U.S. firms faced more intense foreign competition, domestic industries started to seek protection. In the steel industry, this began in the late 1960's—the first major development being Voluntary Restraint Agreements [VRAS) negotiated by the U.S. Government with a number of other steel-producing nations and becoming effective in 1969.

Major issues in postwar U.S. trade policy have thus been: 1) the terms of access to the American market; z) the effect of foreign government policies on patterns of international trade; and 3) access for U.S. firms to foreign markets. These issues have shifted in importance as the flow of policy control moved away from Congress toward the executive branch in the early postwar years, then more recently returned in part to Congress.

In keeping with the broad direction of U.S. trade policy, the Government has consciously attempted to avoid the use of antidumping laws against foreign steel producers, especially European firms. [4]Thus to some extent, protection for U.S. steelmaker may have been sacrificed to other interests, particularly the desire to maintain good relations with our allies in Europe. Another factor has been fear of retaliation against U.S. exports or overseas investments. The desire to avoid dumping proceedings was an important motivation for the VRAS on imports of steel, and later the trigger-price mechanism (TPM).

The recent history of trade policy in steel thus begins in 1969 with the VRAs. These consisted of voluntary quotas on imports negotiated by the Department of State with most of the major steel-exporting nations, the quotas growing by 5 percent each year. The rationale was a slump in the U.S. industry, supposedly temporary; the VRAs, it was claimed, would give domestic firms an opportunity to adjust and restore their competitiveness.

To some extent these quotas—along with existing tariffs at about 6 percent—did succeed in insulating the U.S. industry; domestic steel production was as much as 10 percent above the levels that would have been expected without VRAs, and profits also increased. ' However, during the 6-year period when VRAs were in effect (between 1969 and 1974) capital expenditures remained significantly below the level of 1968,(' although steelmaker added to their debt in several years. To some extent, a vicious cycle—poor profits, low expectations for the future, plus high costs of meeting environmental regulations and high costs of investment in new production technologies—led the managements of many steel firms to strategies emphasizing protection and divestment.

At the same time, the United States continued to have the most profitable major steel

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[4]D. Driscoll, "Steel and the European Community: The Protection Issue," Congressional Research Service issue brief No. IB 80061, Aug. 6, 1980.

[5]J. Jondrow, E. Devine, L. Jacobson, A. Katz, and D. O'Neill, *Removing Restrictions on Imports of Steel* (Arlington, Va.: Public Research Institute, Center for Naval Analyses, May 1975), p. 3-56.

[6]*The U.S. Steel Industry and Its International Rivals* (Washington, D.C.: Staff Report, Federal Trade Commission, November 1977), p. 74.

industry in the world, But relative to other U.S. industries its profitability was poor. It was no surprise to find capital flowing elsewhere.

Thus, VRAs had little apparent effect in providing "breathing space" for the industry to revitalize. Instead, the pressures of foreign competition compounded the other problems faced by the industry and led to renewed calls for restrictions on imports, particularly those "dumped" on the American market. By late 1977, the industry was in a slump that caused the closing of 14 major mills at a loss of over 20,000 jobs. The TPM followed in 1978.

First, however, the administration called on Anthony Solomon, then Undersecretary of the Treasury, to formulate a "comprehensive program" for the steel industry—in large measure to forestall antidumping suits against European steelmaker.

The Solomon Plan

The Solomon plan had four general objectives:[7]

1. stimulate efficiency;
2. ease the burden of adjustment for both industry and labor;
3. provide incentives for modernization through tax, investment, and financial assistance; and
4. expedite relief from unfair import competition while maintaining the overall U.S. posture favoring open trade.

Only a portion of the plan was implemented. Most significant was the TPM, which set reference prices for 32 categories of steel products, covering 90 percent of imports. These prices, established by the Department of Treasury, were to be based on the cost of production in the most efficient steelmaking nation, Japan, plus transportation costs, 8-percent profit, and 10-percent overhead. Imports sold below this price would trigger an expedited dumping investigation.

The TPM evidently suffered from lax enforcement as well as problems in establishing the reference cost levels,[8] the latter associated particularly with exchange rate fluctuations and variations in capacity utilization. Trigger pricing was a political compromise that provided some import relief, while allowing our European allies to export to the United States at prices below their costs of production, (Strict enforcement of antidumping laws would have been an effective embargo on much European steel). One effect of the TPM was, therefore, to allow European exporters to raise prices and cover a larger fraction of their costs, helping them more than American firms.' The TPM may also have raised the prices Japanese firms could charge. While increasing revenues for American steelmaker, it increased costs for American firms that buy steel for use in their own products.

Although the complete Solomon plan was not implemented, several other recommendations—including the establishment of a loan guarantee program—were carried out, The Economic Development Agency (EDA), part of the Department of Commerce, was authorized to extend over $550 million in loan guarantees to steel companies. As for other EDA loans and loan guarantees, maintaining employment was the primary objective. The loan program was small in terms of the capital needs of the industry as a whole, which by all estimates reach several billion dollars per year; it helped weaker firms and was not oriented toward new technology."]

The EDA loan guarantee program has had some success in meeting its limited objectives of supporting ailing firms and saving jobs. But trade policy measures such as the TPM and the earlier VRA'S have shown little evidence of creating an environment conducive to the revitalization of the industry. Steelmaker have been able to protect some profits, but in-

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A. M. Solomon, "Report to the President: A Comprehensive Program for the Steel Industry},"' December 1977.

[8] *Administration of the Steel Trigger Price Mechanism* (Washington, D.C.: U.S. General Acounting Office, July 23, 1980).

[9] *Technology and Steel Industry Competitiveness* (Washington, D.C.: Office of Technology Assessment, U.S. Congress, June 1980), p. 150.

[10] Ibid., pp. 105-106.

centives for using these profits to diversify out of steelmaking remain strong.

Another recommendation of the Solomon plan to be adopted was a shortening of depreciation schedules for steelmaking equipment from 18 to 15 years. While this gave a small increase in cash flow available for reinvestment, capital cost recovery periods in the United States remain longer than for many of our international rivals. [12] The Steel Tripartite Advisory Committee recommended in the Solomon report also remains in existence. Drawing its membership from industry, labor, and Government, the tripartite committee helped to formulate the Carter administration's steel policy and has served as a model for similar committees in other industries—e, g., that formed during 1980 to consider the problems of U.S. automobile manufacturers,

Despite the comprehensive program urged in the Solomon report, the competitive position of the domestic steel industry is no better today than when the report was issued, As discussed in chapters 4 and 5, the competitive slide of the integrated portion of the industry stems in large part from high wage levels combined with slow' productivity growth. Government policies have thus far done little to attack the underlying problems of capital investment for modernization-which could reduce energy consumption as well as cutting costs and improving productivity. One reason is that in the United States, actively strengthening an industry such as steel has not been widely perceived as a legitimate goal of public policy.

Other Policies

Among the many Government policies with broad objectives but sector-specific impacts on the steel industry, the most visible have been environmental standards and workplace health and safety regulations. During the 1970's, meeting Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) regulations required capital expenditures by the U.S. steel industry averaging about $365 mill ion a year, 17 percent of annual capital investment. [13] This is less than industry spending for nonsteel diversification.[14] (Diversification can give useful stability to firms in cyclical industries such as steel.)

In other countries, public pressures have also led to increased capital expenditures for safety, health, and environmental controls. From 1971 to 1977, Japanese steel industry capital costs for environment al compliance were 65-percent higher than L[T]. S, levels, ' Expenditures by European producers have been similar in magnitude to those in the United States, but governments in both Europe and Japan have often subsidized some of the costs. Even in the United States, nearly half of capital expenditures for pollution cent rol have been financed through industrial development bonds—in effect, Govern ment-subsidized loans. [15] Because European steelmaker have not in any case been cost competitive with U. S, producers- in cent rast to the J apanese—it seems unlikely that the American steel industry has been seriously harmed in any relative sense by differences among the industrialized countries in environmental or workplace regulations,

Energy policies in the United States directly affect the competitiveness of the steel industry and will be increasingly significant in the future. Costs of coal and electricity are important—coal primarily for integrated steelmaker, electricity for minimills as well as integrated producers using electric furnaces.

The effects on the competitiveness of the steel industry of measures such as those dealing with energy or the environment have often been viewed by policy makers as incidental. Though the cumulative effect of many such policies, each of which has only a mar-

[12] Ibid., p. 323.
[13] Ibid.! p. 59.
[14] Ibid., p. 3.)1.
[15] ''!\'('Lt' *Strategy Required for Aiding Distressed Steel Industry*, op. cit, pp 2-16 to 2-18,
[16] '1'('{}11101(ogy and Steel Industry Competitiveness, op. cit,, p. 68.
[17] Ibid., p. 346.

ginal impact (positive or negative), can be major, evaluation of net impacts is seldom attempted. A possible task for industrial policy would be to attempt a more encompassing perspective towards the dilemmas faced by industries like steel. This could be a useful step in deciding what, if any, role the Government should play in efforts to maintain and enhance the competitiveness of such industries.

Electronics

The diversity of products and technologies in the electronics industry carries over to policy matters. Different types of policies have been important to different parts of the industry. Electronics firms have not always agreed on which Government policies would be desirable. For example, in the protracted controversy over dumping of color TVs and other alleged unfair trade practices, firms such as RCA that have extensive international activities and receive licensing revenue from Japanese producers took a "free trade" position. Companies with primarily domestic operations pressed strongly for Government policies to protect the industry.

In the computer industry, there is likewise no community of interest between IBM and many of the smaller firms, particularly those making plug-compatible equipment of various types, Several of these firms have brought suit against IBM alleging unfair competition. This part of the electronics industry has also been unsettled by the ongoing attempts of the Federal Government to resolve the complex policy issues that are arising as computers and information technologies overlap the regulated communications industries. In the semiconductor sector, merchant and captive manufacturers do not always share common concerns.

Consumer Electronics

As for the steel industry, Government actions concerning trade have been important to the U.S. consumer electronics sector, While most of the attention has focused on imports, concern has also been expressed over policies dealing with foreign investment and offshore assembly, the latter currently favored by U.S. tariff laws. " Organized labor, in particular, has often criticized such tariff policies —which have helped keep down costs for U.S. semiconductor firms as well as TV manufacturers, but are claimed to "export" jobs. " Still, treatment of imported consumer electronics products, particularly color TVs, has been the core of U.S. policies affecting this industry.

Dumping complaints—claims that imported TV receivers were being sold at less than "fair value"-began in 1968, when the Electronics Industries Association (EIA) alleged massive dumping of Japanese TVs. 'Y The EIA claimed that Japanese firms were able to cut prices in the United States by maintaining artificially high price levels at

SW-S. 806.30 and 807.00 of the (1. S. tariff schedules provide for duty-free treatment of some materials and components sent abroad for further processing or assembly and then reimported. The duly-free value of imports entered under these provisions gives an indication of the extent of offshore assembly. For TV receivers, the duty-free portion of imports increased from 9 percent in 1975 to 17 percent in 1977. (See *Import Trends in '1 'SUS Items 806.30 and 807.00* (Washington, 1). C.: International Trade Commission publication 1029. January 1980), p.38.) Duty-free content of semiconductor imports rose from 30 to 60 percent between 1975 and 1978.

[18]Whether foreign investment decreases domestic job opportunities depends un the assumed course of events in the absence of the overseas investment —which can never be known. Assuming that the industry would decline precipitously if it did not move some operations overseas generally leads to a prediction that foreign investment saves domestic jobs. See, for example, *The Impact of International Trade and Investment on Employment* (Washington D.C.: Department of Labor, 1978).

[19]A countervailing duty case was also filed by Zenith in 1974, which claimed that rebates of the Japanese commodity tax unexported TVs constituted a subsidy. This event ually went to the [J. S. Supreme Court, where it was decided against Zenith in 1978. An antitrust case filed by Zenith and another plaintiff—alleging a conspiracy by Japanese firms to destroy the U. S, consumer electronics industry—was recently dismissed but will almost certainly be appealed.

home, helped by import barriers. Japanese firms, while acknowledging higher domestic prices, contended that the difference was due to higher taxes and marketing costs. (Spurred by news reports of the dumping charges, Japanese consumers in fact organized an 8-month boycott of color TV sales, eventually forcing prices in Japan down somewhat.)

In the United States, it was not until 1971 that the Treasury Department and the International Trade Commission issued positive findings of dumping and injury on the EIA complaints. During 1973 the amounts of the antidumping duties were determined (for the period 1970-71 only), But by the end of 1980 only a fraction of the duties assessed had been collected. Furthermore, no duties for the period 1973-75 had been collected, and assessments past 1975 had not been completed. The post-1975 duties alone could total more than $100 million. [20]

This 12-year history demonstrates the inadequacies of antidumping procedures in a case where both dumping and injury have been consistently demonstrated. An industry legally entitled to protection has not received it. Nonetheless, the failure of public policy in this case—partly a reluctance by Government agencies commit ted to free trade to pursue the complaints—may not have had a critical effect on the course of the domestic industry. As discussed in chapter 5, Japanese consumer electronics manufacturers had many other advantages over American firms: lower costs, a measure of government R&D support, and an aggressive determination to penetrate markets on a worldwide basis, At least some of these companies would probably have succeeded in the United States without dumping. A telling point is that Sony, one of the most successful of the Japanese firms, has never been implicated in dumping and has been able to command premium prices in U.S. markets.

The most disturbing aspect of this history from a public policy standpoint is the uncertainty that has persisted over the past 12 years. The conflicts within the Government and between Government and industry—the lack of final resolution in the antidumping proceedings— created a climate in which U.S. consumer electronics firms had to plan for the future without knowing what the trade policy environment would be. This uncertainty extended to importers as well. But an important goal for industrial policy should be to reduce uncertainty, not create it.

During this period of unresolved dumping proceedings, the U.S. Government also negotiated import quotas on color TVs, first with Japan, later with Taiwan and South Korea. An upshot of "escape clause" proceedings brought before the International Trade Commission in 1976, unfair trade practices were not at issue.

The Orderly Marketing Agreements (OMAS) for color TVs were ostensibly intended to give the U.S. consumer electronics industry a chance to rebuild its competitiveness—in this analogous to VRAS for steel. In reality, a more important aim of the color TV restrictions was probably to encourage foreign manufacturers to set up U.S. assembly operations as an aid to maintaining domestic employment. This objective was in fact accomplished (ch. 5). Many of the indications of rebuilding or of sustained competitiveness that are evident—e.g., RCA's video disk developments—would probably have taken place in any event.

The OMAS with Taiwan and South Korea were recently extended through mid-1982. Under the new agreements, each country will be permitted to increase its color TV exports to the United States—from 526,000 for the year ending June 30, 1980, to 1 million in 1982. At the same time the OMA with Japan was allowed to expire because U.S. imports of Japanese TVs have dropped markedly. As happened with Japanese producers, the extended OMAS with Taiwan and Korea will probably encourage firms from these countries to establish manufacturing operations in the United States. If these OMAS had been

[20] *Import Reporter*, Bureau of National Affairs, Apr. 30, 1980, p. A-2.

allowed to end, imports from Taiwan and Korea would most likely have jumped.

Semiconductors

There are comparatively few current Government policies with marked sector-specific effects on the semiconductor industry. While public comments by industry executives have sometimes included allegations of unfair trade practices by the Japanese—e.g., in connection with rapid import penetration in 16K RAMs—no formal complaints have been filed. The industry has also claimed that subsidies and supports by the Japanese Government—as exemplified by the VLSI cooperative R&D program described in chapter 5—constitute unfair competition. [21] The agreement on government procurement reached by the United States and Japan at the end of 1980—affecting primarily the purchasing practices of Nippon Telegraph & Telephone Public Corp.— may help to ease some of the friction between the two countries over trade in semiconductors.

In the past, the Government activities with the greatest impact on the U.S. semiconductor industry were R&D support and procurement associated with military and space systems. Except for the new Very High-Speed Integrated Circuit (VHSIC) program of the Department of Defense, the major impacts of such programs have already been felt. Much the same has been true for the computer sector, where Government-sponsored R&D and purchases of equipment were important to the early development of the industry, but have since faded in significance.

Both the transistor, invented at Bell Laboratories in 1948, and the integrated circuit (IC), developed by Texas Instruments and Fairchild Semiconductor in the late 1950's and early 1960's, sprang from company-funded R&D programs.[22] Nonetheless, Government support was crucial to engineering development—first for transistors, later for ICs. Market incentives provided by the military, primarily through procurement, were more important than direct R&D funding.[23] Purchases for the U.S. space program likewise aided the early growth of the industry.

More recently, military and space markets have declined in size and importance relative

[21] For a sampling of the industry's concerns see: M. Hodgson (ed.), *An American Response to the Foreign Industrial Challenge* in *High Technology Industries*, proceedings of the Semiconductor Industry Association Government Policy Conference, Monterey, Calif., June 18-19, 1980 (Palo Alto, Calif.: Worden Fraser Publisher, 1980),

[22] N. J. Asher and L. D. Strom, "The Role of the Department of Defense in the Development of Integrated Circuits," Institute for Defense Analyses paper P-1 271, May 1977.

[23] J. R. Tilton, International *Diffusion of* Technology: The *Case of* Semiconductors (Washington, D. C.: The Brookings Institution, 1971), pp. 90-91.

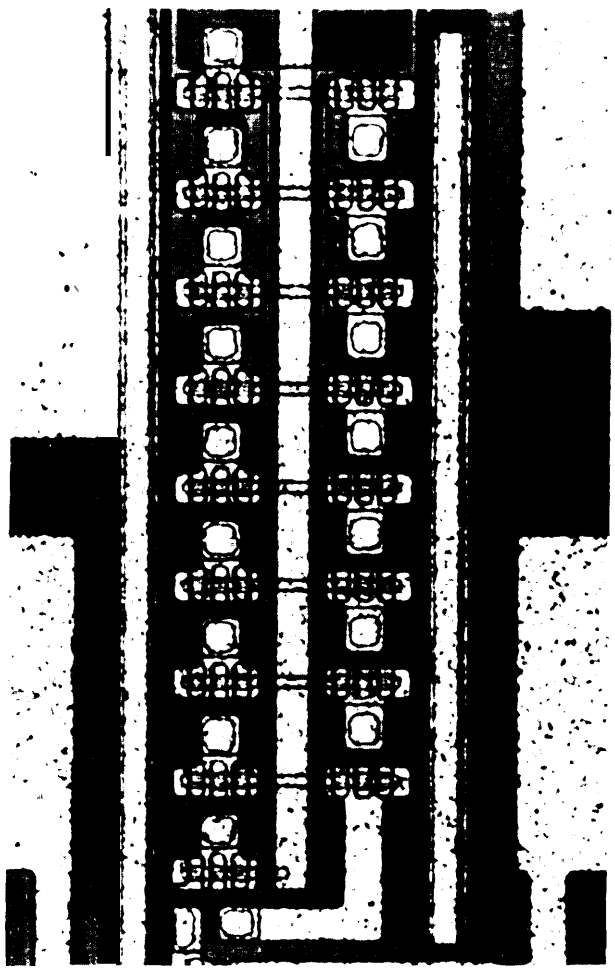

Photo credit IBM Corp

Subnanosecond bipolar VLSI circuit

to commercial sales— this being one of the reasons for the VHSIC program. Although directed at specialized military applications—primarily signal processing—and more rapid use of VLSI in fielded equipment, VHSIC spending will stimulate the commercial semiconductor industry in a real though limited way, mostly by accelerating the pace of R&D in areas such as lithography and computer-aided circuit design.

Another important support for the semiconductor industry— this one indirect—has been education and training of engineers and scientists, primarily through Government-sponsored R&D within universities. Less of this funding is now available than in the 1960's, a cause for concern to many in the industry because of the current shortage of technical professionals.

From a Government policy viewpoint, a noteworthy aspect of the development of the semiconductor industry is the impetus for the integrated circuit provided by an Air Force program aimed at "'molecular electronics' during the late 1950's. Molecular electronics never came to fruition, but the effort stimulated the invent ion and development of the IC.[24] If the Air Force program had been directive rather than stimulative—i. e., if Government policy had tried to force the technology down the path of molecular electronics—IC development might have been delayed. Instead, military needs stimulated private expenditures leading to the new technology; it did not come from the Air Force's own laboratories or from Government-funded R&D.

Computers

The early history of this sector is also marked by a strong Government presence, through both R&D support and purchases.[25] Since the 1950's, Government influence has been more tangential. Trade policies have had little effect on the development of the computer industry beyond U.S. support for open international trade; American computer firms have generally had price advantages as well as technical superiority. Under such circumstances, trade barriers have been unimportant except in the case of Japan and to a lesser extent the United Kingdom,

~ An area where policy may become increasingly significant is computer software. Software is presently almost impossible to protect: programs typically cannot be patented, and copyrights can be easily circumvented. More workable protection for proprietary programs could help safeguard the U.S. lead in software.

Within the United States, perhaps the most important Government action in recent years has been the antitrust suit brought against IBM in 1969—and still in trial, Some observers have suggested that a Government victory might harm the international competitiveness of the U.S. computer industry, given IBM's worldwide dominance of markets for larger size computers. In this, as in the antitrust suit which seeks (among other things) to divest Bell Laboratories from AT&T, these observers have seen a policy that could run counter to the interests of U.S. competitiveness: antitrust enforcement has only recently begun to consider worldwide-as opposed to purely domestic—market conditions. Others contend that antitrust measures aimed at decreasing industrial concentration will enhance U.S. competitiveness-that the traditional reliance of the United States on bala need competition is a key to effectiveness worldwide as well as in domestic markets.

Governments in the United States and elsewhere have been slow in coming to grips with the many issues raised by the blurring of boundaries between the computer and communications industries. With computers talking to one another over telephone lines, widespread networking and distributed processing, and electronic mail, teletext, and videotext on the horizon, it is increasingly difficult to distinguish data processing from data communications. Because communications, unlike data processing, has been a regulated industry, government policies are having to

[24] Asher and Strom, op. cit., p. 14.

[25] J. T. Soma, *The Computer Industry* (Lexington, Mass.: Lexington Books, 1976), ch. 1.

be reconsidered in light of the overlap between these sectors created by technological change.

This brief review of public policies with major effects on consumer electronics, semiconductors, and computers—ranging from trade policies and their administration to communications regulations-illustrates the variety and diversity of impacts on this industry. Most of these policies have been developed on a case-by-case basis, and—as was typical for the steel industry—with aims other than competitiveness and economic efficiency. The favorable impacts of Government procurement on the semiconductor industry, for example, were not a central concern of policymakers, even though the Department of Defense recognized the importance of a healthy electronics industry to U.S. military strength.

Photo credit Westinghouse

Terminal for an electronic mail system

Automobiles

Current sector-specific policies toward the automobile industry can be traced back to the 1950's, when smog in the Los Angeles basin was attributed in part to automobiles. Government regulations to reduce emissions and enhance auto safety multiplied during the 1960's and 1970's; fuel economy regulations were instituted in 1975, The automobile industry now finds its products heavily regulated; at the same time, its manufacturing processes are monitored by EPA and OSHA, and its sales affected by many policies that indirectly influence demand for automobiles—energy policies, interest rates, credit controls.

Today, automakers see themselves as facing two major sets of policy-related problems: 1) absorbing the costs of regulation; and 2) dealing with Government policies that are perceived as sometimes ambiguous and conflicting, and that are not always stable over time (the industry itself contributes to delays and confusion in automobile regulations, as in the case of passive restraints). But two past Government policies have also had deep, long-term though indirect impacts on the automobile industry. Both encouraged the production of big cars designed with little attention to fuel economy. The first is the series of decisions that kept the price of gasoline low in the United States—the second, public policies supporting a system of roads and highways unmatched in the rest of the world. Both were supported for many years by a broad political consensus.

Price and Supply of Gasoline

The United States has traditionally had low gasoline taxes and low import charges on foreign oil. For many years these policies helped to keep fuel prices low. Even after decontrol, gasoline in the United States still costs far less than in most other parts of the world—and the market incentives for consumers to buy small, fuel-efficient automobiles are correspondingly lower. (By 1975, the domestic automakers had nonetheless taken

positions in support of gasoline price decontrol,)

Thus until recently, the cost and availability of fuel was a minor consideration for most automobile purchasers in the United States. When this changed suddenly in 1979-80, the consequences for domestic automakers were severe. Moreover, if gasoline prices in this country were to rise to levels comparable to those in Europe and Japan, consumers would presumably find the larger domestic cars still less desirable. While public policies in the United States as they affect gasoline prices continue to favor domestic automakers, Government decisions have contributed to the erratic nature of gasoline price rises, as well as to shortages and gasoline lines, and thus to the currently depressed market for American cars. These decisions have come in a highly politicized environment—one where consensus has been elusive and the terms of the debate have often been outstripped by events.

In the simplest view, policy makers in the United States have been caught between two conflicting objectives, The first is a need to allow fuel prices to increase, encouraging conservation and reducing U.S. dependence on foreign oil. The second is a desire to keep fuel prices low as a brake on inflation and to minimize the burdens on low-income segments of the population. As one result, rather than a gradual, predictable rise in gasoline prices—which would have allowed both automakers and consumers to plan ahead—gasoline prices (and supplies) have moved suddenly and unpredictably, The difficulties that would in any case have been caused by external disruptions—such as the 1973 Arab oil embargo and the monopoly control exercised by the OPEC cartel—have thus been more acute,

For example, gasoline prices quickly rose by more than 20 percent in real terms following the 1973 October War and the Arab oil embargo. Subsequently, the small car share of the U.S. market increased sharply—going from 38 percent in 1972 to 49 percent in 1974 and 53 percent in 1975.[2,)] Import sales did not rise appreciably; most of the increase in 1974 was taken by domestic small cars (see table 5 in ch. 4).

Yet gasoline prices soon stabilized—and even went down in real terms during the period 1974-78. One reason was the Energy Policy and Conservation Act (EPCA), which became law at the end of 1975. The Act did two things. It established mandatory fuel economy standards for auto fleets. At the same time, EPCA kept oil prices under strict controls. During this same period, OPEC followed a policy of moderation in oil pricing and fuel taxes remained low.

Many consumers refused to accept the reality of the "energy crisis. " The market share of small cars fell slightly—from 53 percent in 1975 to 48 percent for 1976 and 1977. More significantly, capacity utilization for domestic subcompacts dropped to less than 54 percent in 1976 and 1977, while plants for intermediate and full-sized cars operated at or near full capacity. "

The years 1974 to 1977 thus presented American manufacturers with a difficult set of decisions. On the one hand, they could sell all the large cars they could build—and at healthy profit margins. But the Corporate Average Fuel Economy (CAFE) standards built into EPCA required that they move toward better fuel consumption, EPCA did not require that cars be small in size, but downsizing was clearly in order to increase mileage, In fact, the law favored downsizing and other means of gaining relatively small improvements in the mileage of big cars over building new high-mileage subcompacts. But it was also obvious that each manufacturer would eventually need a substantial fraction

[2,)] *Auto Situation: 1980* (Washington, D.C.: Subcommittee on Trade, Committee on Ways and Means, U.S. House of Representatives, June 6, 1980), p. 13. Small cars are defined as subcompacts and compacts.

[2,)] "Certain Motor Vehicles and Certain Chassis and Bodies Therefor," prehearing report to the Commission and Parties, International Trade Commission, Washington, D.C., Sept. 10, 1980, p. A-40.

of subcompacts in order to meet fleet averages for later years,

Nonetheless, in the mid-1970's small cars were not selling well and American manufacturers were reluctant to believe that their customers would want them in large numbers. Moreover, profits on small cars were low. Thus domestic automakers tended to hedge their bets. In 1976—the same year it introduced its new subcompact Chevette—General Motors announced that it would downsize its entire fleet by 1985. Ford decided to import the subcompact Fiesta rather than building it in the United States—which meant that it could not be counted in the CAFE figures—and as a result did not have a competitive domestic subcompact until the 1981 model year. Chrysler introduced its subcompact Omni/Horizon in 1978 but relied on outside suppliers for engines, which limited attainable production levels.

In general, then, American firms were not well-prepared for the end of consumer ambivalence toward small cars— triggered by events at the end of 1978 and the beginning of 1979. Large OPEC oil price increases, the Iranian revolution, and the beginning of decontrol of domestic oil prices caused major shifts in the U.S. automobile market. Gas lines reappeared during the summer of 1979. Prices at the pump more than doubled over a 2-year period. As in 1974-75, consumers turned to small cars—their market share rose from under 50 percent to nearly 65 percent in 1980. Japanese auto firms had extra production capacity available to meet the new demand, U.S. manufacturers, in contrast, might have had even fewer small cars on the market in the absence of the CAFE standards in EPCA.

Roads and Highways

A second major indirect influence on the U.S. automobile industry—one now less important than in years past—was the extensive development of roads and highways which culminated in the Interstate Highway System. And, in contrast to many other countries, public policies in the United States put railroads and other public transportation at a relative disadvantage compared to automobiles and trucks.

Federal aid for highway construction dates from 1917; State highway systems were universal by **1924.** Secondary highways and city streets, in particular, have been heavily financed from general tax revenues. The development of both inter- and intra-city roads and highways—together with the long distances between population centers in the United States, and our energy policies—contributed to the development of the characteristic American automobile: comfortable and durable but also large. The legacy of the big American car—which evolved in isolation from other world markets—has left the industry for the moment in a rather weak position. It is easy to lose sight of this history in the current discussion of fuel economy/emissions/safety regulations. The Government has for years been making policies that affected the industry. In the past these policies were welcomed by all—and often actively supported by the automakers. This is no longer the case.

Regulation

The three primary categories of product regulations that affect the automobile industry cover emissions, fuel economy, and safety. " EPA administers the emissions and fuel economy standards—which have been largely set by Congress—while the National Highway Traffic Safety Administration (NHTSA) has responsibility for automobile safety. In addition to regulation of automobiles as products, manufacturing operations come under the purview of EPA and OSHA.

Regulation of automobile emissions began during the early 1960's in California. The first Federal standards took effect in 1968, Originally, only hydrocarbons and carbon monoxide were controlled. Rather minor en-

-'The Automobile *Calendar: Recent and Pending Federal Activities* Affecting *Motor Vehicles* (Washington, D. C,: United States Regulatory Council. January 1981).

gine modifications—PCV valves, retarded ignition timing, and slightly leaner air-fuel ratios—were sufficient to meet the early standards.

Regulations for later years called for further reductions in hydrocarbons and carbon monoxide, with restrictions on nitrogen oxides taking effect in 1973. Scheduled reductions in all three pollutants were steep and essentially arbitrary in magnitude. At the time, the automakers claimed that standards scheduled for the mid-1970's would be costly to meet and perhaps technologically impossible. Today, controversy over the costs and benefits of emissions standards continues. Opponents of standards have claimed that increased purchase prices of automobiles and decreased fuel economy outweigh the benefits of the stringent control levels that the Clean Air Act and its amendments require,

Beyond costs and technical feasibility, the timing of emissions standards has been at issue. Timing is closely tied to technical feasibility. The manufacturers have claimed that standards could not be met on schedule, and perhaps could not be met at all. Widespread driveability problems with cars produced during the mid-1970's gave evidence of the technical problems.

Another consequence of emissions standards which rapidly became apparent was the fuel economy penalty associated with engine modifications for pollution control. Retarded spark timing, exhaust gas recirculation, and thermal reactors all decreased engine efficiency. Catalytic converters allowed some ground to be regained, but the lead-free gasoline needed to prevent catalyst poisoning meant compression ratios had to be lowered, canceling some of the possible gains. While the magnitude of the tradeoffs between emissions control and fuel economy may have been overstated during debates on these regulations, the incompatibilities between the two goals illustrate the complexities of such issues.

The staging of fuel economy regulations was also controversial. While no longer an issue for automobiles—because the demands of the marketplace have recently outstripped CAFE regulations—manufacturers have continued to oppose the mileage standards scheduled for light trucks. As the question of possible fuel economy standards for the post-1985 period comes into focus, there may again be debate over passenger car mileage standards and their timing.

Fuel economy regulations and now the market have forced U.S. automakers to make large capital investments in new vehicle designs that foreign manufacturers—with their existing high-mileage fleets—have generally been able to avoid. But the very fact that the market is now demanding small, economical cars demonstrates that the premise behind the fuel economy standards was sound.

Safety standards have thus far been relatively easy to meet from a technical standpoint—unlike emissions regulations. Nonetheless, they have remained a source of considerable conflict between Government and the automakers. Of particular concern at present are passive restraint requirements. U.S. automakers have argued that these give an advantage to the Japanese since small cars do not have to be equipped with passive restraint systems until 1984, while large cars must have the systems by 1982 (delays in these regulations have recently been proposed as part of the Reagan administration's automobile industry aid package).

OSHA standards apply to automakers as to other manufacturing industries, Examples of production operations affected include exposure to paint fumes and to lead associated with soldering body joints. At the same time, workplace standards also exist in other countries; there is little evidence that OSHA has placed U.S. automobile manufacturers at a marked disadvantage,

The total regulatory environment for automobiles in the United States now constrains vehicle designs in many ways. Regulation grew rapidly during the 1970's, with little attention to tradeoffs and side-effects. At present, there are signs that automobile standard-

setting is maturing, as both Government and industry accommodate themselves to political pressures and technological realities.

Over the past decade, regulations have clearly had major impacts on the U.S. automobile industry, but—except for fuel economy standards (and manufacturing regulations)—they have affected foreign manufacturers wishing to sell in this country at least as much. In most cases, American firms have been at a relative advantage.

The question of the differential impacts of regulatory standards is nonetheless more complex than it first appears. Product regulations might seem to treat imports and domestic autos alike; the Government establishes some standard which all manufacturers must meet, In reality, product regulations can create barriers to the entry of imports or, alternatively, encourage purchases of foreign cars, Particular regulations may also burden (or favor) some domestic manufacturers more than others, giving those less burdened a competitive advantage. For example, decisions on particulate and nitrogen oxide standards for diesel engines will affect the competitive position of General Motors and Volkswagen of America compared to other domestic automobile firms because only these two have so far made substantial commitments to diesels.

More generally, regulatory compliance requires R&D and testing programs that are not a function of the number of cars to be produced. Large-volume manufacturers such as General Motors, Ford, Nissan, and Toyota can comply with regulations at significantly lower costs per vehicle than small-scale manufacturers. Thus, regulations often give competitive advantage to big companies. Moreover, European producers, whose home countries have much looser emissions regulations, must spend significant amounts per vehicle to bring them into compliance with U.S. standards, Japan, in contrast, has mandated emissions levels comparable to those in the United States; Japanese cars have not needed significant redesigns to meet American standards.

Some regulations, especially the CAFE rule which applies to all manufacturers selling in the United States, have also had significant secondary effects. The CAFE standard defines any vehicle with more than 75 percent domestic value-added as American-made, anything with less as an import. American manufacturers cannot bring in cars they build overseas and count them against their CAFE figures; likewise, Volkswagen is keeping its American-built Rabbit at less than 75-percent domestic value-added so it can offset its less fuel-efficient imported models. The value-added rule was intended to protect American jobs, but cuts both ways.

While regulations of many types now restrict the freedom of action of automobile manufacturers, their objectives—as in the case of safety standards—lie by-and-large outside the industry itself; just as emissions regulations are intended to help control air pollution and its possible harmful effects, so fuel economy standards were aimed at conserving petroleum and reducing U.S. dependence on oil imports.

Other Policies

Tariffs and local content rules are the most significant barriers to trade in automobiles. Foreign governments often use local content requirements to protect domestic employment .[29]

Government agencies also influence the activities of the U.S. automobile industry in other ways, for instance through economic adjustment policies. Thus—in addition to EPA, NHTSA, and OSHA—the Departments of Labor, Justice, and Commerce, the Office of the U.S. Trade Representative, and the International Trade Commission, among others, all can affect the competitive position of the industry. Even the Small Business Administration (SBA) is involved in the industry's current problems, because many dealerships qualify as small businesses. During 1980,

[29] *Auto Situation: 1980*, op. cit. pp. 93-103.

SBA guaranteed more than $100 million in loans to nearly 500 auto dealers. 30

The fragmentation which results from this plurality of interests and agencies is typical of public policies affecting industry in the United States, but has advantages as well as disadvantages. The absence of coordination and centralized control in U.S. industrial policy can lead to flexible and adaptive response. Regulatory policies affecting the automobile industry may not always have been well-coordinated, but they have benefited consumers and the public at large in many ways,

~D•Œ""I)etrtJit"s New Sales Pitch," *Business Week*, Sept 22, 1980, p. 78.

Summary and Conclusions

In these three industries, Government policies with major sector-specific impacts have sometimes exhibited a lack of coherence and continuity. In steel, a variety of trade measures have provided some insulation from import competition, but seldom actively promoted adjustment to changing conditions in the world industry, Coupled with these policies have been environmental and other regulatory measures that have demanded significant capital spending—though not at levels that seriously affected competitiveness.

In consumer electronics, a long-running string of dumping complaints has never been satisfactorily resolved. OMAS intended to protect the domestic industry and maintain employment have saved some jobs but not promoted restructuring or other adjustment except by encouraging foreign investment. Other portions of the electronics industry have not recently been strongly influenced by Government policies, but neither have domestic programs to countervails supports and subsidies in foreign countries been seriously considered.

The automobile industry has suffered, along with many other portions of the U.S. economy, from irresolution and lack of consensus on energy policies, There have also been conflicts among some regulatory policies, and, again, little recognition of the structural changes the industry has faced.

In general, public policies toward these industries have not supported or promoted continued competitiveness and adjustment to changing economic conditions: such concerns have seldom been among the goals of policy in the United States. There has been no real agreement on the appropriate role of Government in either distressed industries or growth industries, except where national security is directly affected. As industries in other countries increasingly challenge the United States in both domestic and export markets, public policies which bear on productive efficiency and competitiveness are likely to need reexamination.