

A list of Working Papers on the last
pages

No. 123, 1984

**What Can Be Learned from the Chrysler
Experience?**

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Paper to be presented at the Ann Arbor conference on U.S. industry, Fall, 1984. The paper has received substantial input from Hans Ehrbar, who provided a complete first draft of section I. This is a preliminary paper. It is intended for private circulation, and should not be quoted or referred to in publications without permission of the author. Comments are welcome.

July, 1984

WHAT CAN BE LEARNED FROM THE CHRYSLER EXPERIENCE?

Introduction

In virtually every industrial country of the world, signs of widening government efforts to help enterprises can be discerned. Between 1970 and 1980, every member country of OECD, save one, experienced a rising share of gross domestic product granted to private industry or industries already held in public control.¹ Some countries, such as Sweden, substantially reversed a long-standing policy of limited government intervention into the affairs of private firms. By 1979, industry subsidies represented 16 percent of value added in Swedish mining and manufacturing.² The U.S. was the one OECD country which *reduced* its share of direct government subsidy to enterprises between 1970 and 1980, but, here too, proposals were made for various forms of government sponsored reindustrialization policies. These included permanent or temporary trade limits (such as voluntary export limits on autos from Japan), aid to Chrysler, and proposed increases in government support for basic R&D in the mainframe computer industry. Moreover, it is claimed that between 1980 and 1983, government subsidies for the protection of business doubled to \$70 billion.³ It is unlikely that this growth would have been less had a different administration been in power.

¹ This is summarized in "Banking on Recovery: A Survey of International Banking" *The Economist* March 26, 1983. The data sources are given as OECD and Eurostat.

² Bo Carlsson, "Industrial Subsidies in Sweden: Macroeconomic Effects and an International Comparison," Working Paper No. 58, Industrial Institute for Economic and Social Research, Stockholm, Sweden, 1982. In Sweden, over half of the funds were devoted to rescue operations or firm-specific subsidies. By contrast, in Germany, industry subsidies represented 4 percent of value added in mining and manufacturing and 85 percent of the funds were devoted to general subsidies, such as research and development (R&D) subsidies and regional and small firm support.

³ James Bovard, "Soaring Succor for Select U.S. Businesses," *The Wall Street Journal*, February 13, 1984.

intervention into the affairs of individual firms or specific industries is a practice which most economists would argue against. Beginning first on a limited scale, such a policy could expand to unmanageable proportions or, even if restricted, would imply inequity with some (probably large) firms being supported and others left to their own devices. Besides, if a firm or industry needs and desires help, the argument runs, what reason do we have to believe that private capital markets will fail to see the value of the enterprise and support necessary reorganization through corporate takeovers or through some settlement with the firm's creditors, after which it can continue with some new or remaining profitable lines? If the reorganization leads to layoffs, the normal processes of labor market adjustment combined with income support systems should lead to an outcome better, on average, than *ad hoc* government prescriptions.

Such an argument overlooks the fact that the various institutions and economic policies of the U.S. already add up to an implicit industrial policy. The discussion of the Chrysler experience below will demonstrate the extent to which this is so. The question is not whether or not the U.S. should engage in industrial policies, but whether it should recognize the ones it has as such and, subject them to public scrutiny and control.

Many proponents of limited government intervention also uphold the idea that international trade promotes economic efficiency. There is a growing belief that international competition should replace elaborate antitrust policy, most of which is intended to discipline large domestic oligopolies. It can be claimed that in a vast international market, these firms will become small actors.⁵ This view of trade as a guarantor of efficiency is put to the test by the abrupt changes in the international economic environment confronting the U.S. and other industrial nations. They were exactly what sparked the world wide discussion and implementation of industrial policy, in order to prevent the erosion of a country's position in engineering based industries, the potential erosion of position in engineering based industries, or the inability of a country's engineering based industries to develop on their own.⁶

whether it maintains competition and healthy growth of industry. A general subsidy to industry at the expense of other sectors of the economy can be compatible with competition among the producers.

⁵ The proposed joint ventures in auto production raise questions about the automatic viability of this approach to maintaining competition.

⁶ By engineering based industries we mean what are called "verkstadsindustries" in Sweden

array of manufactured goods, and during the most recent recessionary experience even our high technology sectors have come under great pressure from imports. The computer and aircraft industries could wane as net export sectors, and the question of whether we can hold our own in the domestic market for upcoming generations of mainframe computers is now seriously raised. Electronic products are essential to an emerging manufacturing technology, including the technology for revitalizing some of the traditional industries associated with metal shaping such as automobiles and machine tools. Electronic products or most other "high technology" goods are exceptional candidates for international trade—much more so than industrial products such as automobiles. This is because electronic goods often have vastly higher value to weight ratios and do not have specialized locational requirements for their production other than a low wage, disciplined labor force.

In our view a large measure of the support for having no industrial policy in the United States rests on the belief that the U.S. high technology sector will flourish in open world competition rather than the economist's gains-from-trade—markets-are-good arguments. Another factor supporting a limited public policy is widespread skepticism in the U.S. about the effectiveness of governmentally sponsored activities of almost any form.

It is the thesis of this paper that there is emerging a new manufacturing technology which, during the next 20 years, will lead to significant changes in the worldwide organization of engineering based industry or what is designated as Industry 38 in United Nations statistics. The high technology (computer) part of Industry 38 and the manufacturing technology part are importantly interrelated and mutually supporting. It will be unlikely that countries will be able to specialize in high technology design or basic R&D and have marketing and manufacturing done by others. In a market based system the cash flow required to rationalize R&D depends on successful (low cost) manufacturing. In the absence of market returns on high technology, industrial R&D will become dependent on the stimulus of unwieldy government mechanisms—and this is virtually a contradiction in terms.⁷

⁷ Jacob Schmookler, in his book *Invention and Economic Growth*, Cambridge, Mass: Harvard University Press 1966, argued convincingly that the number of innovations in a given area depends on the gains to be made from such innovations.

sheet (no debt), and paid fat dividends. This business strategy was engraved in Chrysler's organization—Chrysler was run by its engineering department. GM and Ford had quite a different outlook: Alfred Sloan concluded at the end of the war that "the consumer would rank styling first, automatic transmissions second, and high compression engines third."⁹ After the immediate postwar demand for cars was satisfied, they accelerated the style change rhythm.

Without the benefit of hindsight of tail fins, suburbanisation, the growth of the two- or three-car family, and the decline of mass transportation, it would not be immediately clear why Chrysler's strategy of low growth and little emphasis on marketing was wrong and GM's was right. (Ford went from the side of the losers to the side of the winners through its reorganization right after the war). Chrysler could have argued that its competitors' emphasis on styling was shortsighted. After the automobile had technically matured, and frequent innovations were no longer available as incentives to buy a new car, one might have branded style changes as only a temporary stimulus to demand: the replacement decision of a long-lived consumer good like a car can usually be postponed, and it may be possible to influence the timing. But these sales gains are paid for by a large increase in uncertainty, since style preferences may keep people out of the showrooms as easily as they might lure them. And the total number of cars in the consumers' hands is not decreased by style changes. Thus, a low growth strategy could be premised on the belief that the saturation of the market cannot be remedied by style changes. And once a pinch came, consumers would quickly forget whether they liked the curve of this fender better than that, and go for value. Besides, due to the increased costs of restyling, Ford and GM would miss the whole lower segment of the market (Chrysler was the only one of the Big Three to bring out a small car immediately after the war). Chrysler could point to the experience of the Great Depression, its own past success due to superior engineering,¹⁰ and even the financial solidity of the Eisenhower government and the low growth orientation of great parts of American industry.

In the early years, while there was a pent-up demand for cars, Chrysler's cars were gobbled up like everybody else's. But in 1953, Chrysler's sales flopped, and it fell behind Ford in the

⁹ Michael Moritz and Barrett Seaman, *Going for Broke: the Chrysler Story*, New York (Doubleday) 1981, p. 52.

¹⁰ Like Ford before and VW afterwards, Chrysler became a victim of its own success.

for some of the firms.¹³ Besides, consumers considered cars not just as a means of transportation, but the car was a "dream machine," an escape, and an expression of their status and personality. Therefore the emphasis on styling met an actual need, but Chrysler's dwindling market share prevented it from taking calculated risks with innovative styling configurations. drove the lower segment of the market away from cars. Lower income families could fall back on a thriving used-car market, therefore the automakers saw themselves relieved of the unprofitable task of building a small economy car, and could concentrate more on marketing and production of more expensive models.

3) The "pinch" did not come; postwar economic fluctuations were much weaker. The conventional explanation of this striking change is the automatic demand stabilizers, which were a byproduct of the high level of spending on defense and social programs (social security, unemployment benefits). Regardless of the reasons, the economy did experience a prolonged growth phase without dramatic contractions.

4) The market was much less saturated than many assumed at the time. One can even pin down concrete economic reasons for the American "love affair with the automobile." The slow but persistent decline of the price of energy and raw materials¹⁴ relative to other prices permitted cars to be produced more and more efficiently, partly by using more energy intensive production methods. On the demand side, falling relative gasoline prices caused consumers to substitute the use of their cars for other consumption expenses; they moved into the suburbs and drove to work, shopped in large scale shopping centers, etc. The automobile therefore benefited twice from this change in relative prices.

5) Compared to other industrial countries, the automobile industry obtained very supportive treatment by the various government units through a broad mix of policies¹⁵ instituted

¹³ Jack A. Menge, "Style Change Costs as a Market Weapon," *Quarterly Journal of Economics*, LXXVI (November 1962), pp. 632-647.

¹⁴ Michael Bruno, "Raw Materials, Profits, and the Productivity Slowdown," NBER Working Paper 660R (revised), December 1981

¹⁵ John Campbell, "The Automobile and Public Policy," *Joint U.S.-Japan Automotive Study* Working Paper 16, August 1983, published by the Center For Japanese Studies 108 Lane Hall, University of Michigan, Ann Arbor, MI 48109.

recovery from World War II to the late 1970s was led by a pickup in auto-sales.

The rapid expansion of the automobile market and severe penalties for relative smallness within the industry called for a much more aggressive and growth-oriented posture than the one exhibited by Chrysler in the early postwar years. Once Chrysler's error had become apparent, it was willing to learn. Colbert was very aggressive in marketing and styling, but some of Chrysler's reputation in engineering was lost in the process. His cars became very stylish and very different. Unfortunately, the introduction of his new line of cars was followed one year later by the 1958 recession and the first noticeable shift to small cars. Another crucial failure was that his attempts to reorganize the company ran afoul of the deeply engrained company practices.

1960-70

Townsend realized that it was impossible for a smaller company to win against Ford and GM; Chrysler had to grow and join them to be successful. Chrysler pledged to meet its competitors in every segment of the market. Chrysler never really fully reached this goal, because of its smaller overall size, and also because product differentiation developed during the sixties from three classes of cars to seven—i.e., the car manufacturers kept up with the rising personal income and had for every income class the right car available at the most profitable price. Also in its styling, Townsend kept Chrysler cars in line with Ford and GM. These policies emphasizing styling and marketing paid off; Chrysler made a spectacular comeback.

During the early sixties, Chrysler could grow into an expanding market. Later the great weakness of Townsend's growth became apparent: the company had to grow no matter what. According to *Going for Broke*, p. 98, Chrysler's executives first set themselves a price per earnings ratio goal on their shares, then calculated how many cars they had to sell to reach it, and then pressured their dealers to reach the sales target. "Cars just aren't made; sales are pushed," Townsend would say.¹⁹ Growth became an obsession. The authors of *Going*

¹⁹ *Going For Broke*, p. 94. Townsend knew why he was doing that: "The manufacturer needs a higher volume to survive than the sum of all its dealers." (l.c., p. 109) An economic

it is forced to; the integration would not take the form of consolidation of profitable concerns through stock exchanges, but through the purchase of one company, which was usually in financial difficulties, by another. Townsend was laying the foundation for an empire, and before he could really start, he was out of money. Instead of being able to pour it on, Chrysler had to skimp and could not even consolidate the overseas operations.

Also macro-policy took its toll. Due to Johnson's overheating of the economy, the financial markets gave the wrong signals. Manufacturers had to compete for capital with easy ways to make money by speculation in stock markets, inventory, and real estate speculation, which forced them to overextend themselves. Nixon's abrupt turn away from this inflationary policy was one of the factors in the failure of Penn Central. There was a panic that Chrysler might be next, and Chrysler could only be saved by an emergency line of credit.

The First Oil Price Shock and Downsizing

Chrysler had barely recovered that the energy crisis hit. The problems of the gas price shock were exacerbated by the government policies responding to it. A supply price shock means that the equilibrium of the economy has to adjust at a lower level of output. With downside rigidities of prices, it is unrealistic to expect that prices will not rise; the goal of the policy must be to prevent the one-time price adjustment from becoming permanent inflation.²¹ One interpretation is that the government saw "inflation" and reacted with restrictive policies, as if the price rises had been demand induced. Interest rates soared at a time when industry had to make capital investments in order to substitute away from energy. GM had enough of a cushion to do the correct thing *despite* ill advised government policies, it raised its expenditures. Chrysler could not and almost completely shut down; it even laid off its engineers.

A lucky circumstance during that time was that instead of roaring racing cars the young American car buyer suddenly discovered a liking for pickup trucks, four wheel-drives, and

²¹ Robert M. Solow, in the article "What to Do (Macroeconomically) when OPEC Comes?" in S. Fisher, ed., *Rational Expectations and Economic Policy*, University of Chicago Press, 1980, recommended cuts in indirect taxes, in order to soften the supply side blow.

for gracefully reversing a policy bundle which had become obsolete. For instance, 1976 would have been the perfect time for abolishing the price controls for domestic oil.²³ Pollution and fuel consumption considerations might also have made an excise tax for large cars a publicly acceptable solution. Furthermore, this would have been the time for abolishing the bias for spending and against saving.

While government inaction and therefore perseverance in old ways which were no longer appropriate was hurting the domestic auto industry, its activism in a different area brought additional disadvantages on Chrysler. The increasingly stiff safety, emission, and fuel economy standards clearly put the bigger manufacturers at a competitive advantage. Ever since Carter came into office, Riccardo spent much time in Washington pleading for regulatory relief—with mixed success. Was this an appropriate use of Chrysler's scarce management resources?

The costliest requirement for the auto industry, however, was the need to downsize. Although this too, often is chalked up to government as the fault of its fuel economy requirements, the market would have demanded it with or without government regulation. On the other hand, the fact that the fuel economy goals referred to the fleet average of each manufacturer rather than to each car line separately favored the large producers, who fully cover every segment of the market and clearly have many more options for compliance than Chrysler or AMC, and can more easily bear the fixed costs of engine redesign.

Digression: An Economist's Pipe Dream

Above we enumerated only the most obvious reactions to the fluctuations of the oil price. With some theory clarifying the deeper significance of what was going on, even broader and more effective policy implications might have been drawn. Let us assume, hypothetically, that the six points given on pages 10–12 were indeed the main factors responsible for the postwar growth of the auto industry, and that they were known to the Federal government. Then (with hindsight!) we can say that the government's policy advisers could have gone through

²³ "Immediate decontrol in 1976 would have raised the price of gas by less than 10 cents per gallon at worst." (William Tucker, "The Wreck of the Auto Industry," *Harper's* magazine, November 1980, pp. 45–60.)

to provide people with the means to bear these additional expenses than stalling for over half a decade before the necessary adjustments could be made. From a business perspective, "human services" should not be considered a handout but a necessary prerequisite which frees industry to do what is efficient.²⁴

The Second Oil Price Shock and High Interest Rates.

"Customers flocked to the showrooms during the first three months (of 1979), engaging in a buying spree that was contradictory to economists' and analysts' warnings of a major national recession."²⁵ However, gasoline lines then reappeared in some parts of the country, and Chrysler was in no position to weather this renewed storm. Already in 1978, Chrysler was so much in debt that only an exceptional series of profitable years would have enabled it to comply with the repayment schedules and also make the necessary investments. This could have been known.²⁶ Yet Chrysler's lenders kept the loans flowing, and as late as May, 1979, Chrysler management refused a private bailout plan by Rohatyn.²⁷ They could not foresee that Reagan would refuse to stimulate the economy out of its recession and would live with extremely high interest rates for a long time. The experience which they had to look back to was more like the Fed's reaction to the Franklin National Bank failure. Nevertheless, prudence must have told them that the positive outcome which they were hoping for might not occur. One can only speculate which of their obligations they thought they could defer: was it pension obligations? local taxes? wages? regulatory requirements? Or did they hope

²⁴ This is one of two reasons why West Germany weathered the storm without price controls. Due to a much better "safety-net," the Germans could get by even after the price rises of gasoline and home heating. And as it turned out, they were willing to bear the burden; when Chancellor Helmut Schmidt said that they were "spoiled," the Germans did not object and buckled down. (The other reason was that West Germany allowed its currency to rise against the dollar and thus could cushion part of the oil price shock.)

²⁵ *Automotive News*, 1980 Market Data Book issue, April 30, 1980, p. 8

²⁶ One can e.g. read it clearly in the study by John B. Schnapp, *Corporate Strategies of American Manufacturers*. Lexington, Mass.: D. C. Heath, 1979, which must have been completed before the oil price shock.

²⁷ *Going for Broke*, p. 255.

probably best to look at financing of both new and old ventures in some integrated fashion.

New ventures usually have only a small stock of physical capital in place, and the main effort centers on deciding the payoff of a new concept. There is usually only a small initial stock of human capital which is venture specific. On the financing side a key issue is whether the expected value from the proposed venture is worth it.

Investor risk can be reduced if several individuals participate in financing so that only a small share of each individual portfolio is tied up in a particular firm. However, if the firm is truly new and its prospects difficult to evaluate, the costs of deciding to invest are greater and may involve a substantial fixed component. For such an investment to pay one has to invest enough so that the decision and evaluation costs are covered. This give rise to a specialized "venture capital" market with smaller numbers of investors devoting large amounts of effort to evaluating specialized, new types of investments and placing large individual bets (or organizing themselves as a venture capital firm which sells shares to less technically involved investors).

It is a more complex task to dilute the *workers'* risk, and less economic research has been done on this. Key managers and workers make the enterprise run. What risks do they face if the project collapses? One possible case is that their skills are useful in alternative employment and the earnings loss is temporary until they are relocated with a new employer. For example, in the case of oil exploration, where technology is known but the outcome of a specific well is not, there is substantial capital risk and arrangements for sharing this financial risk are common. Worker risk is not exceptionally great because other employment opportunities exist should the particular well fail. For a new unique enterprise (as well as for long standing enterprises) this may not be the case; a person who becomes expert in an enterprise which fails as a *type* will experience a loss of human capital specific to that type of firm (whether there is only one or whether there are many firms of that type). This loss will be reduced by taxes which are a type of social insurance, and there may be methods for "self-protection" as well. One form of self-protection is part-time commitment to a new enterprise until its viability is more assured; another is active participation in a large network of innovative activities associated with a type of skill. This latter approach is illustrated by

Unfortunately, the tax laws of most industrial countries are complex enough that we do not know whether meaningful takeovers are being discouraged or, worse yet, when the central managerial task has become discovering loopholes and coping with regulations rather than attending to the real activities of the firm.

In the case of Chrysler, many have argued that the problems that led to the 1979-82 crisis were largely the result of "bad management" in the period after World War II. If a firm's problems are simply bad management, the basic prediction from economic analysis is that corporate takeovers and management reorganization are to be expected. Missed profit opportunities from insufficient attention to product quality will lower the value of the firm's shares under current management and should encourage takeovers. This does not appear to have been a serious issue in Chrysler's recent history, though it was important prior to World War II.²⁸

A possible explanation for the lack of recent takeover threats to the major auto companies (all of which have been accused of bad management at one point or another) is that even if management had failed to do the best job, the automobile enterprise is specialized enough that an outsider coming in would do much worse. Furthermore, such a takeover would have required immense amounts of capital and a long lead time before it would turn a profit (since Chrysler management was certainly sophisticated enough to exhaust all the cheap possibilities of squeezing out more profits in the short run). Any firm taking over an auto firm can expect wild fluctuations of earnings in cycles lasting several years. These fluctuations are probably one of the reasons why none of the American auto manufacturers is part of a diversified conglomerate. In bad times, either minor production branches unrelated to auto are sold, or the firm decides to exit auto production (Kaiser-Frazer 1955).²⁹ Chrysler management also usually showed that it was "willing to learn," i.e., to adopt what is the conventional wisdom of the time, which might also be interpreted as a measure preventing takeover. The widespread claims of weakness via mismanagement applied to so many large, traditional industries is something of a puzzle since there do not appear to have been numerous takeover threats.³⁰

²⁸ Michael Moritz and Barrett Seaman, *Going for Broke: The Chrysler Story*, New York, Doubleday, 1981.

²⁹ Lawrence P. White, *l.c.*, p. 47

³⁰ Perhaps the high share of industry output arising in a small number of firms and the

Rational reorganization contingent on a financial crisis was one of the main issues in the Chrysler case. The present value of the reorganized firm (including some form of wage concessions) was seen as less than the value of outstanding debt and pension obligations but greater than the salvage value of the assets.³¹ Chrysler and other long-lived manufacturing corporations can be characterized by a great deal of specific or dedicated physical and human capital. In such a case abandonment of the firm to satisfy the needs of lenders to test their liquidity will ensure collapse. For this reason we have various policy devices to protect the firm from its creditors even when the value of the firm's assets falls below the nominal or book value of debt.³²

To promote economically viable reorganizations, public policy can operate in several ways. First, the law can provide an environment in which the initial funding can be based on agreements which provide for repayment contingent on various possible future outcomes. This will allow lenders to know what likely risks they are taking in providing loans. However, there are limits to even the most carefully thought out contract based on the clearest possible set of laws. The set of all possible compound events which could occur is virtually impossible to enumerate, and, as indicated already, the fact that actual dedicated physical assets will be involved means that the value of the assets in place as the basis for repaying lenders will be commonly less than the value of the assets in continued use in the enterprise. Loans which are tied to key, marketable properties may provide an individual lender with protection but could jeopardize the value of specialized assets if sold off in a financial crisis. To illustrate,

³¹ For a discussion of the market value of Chrysler's physical assets if sold to other firms see the study by the Department of Transportation of which excerpts appeared in *Challenge*, November-December, 1979, pp. 49-50.

³² See M. J. Gordon, "Towards a Theory of Financial Distress," *Journal of Finance*, May, 1971 (Papers and Proceedings), pp. 347-56, for a description of the value of financial assets of the Chicago, Milwaukee, St. Paul and Pacific Railroads between 1967 and 1970. An individual investor with a margin account would have had the loan "called" as soon as the value of assets fell to the value of the loan. A difference between liquidation of individual investments and corporations in this case is that the individual being severed from his financial investment will not lead to a loss of real output.

headquarters that operates very much as a commercial and an investment bank when it comes to obtaining an efficient *internal* allocation of funds.”³⁷

In this respect the corporate headquarter of a large technologically advanced manufacturing firm is really in large measure an investment bank engaged in appropriate allocation of funds among a set of related, smaller firms. The larger corporation is supposed to solve refinancing problems in an efficient (*joint* profit maximizing) manner. This means deciding not only what new lines to finance (front wheel drive autos) but also inherent complementarities between different activities such as an engine plant to produce a particular type of power plant and a body shop section of an assembly line which will produce a compatible unitized body. The bankruptcy of a large manufacturing firm is more like the collapse of an investment bank which is specialized in certain lines of businesses and which finances individual firms which have strongly interrelated activities. As suggested earlier, the cost of such a collapse is that it will likely bring down viable activities along with those which have a payoff to being discontinued.

It is important to realize that there is also an upside from such large firms in that they have the function of investment screening and *selecting useful ventures* as well as the more often emphasized improvement of productivity of existing activities. This is highlighted in a recent study which indicated that “*at least 50 percent of total productivity performance in Swedish industry seems to be the result of structural change between firms (establishments) rather than technical change at the firm (establishment) level.*”³⁸

III. How and Why was Chrysler Bailed Out?

When Chrysler went to Washington in the summer of 1979 to ask for a one billion dollar tax relief and later for loan guarantees, its bargaining position with respect to the government was on the one hand the immense cost of a collapse due to Chrysler's size and concentration in only few geographic locations, on the other hand a thorough restructuring of the company under a strong leader Iacocca, which would hold the promise that the old errors would not be

³⁷ Gunnar Eliasson and Ove Granstrand, “The Financing of New Technological Investments”

³⁸ Source desired

in the long run—and the trimming-down of Chrysler's operations can in fact be considered as the preliminary actions making such a venture possible. (Chrysler had been a rather big hunk for anyone to swallow or even to combine with.)

Under the general heading of "mergers and combinations" fall also the divestments by Chrysler of its nonautomotive operations. One of the requirements of the Loan Guarantee Act was that Chrysler had to raise cash by the sale of assets. Indeed it sold everything unrelated to the auto business and also some financial assets of Chrysler Financial. In its critical near-insolvency phase January–May 1980, while it was negotiating with the banks and interest rates were at record highs, Chrysler was also forced to pare down its product line from five car families to two front wheel drive platforms.

Private debt restructuring by Chrysler's lenders. With its banks, Chrysler had reached the point where they were no longer willing to commit new money, but rather were concerned about how to recoup their previous investments, even if this involved "pulling the plug" on Chrysler. "There were dragged in by the Federal government kicking and screaming."⁴⁰ Also the requirement of the Chrysler Loan Guarantee Act that the banks should provide \$650 million of new unsecured loans as a precondition of the loan guarantees could not change the bankers' posture. Indeed, the government's insistence on this point was not a very strong one; the wording of the Act was rather vague, and the determination by a different branch of government, namely, the Federal Reserve Board, the FDIC, and the Office of the Comptroller of the Currency, that loans to Chrysler had to be considered as "doubtful," (September 1979) did not help the issue either. Philip Lowman, vice-president with the National Bank of Detroit, commented: "One arm of government was telling us to lend Chrysler money, while the other was telling us not to lend any money."

In the Senate Hearings on the Loan Guarantee Act, Manufacturers Hanover's president John F. McGillicuddy commended Congress for helping Chrysler, said that Chrysler deserved being saved, but added that his bank was not prepared at this point to come forward with new unsecured loans. This was considered a blow to the plan, but the apparent contradiction

⁴⁰ Hal Lancaster and Sue Shellenberger, in a *Wall Street Journal* article about Chrysler and International Harvester, January 18, 1983, pp. 1, 23.

other jobs. Suppliers might put Chrysler on a cash or COD basis, or might refuse to sell to Chrysler. 2) However the bankruptcy act has provisions that the present management can be maintained. 3) Banks can offset accounts versus loans, so checks could bounce 4) New loans with priority over the old ones could be obtained, but probably only for the going business, not for capital expenditures. New product development would have been allowed only with specific permission by the courts. 5) Under chapter 11, sweeping financial restructuring is possible. But a reorganization plan must be devised which might take many months in such a complex case as Chrysler.

Private pre-crisis bailout: In May 1979, Rohatyn came forward with a private bailout plan after the pattern of Big Mac, under his supervision. He was rebuffed by Chrysler management, and it seems that personal pride played a role. (See *Going for Broke*, pp. 256-257) This issue does not appear to have been discussed in the Congressional hearings.

IV. Labor Market Implications

Whether or not Chrysler is the employer, a manufacturing job is an uncertain matter. Even during normal times, or periods of rapid output growth, manufacturing industries have been characterized by a great deal of transition and adjustment. This point is illustrated by examining employment patterns in various industrial regions of Japan during the period 1970-1980, and in Michigan and California during the period 1968-1978. Despite the rapid output growth in Japanese manufacturing during the 1970s, the share of the labor force employed in manufacturing in the industrial regions⁴² declined noticeably and the share of employment in services and retailing increased.

In Michigan the share of persons on private payrolls engaged in manufacturing declined from about 46 to 39 percent during the period 1968 to 1978. (Remember that 1978 was a peak year for auto production, prior to the 1979-1982 recessionary period.) In California,

⁴² The particular areas are the three industrial prefectures of Aichi, Kanagawa, and Osaka. See Frank P. Stafford, "Economic Aspects of Advanced Manufacturing Systems," in *Research Program for the Industrial Technology Institute*, The University of Michigan, 1982.

suppliers, dealers, and shippers)⁴³ who would have had great difficulty finding work at wages near the U.S. manufacturing average.

Table 1.
Chrysler Employment Numbers
(Source: annual reports)

Year	World- wide	U.S. total	U.S. hourly	U.S. pension recipients
64	142410	104845	73226	N.A.
65	166733	126000	90100	N.A.
66	183121	133114	94539	N.A.
67	215907	127894	90156	N.A.
68	231809	140204	102522	27042
69	234941	140454	103388	29469
70	228332	129127	95048	31329
71	227394	129531	95698	36455
72	244844	136620	100957	40248
73	273254	152560	113769	39548
74	255929	135782	99351	41914
75	217594	103342	76718	46660
76	244865	129186	98911	48836
77	250833	133572	100889	51088
78	157958	131758	96909	51910
79	133811	109306	76018	54573
80	92596	76711	51938	59413
81	87825	68696	45958	63159
82	73714	58607	39546	64330

The possible cost of this is somewhat higher auto prices to a large number of consumers and somewhat higher taxes to finance the loan guarantee. A common explanation offered by economists how such an intervention would take place is that a relatively small group (Chrysler, the auto suppliers and workers) with a large per capita interest in the policy outcome will have incentives to apply political pressure and achieve personal gains. Yet, overall, there is a negative sum game because these gains add up to less than the many small losses of others, usually consumers, who will not bother to counterlobby as individuals if they see only small

⁴³ Alternative estimates, in the same ballpark, in the "Statement of the Honorable G. William Miller, Secretary of the Treasury," reprinted in *Senate Hearings on Financial Situation*, p. 180: "approximately 113,000 Chrysler employees (as of late September, 1979), about an equal number of employees of its dealers, and 150,000 employees of its suppliers... Conservatively, unemployment would increase by 75,000-100,000 during the 1980-81 period."

Chrysler. However, trade related job loss and long term stagnation of regional labor markets has motivated some illuminating research on the more general subject. This research can be useful in thinking about the Chrysler experience. There are six areas of research on labor markets which appear to bear on the question of the labor market for manufacturing in a regime of international trade. These are:

1. Cost of worker dislocation through job loss for plant closures in labor markets with excess labor.
2. The role of attrition and reassignment as an alternative to layoffs.
3. The potential displacement effects of robotics and advanced manufacturing systems.
4. The government costs of layoffs in terms of unemployment insurance, welfare payments, and reduced tax revenues.
5. Evidence on the effectiveness of retraining programs.
6. The role of wage levels in open (free trade) economies or what is termed the Scandinavian model of wages and inflation.

Each of these subjects is quite broad, so only a few of the main points will be emphasized. Most attention will be given to the first topic.

1. Costs of worker dislocation.

Empirical studies about the cost of worker dislocation are available from several countries and different labor market settings. Here we will review evidence based on studies in the U.S., Sweden, and Canada.

A recent paper by Jacobson and Thomason⁴⁶ extends Jacobson's earlier work on earnings loss of workers displaced from manufacturing. The basic idea is to compare the path of earnings for those displaced to what it would have been in the absence of the displacement. Their

⁴⁶ Louis Jacobson and Janet Thomason, "Earnings Loss Due To Displacement," Research paper CRC 385, Public Research Institute, Center for Naval Analysis, 2000 N. Beauregard St., Alexandria, Virginia, August 1979

Table 2. Earnings Losses of Prime-Age Male Workers
Displaced Due to Plant Closings

	Average pre-displacement earnings of sample (1970 dollars)	Number of displaced workers in sample	Average Annual Percentage Loss (Negatives indicate Gains)	
			First 2 years	Subsequent 3 years
Automobiles*	7881	685	24.1	14.6
Industrial Chemicals*	7823	531	15.9	16.4
Flat Glass	7677	386	16.3	12.2
Men's Clothing	8165	109	21.3	8.7
Rubber Footwear	7220	39	32.2	-9
Cotton Weaving*	5520	537	7.6	5.2
Electronic Components*	8495	421	10.1	.2
Shoes*	6744	426	11.3	-1.9

* denotes industry included in displacement study

withdrawal is not properly taken into account.⁴⁷

Auto workers lose the most and have particularly large initial losses, whereas in cotton weaving and electronic components, the average annual percentage loss in earnings during the first two years and the subsequent three years is much smaller. Common characteristics of industries with large earnings losses are: low voluntary attrition, high rates of unionization, and a high percentage of male workers.

The other result which the research indicated was the substantial influence of local unemployment rates on earnings loss. In a study of displaced steel workers it was found that if a worker was displaced into a labor market where unemployment was 1.4 percentage points higher than the average (which was about 4.1 percent at the time of the study), earnings losses over the first six years were about eight percentage points higher than average. Losses for young, low-tenure workers displaced into low unemployment rate labor markets were negligible. Losses of older workers were influenced by labor market size. A worker displaced into a small labor market (one with a population of 200,000) lost about 5 percentage points more than if he were displaced into an average size labor market. (The average size in the analysis was a population of 900,000)

Another project by Jacobson⁴⁸ involved analysis of displacement in the depressed labor

⁴⁷ Jacobson and Thomason, p. 7

⁴⁸ "The Effect of Employment Declines in Buffalo and Providence on Workers Earnings and

Industry, Trade, and Commerce and the Unemployment Insurance Commission, they were able to determine the (discounted present value of) earnings losses to workers from these two specific plants as well as for workers permanently separated from their jobs in the same regions as the two plants over the period 1974-1976. In 1977 dollars, the estimated present value of income losses to workers averaged \$4,800 in the Owen Sound plant and \$2,100 in the Sherbrooke plant. These losses account for taxes on income that would have been earned had displacement not occurred as well as the value of unemployment insurance and an imputed value for time of those unemployed. The losses for the Owen Sound workers were larger because the workers were older, had more seniority and higher wages than the Sherbrooke plant workers. The results also paralleled the Jacobson-Thomason and Heikensten results in that higher rates of local unemployment implied larger earnings losses.

The Canadian study provided a calculation of the benefits from delaying the layoff of an average worker at the two plants for 5 and 10 years. For the Owen Sound plant delaying a layoff by 5 years amounted to \$19,170 or about 33 percent of the wage bill. Using such calculations they indicate how one can compare the potential benefits of avoiding layoffs with the reduced costs to consumers of allowing imports to close the plant. They argue that if the latter exceeds the former, efficiency requires plant closure and *can* be combined with compensation or retraining for workers. However, the practical matter of determining whether imports were the actual cause of the closure is not administratively simple and retraining for jobs in a declining labor market is a questionable enterprise as well.

2. Orderly transition and the use of attrition rather than layoffs.

Given the rather bleak picture which emerges from the displacement literature, it certainly would seem that alternatives to displacement could be a more attractive way to deal with labor market adjustment at the level of the firm. Since a fairly large share of separations from the firm occur because of quits or retirements, perhaps this adjustment route is more palatable. Again there is an exciting body of illuminating research, and (one of) the most carefully done studies appears to be reported in a paper by Frank Brechling.⁴⁹ Defining

⁴⁹ Here we need the reference

in the auto industry). For some firms a great deal is now known about projected reductions in workforce associated with the adoption of a wide array of new production technology. A change to front wheel drive designs mandates a change in virtually all key components (including unitized body construction to reduce weight). In implementing state of the art replacements for aging capital can the firms and workers apply the sort of advance employment planning suggested in item 2?

The labor cost differentials between U.S. and offshore manufacturing are likely to provide continued incentives for increased application of capital equipment. As such it is reasonable to expect a relatively high rate of labor displacement for a given output level. The main uncertainty is over how rapid this rate will be. While some see cataclysmic shifts toward substitutions of capital for labor others argue that the institutional inertia itself will slow the rate of change and permit labor market adjustment at historically observed rates. This latter point of view is argued most forcefully by Hunt and Hunt.⁵¹ However, there are several reasons for believing that technical change could be, and with open markets indeed must be, more rapid than the historical norm. Unless industries collapse or are given guaranteed import protection, they will be changing rapidly just to meet the market test; life should be great as a consumer, but hectic as a supplier. For this reason it appears that we can expect more rapid technological change, more excitement, and more employment risk in manufacturing. The Chrysler experience has certainly been a part of this.

Due to the large infusion of new money and the complete revamping of its product line, Chrysler has had the most dramatic change in output per worker, despite the fact that the other auto firms were engaged in restructuring of major proportions. It is probably not an accident that Chrysler also had the the most substantial restructuring at the management level. Labor displacement will not simply be the process of literally replacing workers with robots but with a comprehensive, overall effort to achieve production efficiencies by changed layouts within plants and spatial reconfigurations of plants in relation to one another. Successful outcomes will be replicated and failures dropped, leading to additional labor market change.

⁵¹ H. Alan Hunt and Timothy L. Hunt, *Human Resource Implications of Robotics*, W. E. Upjohn Institute for Employment Research, Kalamazoo, Michigan, 1983

better off with the change to imports. Fourth, some (majority) of workers will be reemployed and there will be associated government tax revenues from this. It is calculations of this sort which are required; estimates of government tax losses versus costs of government aid (assuming success) are not sufficient. On the other hand, an approach which ignores these government and other costs of plant closure is not an informed approach.

5. Evidence on the Effectiveness of Retraining Programs.

The literature on retraining is diverse and some concentrates explicitly on effects of training of workers displaced by plant shutdowns. In an analysis and then a reanalysis of workers terminated by an Armour plant closure, it was found that workers who chose to be retrained did not increase their earnings by this choice.⁵³ There are more studies of vocational training programs which are not restricted to those displaced by plant closures. Here the results indicate that earnings gains for those retrained are substantial. Specifically, a recent study by Bassi⁵⁴ indicated that training programs administered under the Comprehensive Employment and Training Act (CETA) have had a positive and significant impact on earnings of participants, and that the benefits of on-the-job and classroom training components were greatest relative to their costs.⁵⁵

It is possible that both the results showing substantial effects for CETA trainees and negligible effects for those displaced by shutdowns are valid. If so, it implies that retraining at the point of labor market crisis is less effective than retraining under more normal conditions. So with the use of unreplaced attritions, planning and precrisis measures may be far more effective than putting together pieces after a major dislocation.

⁵³ James L. Stern, Kenneth A. Root and Stephen M. Hills, "The Influence of Social-Psychological Traits and Job Search Patterns on the Earnings of Workers Affected by a Plant Closure," *Industrial and Labor Relations Review*, October, 1974, pp. 103-121.

⁵⁴ *Journal of Human Resources*, Fall 1983

⁵⁵ See also Nickell (1982) who assesses the role of training in Great Britain.

Consensus about Labor Losses in the Loan Process

While wage levels and growth can be defined by economic targets, how was the wage issue actually reflected in the arguments of those who engineered the loans? It turns out that the cost to Chrysler workers was far less a point of discussion than the cost of Chrysler workers. When, e.g., Senators Lugar and Tsongas introduced proposals containing three year wage freezes, the New York Times wrote:⁵⁷

"Both measures reflect strong disapproval within the committee of the wage contract recently negotiated between Chrysler and the UAW. 'There is a consensus on this committee that there must be a clear sense of sacrifice,' Senator Tsongas said. 'What we have now is a clear sense of embarrassment.'"

Although even Iaccoca was opposed because he feared he could not get qualified people for Chrysler under these conditions, a wage freeze was indeed adopted by the wide margin of 10-4. It would be too simplistic to make anti-labor sentiments responsible for this consensus; some diffuse concern that high autowages may be a danger to America's industrial base probably lurked in the background.

Another aspect of the labor costs are the unemployment compensation costs and lost revenues for the various levels of government. There was consensus that, even if only partially and temporarily successful, the loan guarantees were the least costly of the alternatives faced by government. The priorities are illustrated by the testimony of the NAACP head Benjamin Hooks before the Senate hearings,⁵⁸ who did not cite the inevitable welfare loss for the Black Chrysler employees lucky to make \$18,000 to \$20,000 a year, but rather adopted a Detroit police point of view: through the extended family system, he argued, these Chrysler employees support many of their poor relatives and thus keep the Black community stable.

The cost to the Chrysler workers, especially the cost to the Black Chrysler worker, had apparently been a more significant factor in the more fundamental decision to go ahead with the Chrysler bailout at all. At one point in October 1979, the loan guarantee process was prevented from stalling only by an intervention by Carter, prodded by the close connection between Carter and Detroit's Black mayor Coleman Young.⁵⁹

⁵⁷ Nov. 28, 1979, pp. D1, D19

⁵⁸ pp. 947-956

⁵⁹ *Going for Broke*, p. 283

Another version of the argument is termed Verdoorn's Law, which is the idea that expanding output and the implementation of new technology leads to *learning effects* which, in turn, reduce *industrywide* costs through diffusion of knowledge and through imitation. Stagnant or declining output limits technical change, elevates costs and, in open world markets, invites full collapse of an industry. One obvious counter to this learning effects argument of Verdoorn's Law is that firms producing in slower growing markets may be able to discover the cost-effective technologies used by competitors experiencing rapid growth and can then match costs through imitation of production techniques. If so, knowledge based cost advantages can be transferred unless there are major cost of acquiring complementary skills on the part of the workforce. Then delays in redeploying managers and workers could be so large as to lead to industry extinction.

A third version of the *industrywide* scale economies hypothesis is the spatial concentration argument. Where production requires shipping of intermediate products from specialized suppliers, the spatial concentration of industry as well as sufficient scale will be essential for low industry costs. For this reason airframe assemblers and their suppliers are found geographically concentrated, as are auto assemblers and their suppliers, as are producers of financial services. This last example involves not shipment of physical intermediate goods but costs of communication, both person-to-person and electronic.

Explicit or implicit belief in geographic and other forms of *industrywide* scale economies has led to increasing concern by national governments over the well-being of their industries. This is because, if the hypothesis is valid, behavior of individual firms may be insufficient to compete internationally and direct cooperation among firms is difficult for antitrust reasons if not the usual reasons of competitive jockeying for position.

What does the Chrysler experience imply for any of this? In a closed economy the other auto firms should be happy to see the exit of a competitor, but if industries of different countries are competing via some form of the *industrywide* scale economies hypothesis, the exit of a domestic competitor may signal higher costs and reduced long term profits of the remaining firms.⁶² In the case of the domestic auto industry this might imply that the

⁶² Conversely, suppose one regards smaller cars as a separate industry or "subindustry." If

services (of machine tools) embodied therein.

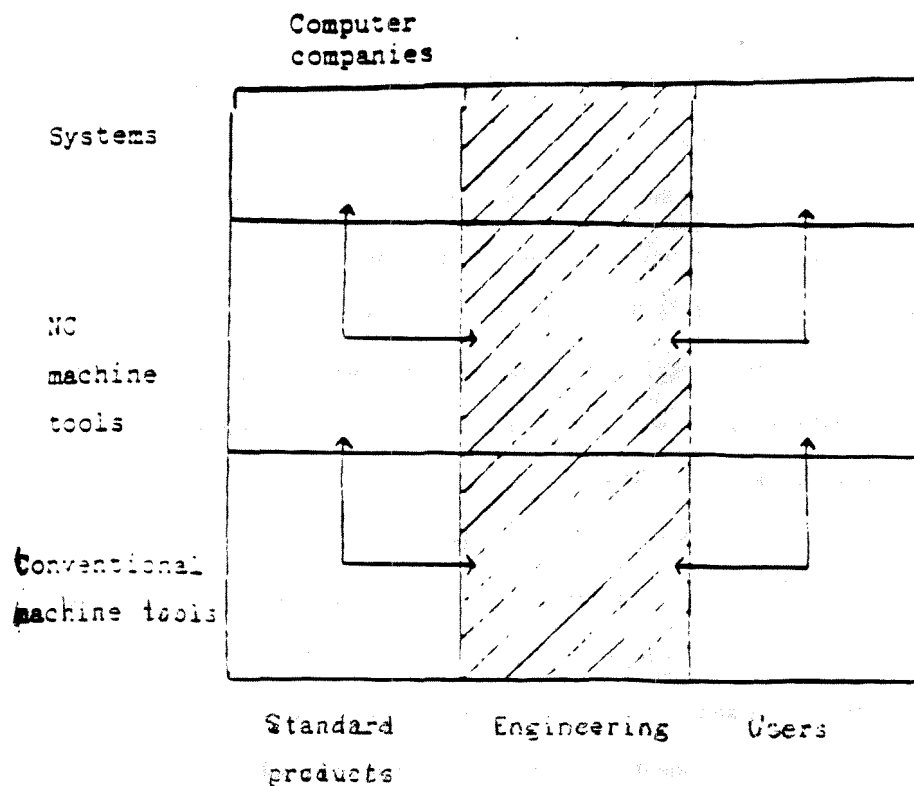


Figure 2. Product Strategies of Machine Tool Firms

treme case, a production firm could become a producer of machine tools (as contemplated by General Motors and as practiced by Fiat).

What is also important in Figure 2, is the cross-hatched area representing the specialized engineering effort required to translate standard capital equipment into production applications. This process is likely to be highly interactive with substantial amounts of either design and service components to the contract, or with the capital equipment supplier being hired on an hourly basis to carry out a joint project with the producer. Few projects are of the "turnkey" variety (wholly developed by the capital goods producer) or of the type stylized in traditional economic model in which capital inputs (machine tools) are procured in a competitive (world) factor market and applied to the "known" production technology. The difficult task is integrating basic functions of the final consumer product with manufacturing components (such as machine tools) and the overall workplace organization.⁶⁴

⁶⁴ The pitfalls of this new technology are vividly illustrated by the following story: While Chrysler in 1980 became the most technically advanced automaker in the U.S. by its installation of 64 Unimate robot welders each in its Newark and Jefferson assembly plants (*Automotive*

It would be unwarranted to assert that IBM can survive now that Chrysler has restructured itself! Yet it is clear that there is a link between manufacturing and electronic technology. Apparently this has even been given a name recently, "mechatronics."⁶⁶

To date, the success of the U.S. computer industry has rested primarily on a rapid development of new products. This has been sufficient to sustain employment in manufacturing of electronic products, as noted earlier. As other countries devote resources to put themselves in a competitive position with respect to design, the productive technology will assume greater importance for the U.S. industry. What this implies is that the U.S. computer industry will have to devote resources to *both* design and manufacturing.

Most discussions of the industry seem to imply that a science-engineering based *design* lead is critical *and* sufficient. The hypothesis here is that there is likely an important connection between profitable sale of products and their design, redesign and improvement. To have serious production cost disadvantages will limit profitability and will lead to reduced cash flow to finance product change in the computer industry just as has already occurred in some sectors of traditional manufacturing, where ailing industries are characterized by poor returns because of imports, low investment, and further deterioration in their relative cost position in world markets.

To deal with this problem there should be some institutional mechanisms for discovering and reporting on basic manufacturing technology which is heavily based on electronics applications, "mechatronics," if that's the term we are to work with. The process of discovering cost-effective production technology will likely take place in specific manufacturing industries. However, there are likely to be some general principles of organization and design which apply across products or groups of products. These general principles are probably close to being what economists term public goods: they can have additional users without additional costs. The principles would possibly be based on a blend of mechanical engineering, electrical engineering, economics, and organizational behavior. What is being suggested is that there are some generic principles of manufacturing (at least for types of manufacturing) which can be

⁶⁶ *Mechatronics: Developments in Japan and Europe*, edited by Mick McLean. Quorum Books, Westport, Connecticut 1983.

probably less than an ideal industrial location!

VI. Strengths and Pitfalls of the Bailout Procedure

*The Case for "Messy Bailouts:"*⁸⁷ The Chrysler case illustrates that one set of fixed bankruptcy rules cannot be adequate for all cases. The option that instead of the usual legal procedure a nonstandard government intervention can occur—without government being *obliged* to make such an intervention—is a valuable addition to the policy instrumentarium available.

The loan agreement procedure broke new ground by the fact that it was carried out despite the unprecedented amounts of money involved, money which enabled Chrysler to restructure itself in a very major way and to be at the forefront of technology. Also, the consistent application of the principle of "equality of pain," i.e., everyone has to chip in and no group is allowed to profit from its ability to make the reorganization fail, set a strong precedent. The recent Supreme Court decision exempting corporations under bankruptcy from their labor contracts can be considered the logical extension of this principle: if the firm's partner normally regarded as most worthy of protection is forced to sacrifice, then suppliers and others will have a hard time arguing that they should be given special treatment.

While some underlying principles were obeyed, a weakness was that the logic of the loan guarantee was never formulated in form of an explicit philosophy, but rather developed only implicitly through the consensus solutions to a series of problems which were dealt with as they emerged. This pragmatism, which is part of the American political tradition, can be a drawback. The failure to discuss explicitly the sum total of the many partial decisions is a clear handicap in the case of the automobile industry. One is reminded here of the budget process. For a long time, Federal expenditures were approved by Congress on a case by case basis, without regard to the impact which the sum of these expenditures would have on the economy. It was not until 1921 that the President obtained the responsibility

⁸⁷ This is the title of an article in *Fortune*, October 3, 1983, by Brian Freeman and Barrett Seaman.

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