
The Economics of Fuel Economy Standards

David R. Henderson

WHY DID GENERAL MOTORS announce in April 1984 that because *large* car sales were unusually strong, it would extend *small* car production until October or November? Why did GM consider producing its large station wagon as a light truck instead of as a car? And what do many auto industry analysts ignore when they predict that the Big Three (GM, Ford, and Chrysler) will produce more of their small cars abroad? The answer to all three questions is CAFE—the corporate average fuel economy regulations imposed by the federal government.

Under the CAFE (pronounced *cafa*) law, an auto company producing more than 10,000 cars a year must meet prescribed average fuel economy standards for that year's production of cars, and for its light trucks. The Energy Policy and Conservation Act of 1975 invented the idea, and set standards of 18, 19, and 20 miles per gallon (mpg) for car model years 1978, 1979, and 1980 respectively. (All standards are set for a mixture of urban and highway driving.) The 1975 act also directed the secretary of transportation to set standards for 1981–84, and required every company to attain an average of 27.5 mpg for its "corporate fleet" after 1984. The National Highway Traffic Safety Administration (NHTSA), with Naderite Joan Claybrook at its head, put the standards for the years 1981 through 1984 at 22, 24, 26, and 27 mpg respectively.

David R. Henderson, adjunct research professor at the Naval Postgraduate School, Monterey, California, was senior staff economist for energy policy with the Council of Economic Advisers, 1983–84.

A company that fails to meet the CAFE standard is fined on all the cars it produces in the year in question. The fine per car is \$5 for every tenth of a mile per gallon shortfall. Although this sounds small, it is not: if GM, which makes about 4 million cars a year, should fall only one mpg below the standard, it would pay \$50 per car, for a total fine of \$200 million. Companies can earn fuel-efficiency credits by exceeding the standards for three years in a row, or may borrow on future performance by convincing regulators that they will exceed the standards in any of the next three years. For example, GM and Ford avoided fines in 1983, the first time either of them fell below the standard, by drawing on credits from prior years when they had exceeded it.

In 1984, GM failed to meet the standard once again. And it soon may learn, when the final data are tabulated, that it has exhausted its credits from previous years. If so, GM then must either pay a fine or convince NHTSA that it can offset last year's shortfall by overachieving in the years 1985–87. This answers the first question asked earlier: GM extended production of small, fuel-efficient cars last year because (according to a company spokesman) doing so could save the company as much as \$150 million in fines. It also answers the second question. By calling a station wagon a light truck, GM could have raised its average fuel economy on both cars *and* light trucks.

What about the third question? When industry analysts predict more Big Three production of small cars abroad, what they fail to note is that CAFE is calculated separately for do-

mestic production and imports. If GM imports a small car instead of producing it here, GM's domestic CAFE *falls*. Thus CAFE severely limits the ability of domestic auto makers to produce small cars in joint ventures abroad. According to William Niskanen of the Council of Economic Advisers, former chief economist at Ford, Ford dropped its Fiesta in the late 1970s, not despite, but because of, the car's potentially large market: Ford feared its German-made Fiesta would steal sales from its U.S.-made Escort, thus lowering its domestic CAFE average.

Winners and Losers

CAFE is not the only fuel economy standard the auto companies must contend with. In 1978, as part of the Energy Tax Act, Congress passed a "gas guzzler" tax. This law subjects 1980 and later model-year cars to a special sales tax if they fail to achieve a minimum mileage per gallon. For model year 1985, the gas guzzler tax ranges from \$500 on a 20-to-21 mpg car to \$2,650 on a less-than-13 mpg car. For model years after 1985 the tax will be \$500 on a 21.5-22.5 mpg car and \$3,850 on a less-than-12.5 mpg car. So far, the tax has been paid mainly on luxury cars like the Rolls Royce, the Maserati, and some models of the Mercedes-Benz. Presumably, the manufacturers of these cars find it worthwhile to pay the tax because their low sales in the United States do not justify the investment needed to avoid it. (In 1984, for example, only 1,250 new Rolls Royces were sold in the United States.) But the tax has also forced high-volume U.S. manufacturers to downsize or even eliminate their largest models. For example, the average engine size of a large car was 297 cubic inches in 1984 compared with 312 in 1980. The concept of a "gas guzzler" embodied in current law is a strange one. Less than ten years ago, the Pinto was Ford's most fuel-efficient car. Today that Pinto, with an automatic transmission, would be subject to a \$500 tax.

CAFE standards and the gas guzzler tax clearly hurt GM and Ford. Both companies have a comparative advantage in producing large cars and face very little competition in that market. Mandatory fuel economy standards prevent them from fully exploiting their advantage, forcing them instead to focus on the small-car market where they are losing out to

Japanese producers. Interestingly, though, Chrysler supports CAFE and the gas guzzler tax. The reason: Chrysler has bet its future on small cars. By discontinuing some large cars and downsizing others, Chrysler raised its average fuel economy from 21.7 mpg to 26.1 in just one year (1981). One might think that the CAFE standards and gas guzzler tax would hurt Chrysler by forcing Ford and GM to produce more small cars to compete with Chrysler's. But, because both laws reduce GM's and Ford's production of large cars, the laws also *reduce* the competition Chrysler faces from large car production. Moreover, without CAFE, Ford and GM would sell many high-quality small cars imported from abroad, where they can be produced more cheaply. So, although Chrysler may have to compete with more small cars because of CAFE, Lee Iacocca, its president, must prefer that to competition with both large cars and *higher-quality foreign* small cars.

The support of the United Auto Workers (UAW) for CAFE is also understandable. To be sure, CAFE standards reduce production of large cars and thus reduce employment in large car plants. But if GM and Ford are to make the large cars for which they have a comparative advantage, they must also make a certain number of small cars rather than import them. This means more UAW jobs in small car plants. In fact, Dan Luria, recently a UAW economist, argued for CAFE explicitly on these grounds, stating that "CAFE acts like a domestic content law." One would expect the UAW also to oppose the gas guzzler tax because it discourages production of large cars and thus reduces the number of offsetting small cars that must be made domestically. Sure enough, according to Luria, the UAW wants the gas guzzler tax abolished.

Although CAFE proponents often concede the harm to GM and Ford, many of them claim that CAFE benefits consumers. But the fact is that the standards and the gas guzzler tax hurt almost all car buyers. As economists J. Hayden Boyd and Robert E. Mellman confirmed in a 1980 study of car attributes that consumers value, most American car buyers place a high value on style, performance, and size. CAFE and the tax undercut consumers' ability to satisfy those preferences. Small-car buyers also suffer. CAFE encourages GM and Ford to replace small foreign with small domestic cars for no reason other than to counterbalance do-

mestic gas guzzlers in the CAFE calculus. If GM and Ford would otherwise import small cars rather than produce them domestically, it is presumably because the imports would be better or cheaper. Some economists have suggested that CAFE helps small-car buyers by lowering prices of small cars. This is not inconceivable, but if CAFE does lower prices, why does Chrysler, which is committed to small-car production, support CAFE so adamantly?

Finally, by giving companies an incentive to make lighter, smaller cars, CAFE also makes cars more dangerous to their occupants. According to safety experts, even if an occupant of a subcompact wears his seat belt, his risk of death or serious injury equals the risk taken by an unbelted occupant of a large car. Not wearing a seat belt doubles his risk.

Why CAFE?

So why was CAFE ever passed? In 1975 American consumers were not paying the true cost of the gasoline they consumed: indeed, the same law that imposed CAFE also extended price controls on oil. Consumers responded rationally—they overconsumed. The legislative options at the time were less regulation (eliminate the price controls) or more (enact CAFE). In 1975, the second option was chosen. Six years later, however, one of President Reagan's first official acts was to abolish the oil price controls and end the subsidy to oil imports. Now consumers pay the true cost of their gasoline and have appropriate incentives to conserve. The original rationale for CAFE no longer exists.

Many CAFE supporters argue that even when consumers pay the world price for gasoline, they do not give appropriate attention to fuel economy when buying cars. But there is evidence that they do. Most European countries and Japan have very high gas prices reflecting stiff excise taxes of over a dollar per gallon. Canada and the United States, in contrast, have relatively low gas taxes and prices. Sure enough, Canadian and U.S. consumers who bought cars before CAFE came into effect favored models with worse gas mileage than those preferred by consumers in Europe and Japan. Moreover, according to a recent study by economists George Daly and Thomas Mayor, when the U.S. price of gasoline rose sharply in the early seventies, and then again in the late sev-

enties, prices of fuel-inefficient cars fell substantially relative to prices of fuel-efficient cars. Thus, by all appearances, consumers *do* take fuel economy into account when they buy cars.

Perhaps, then, consumers need CAFE regulation not because they are unable to assess the value of fuel economy, but because they cannot predict future gasoline prices correctly. The problem is, *no one* can predict future gasoline prices accurately; consumers, in fact, do as well as or better than the government experts. Based on prices of used cars, Daly and Mayor found, for example, that consumers expected real gasoline prices to fall after 1980. The Department of Energy (DOE) on the other hand, together with most energy experts, predicted in 1980 that the real price of unleaded gasoline would reach about \$1.80 a gallon in 1984 (in today's dollars). Consumers—not the experts—were right; DOE was off by a staggering 30 percent. And although DOE predicted further real increases in gasoline prices after 1984, prices are actually falling.

Moreover, consumers can adjust to new information much faster than a government agency. Consumers, after all, make several million purchasing decisions every year, whereas it is scarcely feasible or imaginable for government to confess error or change course more than once in an administration. And sometimes it will not adjust at all: CAFE is a case in point. The Department of Transportation based the 1981–84 CAFE standards on DOE's assumptions about the price of gasoline. The DOE predictions proved as ephemeral as a bad dream, but Transportation still did not change the 1981–84 requirements by even a decimal point.

The last refuge for CAFE supporters is the Club of Rome: we are running out of oil, disaster looms, and we must conserve. But if and when we really *do* run short of oil, that fact will be reflected in the price, and price will supply the right incentive to conserve. One might add that if for some reason oil or gasoline *are* underpriced, a tax on these commodities would readjust the market more efficiently than performance standards placed on cars. Cars, after all, represent only one (among many) sources of demand for oil.

What would happen to fuel economy if we eliminated the CAFE standards and the gas guzzler tax? Not much, some economists have argued, noting that in 1982 an average domestic

fuel economy of 24.6 mpg was achieved, higher than the 24 mpg then required. Their argument is unpersuasive. More likely, without CAFE, car fuel efficiencies would decline, at least in the short term.

First, the 1982 overachievement must be examined in context. In planning for 1982, U.S. car makers presumably chose models they thought could be sold in future years when CAFE requirements were scheduled to increase. The light truck market gives indirect evidence that 1982 consumers wanted larger and more powerful cars than the auto industry was producing. Even before 1982, sales of light trucks for hauling goods and towing trailers boomed. Cars with large V-8 engines used to accomplish both of these tasks. Second, the price of unleaded gasoline has dropped 15 percent from its 1982 level. This gives consumers still more reason to shift toward less fuel-efficient cars. Finally, Europe in the mid-1970s, with gasoline at about \$2 per gallon (1984 dollars), achieved average fuel economy of only about 25 mpg, according to Charles Gray, Jr., and Frank Von Hippel. The United States today, with 40 percent cheaper gas, would be expected to achieve significantly less without CAFE. A reasonable conclusion is that average fuel economy without the standards would be in the low 20s, substantially above the 1973 level of 14.2 mpg but well below the 27.5 level required for 1985.

Benefits and Costs

This sets the stage for addressing—in general terms—CAFE's benefits and costs to the U.S. economy in 1984.

First, the alleged benefits. Without CAFE or the gas guzzler tax, consumers would have incurred higher fuel costs than they in fact did. Cars would, on average, have been bigger and more powerful than those actually produced (under CAFE) in 1984. Now, the average large or mid-size car achieved 20.6 mpg in 1980 and 22.9 mpg in 1984. If we assume that the four-year improvement in gas mileage was entirely due to CAFE, the gasoline saving from CAFE in 1984 works out at forty-nine gallons per downsized car per year. At \$1.22 a gallon, this was worth \$60. Over the eleven-year life of the car, even assuming pessimistically that real gas prices will rise at the real rate of interest, the fuel economy saving was \$700.

But how should we interpret this particular "benefit" from CAFE? Very carefully. Because, to start with, consumers who wished larger cars presumably would have been willing to pay the higher fuel costs. After all, with or without CAFE, no one would ever have been forced to buy a large or mid-size car. Small, fuel-efficient cars were on the market all along.

Another possible CAFE "benefit" derives from the fact that downsized cars cost somewhat less to build. The saving is perhaps \$300 a car, considering the slight reduction in the materials required, no significant change in labor needs, and offsetting new costs from added engineering and retooling. But here again, the benefit is illusory. Smaller cars would have remained available without CAFE. Consumers willing to pay the extra costs of the larger cars would (by definition) have valued the increased size at least enough to justify the increased cost. Selling cheap cars to consumers who would prefer to buy expensive ones is not a benefit to anyone.

Finally, what about CAFE's costs to U.S. consumers? Here the answer is fairly clear. CAFE lowered the range of market choice available to buyers. Because of CAFE, consumers were forced to buy more light trucks (which use more gas) and smaller cars (which use less gas), and had less opportunity to shop for large cars in the middle of the market. All this for no reason other than to placate the CAFE regulatory police force and its fans.

With the decontrol of gas prices, consumers already pay full price for their gasoline and therefore already have appropriate incentives to conserve. CAFE only hurts consumers by preventing them from buying the kinds of cars they really want. In short, cutting the choices on the menu is no way to run a CAFE. ■

Selected Readings

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- Daly, George G., and Mayor, Thomas H., "Reason and Rationality during Energy Crises," *Journal of Political Economy*, February 1983.
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