
REGULATING CHRYSLER OUT OF BUSINESS?

Kenneth W. Clarkson, Charles W. Kadlec,
and Arthur B. Laffer

WHEN REGULATIONS to protect the environment, improve safety, and meet other national goals were first proposed in the mid-1960s, the costs of complying with those regulations were widely assumed to be far less than the expected benefits. In recent years, that assumption has been challenged by experience and by the first empirical efforts to quantify at least the direct costs of regulatory compliance to the nation's economy.

What is not yet fully realized, however, is that regulatory requirements that appear uniform and "fair" may substantially alter the competitive structure of an industry because the burden tends to fall disproportionately on smaller firms. Thus the inadvertent result may be to cripple the smaller firms and concentrate market share in the hands of the biggest and wealthiest corporations. The automotive industry, a product of more than seventy-five years of development and a bulwark of the U.S. economy, provides a primary example of these effects of regulation on competition.

In 1965, the automotive industry was singled out by Ralph Nader for producing "unsafe" cars. The next year Congress responded

Kenneth W. Clarkson is professor of economics at the University of Miami's Law and Economics Center. Charles W. Kadlec is a partner of H. C. Wainwright & Co., Economics. Arthur B. Laffer is a partner at Wainwright and professor of economics in the Graduate School of Business, University of Southern California. This article is drawn from their study, *The Impact of Government Regulations on Competition in the U.S. Automobile Industry* (Wainwright & Co., 1979).

to Nader's exposé by passing a law authorizing the Department of Transportation to regulate auto design and manufacture, the primary purpose being to increase auto safety. Less than five years later, pollution became a primary societal concern, leading to new laws whose primary purpose was a 90 percent reduction in automotive emissions. Then, in 1974, a group of oil-producing countries, acting as a cartel, raised the price of oil fourfold. The Congress, perceiving an oncoming "energy crisis" in the United States, reacted by passing a law regulating energy consumption—including in it mandatory minimum automotive fuel-efficiency standards.

The Regulatory "Tax"

It will illuminate our analysis to think of regulations, from the perspective of the firm, as a form of taxation. The government, after all, once it decided that the national interest would be served by a cleaner environment, safer work place, and fuel-efficient cars, could have then appropriated funds out of the Treasury to gain these objectives. Instead, to a large extent, it has chosen the course of requiring firms to install the equipment or take the design action necessary to comply with a regulatory mandate. To the extent that the requirements are effective, the companies commit resources in ways other than they would have in response to demands of the marketplace. (That, in this context, is what "effective" means.) The expenditures are made as a condition of staying in business and are therefore viewed properly as

a tax payment: the economic value of compliance to *the firm* is equivalent to a receipt for taxes paid.

To take this approach is not to argue that expenditures required to comply with regulations produce no benefits, any more than recognizing income taxes as a cost of doing business argues that government programs funded by those taxes are worthless. The treatment of regulatory burden as a tax is perfectly consistent with the fact that a reduction in auto emissions leads to a cleaner environment, and the further fact that a cleaner environment has economic value.

Nevertheless, whatever the other effects of regulation, it does act as a tax. In both the short and long run, real prices to consumers will rise, while payments to resources will fall. Individual firms, when faced with the costs of complying with the regulations, will not be able to pass on more of those costs than what is permitted by the competitive response in the industry. (This point is of major importance for our analysis.)

Of course, the form of the regulatory tax is as important as its existence. If the regulation imposes an ad valorem burden—that is, imposes costs directly proportional to the value of the company's output—it is equivalent to a uniform sales tax. If the regulation imposes a per unit burden, it is equivalent to a tax bearing most heavily on those units with the least value added. Finally, if the regulation imposes a fixed burden without regard to the quantity of output, it is equivalent to a lump-sum tax. Given generally similar unit values of output, such a uniform requirement for each firm in the industry will impair the performance of small firms relative to large firms. That is, the lower the value of the output, the higher the lump sum is in relation to that value.

The Tax and Chrysler

These distinctions are far from being purely academic. For example, federal regulations designed to reach national health, safety, environmental, and fuel-efficiency objectives have been assumed to affect individual auto firms in the same way as a flat rate tax affects individual taxpayers. That is, they are assumed to take a given—uniform—percentage of income from each company. But, for the auto industry, this

assumption is incorrect: as a rule, regulation has hurt the smaller full-line firms more than the larger ones. Chrysler Corporation's current predicament is properly viewed as an example of the unintended effects of increasingly more stringent regulation. The "lump-sum" effect of this regulation is furthered by the fact that the government forbids the auto companies to pool their research, requiring each company to make roughly the same (lump-sum) research expenditures.

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As a hypothetical example, imagine that it costs all auto firms \$5,000 to develop a device to control emissions. If the cost of producing each device is \$10 and if the smaller firm installs the device on 100 units (cars) and the larger company installs it on 300 units (cars), the investment and extra production costs are \$6,000 for the smaller firm—\$5,000 + (100 × \$10)—and \$8,000 for the larger firm—\$5,000 + (300 × \$10). The smaller firm must receive \$60 per device to recover these costs (\$6,000 divided by 100), while the larger firm needs to receive only about \$27 (\$8,000 divided by 300).

Plainly, the larger firm has an advantage—its unit costs are lower. Competitive forces dictate, however, that the per-unit charge levied in an effort to recoup the investment and extra production costs be approximately the same for each auto company. Thus, if the larger firm charges its customers the price that recovers the \$27, the smaller firms will have to charge approximately \$27—or less than half the \$60 they actually expended. It is a point of prime importance that, throughout the last decade, when regulators asked U.S. auto firms to estimate the cost of manufacturing catalytic converters, General Motors' estimates were consistently well below Chrysler's. This led regulators to disbelieve Chrysler when in fact both firms may well have been correct in their estimates.

Let us take the example a step further. If the smaller company spends \$5,000 for R&D and the larger one spends much more, say

\$12,000, the smaller firm's cost stays at \$60 per unit while the larger firm's cost rises to \$50. General Motors, the largest U.S. auto firm, has in fact consistently spent more than Ford or Chrysler on R&D for government-mandated emission controls. This greater expenditure permitted General Motors to pursue separate research tracks during the period when emission standards were evolving. Chrysler, with its more restricted financial resources, pursued multiple tracks as well. Indeed, its generic engineering advantage yielded a "lean-burn" engine system that would have satisfied emission standards slightly less stringent than actually proposed. But the government's final standards eliminated the lean-burn engine as a viable alternative, forcing all firms to employ the catalytic converter.

This governmental decision emphasizes the important point that the specific standard chosen as well as the form of the regulation may have substantial effects on competition in the industry. If policy-makers had chosen the 1979 automobile emission standards as their goal, Chrysler's market position would have been strengthened rather than weakened (since the lean-burn engine system could have met the 1979 levels without a catalytic device) and Chrysler would have been able to capture the benefits of leasing or selling its lean-burn technology. Faced with the actual final emission standards for 1980 and thereafter, it had no choice but to develop the catalytic device.

Things are made worse by the fact that, beginning in 1980, U.S. auto firms will not be allowed to count the cars they import, even if they produce those cars themselves, to help achieve the fleet-wide average fuel efficiencies required by the regulations. For the domestic industry's smaller firms, the rule against counting imports will force (lump-sum) fixed investment in domestic facilities, shifting the nature of the regulatory tax to place a greater burden on smaller firms. And for all the firms, the rule will reduce the benefits of economies of scale.

The Cost of the Tax

The companies have provided the Department of Transportation with estimates of their fixed costs for complying with existing emissions, safety, and fuel-economy standards over the

SALES, PROFITS, AND ESTIMATED
REGULATION-MANDATED COSTS FOR THE BIG THREE

	Chrysler	Ford	General Motors
Cost of regulation (millions) ^a	\$800	\$1,000	\$2,000
Cost as percent of sales	7.0	4.2	4.6
Cost as percent of aftertax profits	496.9	112.7	68.5
Cost per car produced	\$550	\$340	\$345
Net sales (millions) ^b	\$11,390	\$23,969	\$43,430
Aftertax profits (millions) ^b	\$161	\$887	\$2,918
Number of cars produced (thousands) ^b	1,451	2,933	5,782

^a Average for 1978-85.

^b Figures are for 1977 North American operations.

eight years ending with 1985. The estimates are staggering: \$800 million a year for Chrysler, (65 percent for fuel economy, 30 percent for emissions, 5 percent for safety), \$1,000 million a year for Ford, and \$2,000 million per year for General Motors—in 1977 dollars. Moreover, the expenditures required are proportionately greater for Chrysler than for Ford or GM.

A glance at the table shows that Chrysler's estimated regulation-induced investment is five times its profits and 7 percent of its sales for 1977, while Ford's is greater than its profits and 4.2 percent of its sales for that year. Only for GM is current profit greater than estimated regulatory cost (though equal to 4.6 percent of 1977 sales). This suggests strongly that the tax rate imposed on Chrysler by government regulations is roughly 50 percent greater in relation to sales than the tax rate imposed on either Ford or GM.

Moreover, the estimated costs of the regulations are more than \$200 per car (60 percent) higher for Chrysler than for either Ford or GM. The source of the disparity, by and large, is the fixed-cost component of the R&D and the basic retooling needed to attain compliance. For Ford, the tax rate appears to be roughly the same as for GM, even though Ford is the smaller firm. The cost of complying with the regulations is approximately \$340 per passenger car for Ford and \$345 for GM.

By their very nature, regulations also reduce diversity, each requirement in turn elimi-

nating product features previously available. The more aspects of a product that are regulated, the narrower the distribution of choices around the "average" or "standard" product. Thus, new regulation reduces opportunities for firms to specialize in providing unique combinations of features to the consumer. Indeed, if the government required absolute standardization of a product, in time all firms producing that product would merge into the one most efficient firm. If the government dealt out a single blueprint of a standard auto and required all autos to be built to those specifications, all specialty firms would be forced to dissolve (it would be illegal, for example, to manufacture Checker Cabs). If a product could not be differentiated (whether by quality, warranty provisions, or whatever), price alone would be the consideration, and the firm that could stamp out the standard auto most efficiently would drive all others out of business.

Different auto firms exist because firms cannot at all times and in every way be superior to all other firms. Even physically flawless and intellectually superior individuals, for example, would have trouble competing with a blind person in speed-reading Braille. Similarly, an auto firm may concentrate its resources on producing the greatest number of automobiles at the lowest price; but smaller firms can still compete by concentrating their resources on developing specialty vehicles, superior styling, greater durability, engineering excellence, and so forth. Obviously, Ford and Chrysler are not small firms—but they are smaller than GM, and they have thus aimed more at specialized sub-markets and less at the market as a whole. But, by its very nature, government regulation increasingly has been herding all three toward a standardized product for the mass market, inadvertently and unconsciously undermining Chrysler's advantages (and Ford's).

Our Scenario

While it is impossible to predict the final long-run effect of these regulations, it is clear that there will be fewer motor vehicles produced, that some real resources will go to other industries, and that users of automobiles will pay higher prices. To try to measure the potential impact on the industry and its individual firms,

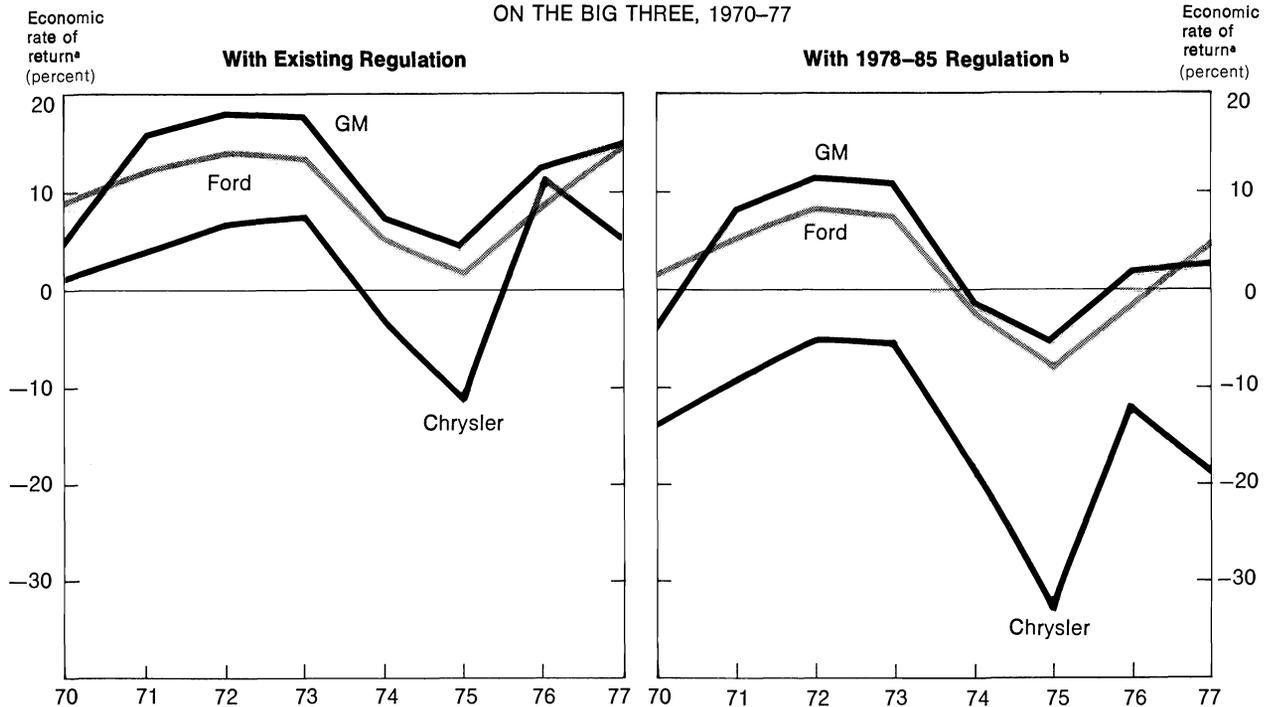
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we set up a simulation—a future scenario. Let us explain it briefly.

In order to calculate the effect of the new requirements, assumptions had to be made about company responses to the regulations—especially those involving pricing—and about the way the consumer will react to price changes. Essentially, we made two assumptions about pricing. First, we assumed that the Big Three auto manufacturers compete with each other, partly on prices, so that no one company will raise its prices much more than any other company—and, specifically, so that Chrysler will not raise its prices significantly more than GM or Ford. Second, we assumed that when prices go up, the number of units sold (both by the industry and by the firm) goes down *correspondingly*, so that overall sales revenues do not change. (In economists' terms, there is a unitary price elasticity of demand.) This assumption simplifies our calculations and is supported by numerous studies of the automobile industry.

Now, obviously, if the number of units sold goes down, the manufacturer will make fewer units, which (all other things being equal) will reduce total costs of production. For simplicity's sake, we assumed that the amount saved by making fewer units balances the increased variable cost per unit sold (the increased variable cost, that is, mandated by federal requirements), so that the total variable cost of manufacturing the cars—the "cost of goods sold"—does not change. In fact, what is saved by cutting production does *not* offset the increased production costs per unit so that this understates the effects of the requirements, but it makes the figures much easier to work with. Even if the effects are understated, they are still far too large to be happy about.

According to our assumptions, then, when Ford or GM or Chrysler tacks on price increases because of federal requirements, say \$350 per car each year, the company will get no addi-

THE IMPACT OF NEW REGULATION-MANDATED COSTS
ON THE BIG THREE, 1970-77

* Economic rates of return were calculated from Securities and Exchange Commission 10-K data for the firms' world-wide operations, using the procedure detailed in Kenneth W. Clarkson, *Intangible Capital and Rates of Return* (American Enterprise Institute, 1977).

^b Adjusted to include estimated regulation-induced costs of \$800 million a year for Chrysler, \$1 billion for Ford, and \$2 billion for General Motors.

tional total revenues (because units sold will go down) and have no additional cost of goods sold (because the decline in number of units sold will balance the increased variable cost per unit). The only change on the company's books will be the increased investment in plant and machinery necessary to comply with the new requirements—if the \$350 per car covers the cost of compliance. If it does not—if it costs Chrysler \$550 to comply and if only \$350 can be tacked on to the price—then Chrysler's profits go down substantially and may disappear, or worse. On the other hand, if Chrysler raises its prices by \$550, and the other companies raise theirs by \$350, Chrysler's sales go down, and its profits may disappear, or worse. No matter which of the probable courses of action is followed, all three firms, with profit not increasing and investment going up substantially, will find their rates of return (profit divided by investment) going down.

There is, of course, a possible way out of the dilemma. If GM and Ford based their price increases on what Chrysler needed (that is, if they raised prices by \$550), then Chrysler would maintain its market share and might

still show profits. There would, however, still be a differential effect of the regulations. Chrysler might be neither better nor worse off, but GM and Ford would be made better off relative to Chrysler. And, of course, in the real world, GM and Ford do *not* make their decisions according to what Chrysler needs.

It should be emphasized here that traditional accounting statements do not present fully accurate pictures of the impact of regulation on profits and rates of return. It is more appropriate to use an economic model with price-level adjustments and R&D expenditures capitalized. Because capital is allocated in the marketplace according to perceptions of probable rates of return into the indefinite future, and because "accounting rates of return" are merely snapshots picturing the financial condition of the company at discrete time intervals, adjusting these accounting snapshots, smoothing them out, provides a better view of economic reality. This view is the one we want to use. So, in our simulation, we calculated the economic rates of return on net worth for the three firms for 1970-77, smoothing out cyclical variations, and then used these figures for projecting

the impact of regulation for 1978–85. It should be noted that this is a period in which the firms anticipate major additions to capital outlays for general research and tooling in order to comply with the mandated federal regulations.

General Motors, with its incremental (government-mandated) investment of \$2 billion a year, shows an average economic rate of return of 12.1 percent without this \$2 billion annual outlay and 3.3 percent with it. The difference is 8.8 percentage points. Ford, with its incremental (government-mandated) investment of \$1 billion per year, shows an average economic rate of return of 9.9 percent without additional regulation and 1.9 percent with additional regulation. The difference is 8 percentage points. Chrysler, with its incremental (government-mandated) investment of \$800 million per year, shows an average economic rate of return of 2.6 percent a year without additional regulation and –13.8 percent with additional regulation. The difference is 16.4 percentage points.

What Does It All Mean?

The results suggest that the adverse effects of government regulation on Chrysler are extraordinary—both in absolute terms and relative to Ford and GM. Bad years in particular are accentuated, as regulation-induced investment expenditures remain high, while sales and profits fall below average. Thus, while regulation of the auto industry depresses the profitability of all firms (which in itself significantly diminishes the ability of small firms to compete), it further acts against the smaller firms by assuming they fit the mold of the largest firm.

The sheer magnitude of the cost of compliance with the higher standards scheduled to take effect in the years through 1985 threatens substantial dislocations throughout the industry, with the effect falling disproportionately on Chrysler and (to a smaller extent) Ford. The final stages of emission-control standards will have to be met in this period and the most dramatic of the fuel-efficiency standards will be faced in the year 1985, when the National Highway Traffic Safety Administration (NHTSA) is directed by law to require an increase in the average fuel economy of new cars to 27.5 miles per gallon. Our study suggests that Chrysler

may not survive as a full-line auto manufacturer. Moreover, unless there should be a burst of real economic growth in the 1980s, Chrysler would have little chance of raising needed capital, given the negative rates of return on investment implied by our analysis.

Ford's viability as a full-line auto manufacturer will also be impaired, especially given that its current profitability arises largely from its foreign operations. In commenting on the standards on December 11, 1978, Ford Motor Company observed, "We believe that 27.5 mpg would press us to the limit—and our financial resources are neither the largest or smallest in the industry." Ford also pointed out the fallacy of NHTSA's findings that the standard is economically practicable "for the industry as a whole": it is not "the industry" but individual companies that must meet the standards, and the financial resources of General Motors are not available to other firms.

Thus we conclude that there will be an undesirable rise in concentration in the U.S. auto industry as a result of the regulatory burdens imposed on the industry over the eight years ending 1985, with General Motors dramatically increasing its relative position. But even as GM expands its market share, its average economic rate of return will tend to fall well below its average for the ten years ending in 1977—unless real prices of automobiles substantially increase. This could eventually lead to elimination of low-profit model lines and to a consequent reduction in choices available to the American consumer.

The smaller the producer, all other things being equal, the greater the effect of the safety, emission, and fuel-economy standards. That is, these regulations, *though uniformly applied*, significantly favor the largest manufacturers. Moreover, as the regulations grow tighter, the payoff goes more and more to economies of scale, and less and less to engineering know-how or product differentiation. With profits at \$161 million a year and the estimated costs of regulation at \$800 million a year, it is no wonder that Chrysler is hurting. And if Chrysler has been trying intelligently to carve out a market for itself as number three, by some means other than GM's economies of scale (which are not available to it), then Chrysler's problems are the inevitable result of regulations that place a premium on being like GM. ■