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CORPORATE AVERAGE FUEL ECONOMY: A RELIC OF THE PAST

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Abstract

We examine the effectiveness of the Corporate Average Fuel Economy program regarding its ability to reduce pollution. Using a variety of automotive reports from the Congressional Budget Office, the Environmental Protection Agency, and the United States Department of Transportation we determine that these standards largely subsidize driving costs for consumers and disincentivize the need for electric vehicles. Our thesis is that CAFE should be repealed, and other more effective environmental policies be examined.

Key words: Pollution; regulation; fuel efficiency

I Introduction

In mid-March 2020 Trump announced his repeal of Obama era fuel efficiency standards (Davenport, 2020). The revocation would replace the Obama administration's required 5% yearly fuel efficiency increase with a mere 1.5% yearly rise (*Ibid*). Critics of the idea claim that it would lead to a significant increase in the levels of Co2 released by cars furthering the pollution of earth's atmosphere. This has reignited a much longer fought debate over the government's role in the automotive industry, most notably its role in implementing Corporate Average Fuel Economy Standards (CAFE). Since its passage in 1975 and its implementation in 1978 these standards have set a fuel efficiency floor that automobile manufacturers must meet on a yearly basis. The goals for CAFE standards were outlined as such by congress: technological feasibility; economic practicality; effect of other standards on fuel economy; need of the nation to conserve energy.

Recently CAFE standards have pivoted to create more of a focus on the need to address environmental problems such as climate change:

“Reduce our petroleum consumption, increase the availability of alternative fuel vehicles, promote the advancement of innovative technologies, lower greenhouse gas emissions both helping to mitigate climate change and improve air quality” (US Department of Transportation, 2014). Unlike “Green House Gas” standards (GHG) monitored by the EPA, which measure the amount of greenhouse gases such as CO2 being emitted, CAFE regulates somewhat differently. Each standard is tailor-made for a company's vehicle fleet. Each model in a company's fleet is given a goal fuel efficiency number in terms of miles per gallon (mpg). This is calculated based on the “footprint” of the vehicle which is—“calculated as the product of the wheelbase and the average track width of the vehicle”(Office of Energy Efficiency & Renewable Energy, 2011).The mpg goals of all the models in that company's fleet for that particular year are averaged together to set the standard for the company's fleet,

which they must meet or face penalties. Of course, these standards are raised every so often so as to drive innovation in fuel efficiency technology. In this paper we focus on the failure of Corporate Average Fuel Economy to benefit the environment and how it leaves a negative impact. The 1973 Oil Crisis was a tumultuous time for America. In response to American military support for Israel during the Arab-Israeli war, the mostly Arab, Organization of Petroleum Exporting Countries (OPEC) placed an embargo on exports to the United States (Office of the Historian, n.d.) In addition they also severely limited their production of oil. This put a strain on Americans as oil prices skyrocketed.

During the OPEC oil embargo, inflation-adjusted oil prices went up from \$25.97 per barrel (bbl) in 1973 to \$46.35 per barrel (bbl) in 1974 (Boyle, 2020)

Eager to ease the burden on Americans and to conserve oil, the Nixon administration put in place economic policies including price freezes and Corporate Average Fuel Economy standards. These policies had dire consequences. The price freezes were repealed, but in regard to CAFE the government still has not learned from its mistakes. It should have allowed Corporate Average Fuel Economy to remain where it belongs... in the seventies.¹

We next consider in section the unintended consequences of this program: the cost of driving. Section III addresses market innovation, while section IV focuses on resulting fatalities. In section V we argue by analogy and conclude in section VI.

II Unintended Consequences: Cost of Driving

The problem with CAFE standards is that they worsen the problem they were trying to fix, and they create a new problem they did not foresee. One of the most glaring issues is this policy fails to acknowledge that by forcing vehicles to become fuel efficient² they are now lowering the financial cost of driving for everyone. The more fuel efficient a vehicle is the smaller the importance played by costs in driving behavior. According to a consumers union report by Synapse Energy Economics the 2025 CAFE standards when compared to the 2016 CAFE standards would save consumers \$3200 for cars and \$4800 for light trucks.³ This is not an insignificant decrease in the cost of operating a vehicle. One could argue that this is good for consumers. It might very well be beneficial to drivers if we assume that the increased cost of the vehicle due to the need to meet CAFE standards would be low enough to create net savings. One would also need to assume that the fuel efficiency of future vehicles would otherwise be lower or remain constant without government regulation. However, as far as driving behavior is concerned the initial cost of purchasing a vehicle is a sunk cost and therefore should not affect driving behavior. Unlike vehicle cost, gasoline savings do affect driving behavior. A decrease in the financial cost of driving creates an incentive for people to want to drive more.

According to the Federal Highway Administration, which is a regulatory agency within the Department of Transportation, monthly traffic volume trends report since 1971 shows that the number of millions of miles driven in the United States has gone from 1,128,168 to 3,228,026 in 2020 (US Department of Energy).

¹ For critiques of CAFE standards see Crandall and Graham, 1989; DiLorenzo, 1999; Galles, 2002; Malkin, 2012; Moore, 1991; Murdock, 2012. For an alternative view, see Bento, 2017; Noland, 2004

²The CAFÉ program requires that vehicles become more fuel efficient, not less. We are saying that although that sounds good, it is not. In our view, the market tends toward the optimal fuel efficiency, and altering it by law decreases prosperity, not increases it. For the resources its costs to attain over-optimal efficiency could be better used in an alternative manner.

³ These are the total savings for the lifetime of the vehicle. See on Comings, T., Allison, A., & Ackerman, F.. (2016, September 7). *Fueling Savings: Higher Fuel Economy Standards Result In Big Savings for Consumers*. Synapse Energy Economics.; <https://www.synapse-energy.com/sites/default/files/Fueling-Savings-Consumer-Savings-from-CAFE-2025-16-035.pdf>.

However, not all miles are CAFE miles. CAFE only applies to vehicles categorized as “light-duty”. When vehicles not regulated by CAFE are taken out of the equation such as “heavy-duty” vehicles we see a slightly different number. From 1970 to 2019 the increase in miles driven rose from 1,039,986 to 2,924,053 million miles.⁴ An increased number of miles driven goes hand in hand with a rise in the number of gallons consumed by the population, which leads to the increased production of greenhouse gases. From 1971 to 2020 the United States Energy Information Administration’s data on “United States Product Supplied of Finished Motor Gasoline” showed an annual change from 6014 thousand barrels a day to 8034 thousand barrels a day (US Energy Information Administration). This growth is primarily due to the change in behavior of everyday drivers rather than commercial vehicles which primarily run on diesel fuel.⁵ Finished Motor Gasoline also excludes finished motor gasoline for aviation use.⁶ One could argue that this is simply due to an increase in the population over time. This is simply not the case. When controlled for population since 1971, which is when the FHA began their reports, there has been an overall 172% increase in miles driven per capita.⁷ Although CAFE is likely not responsible for all this growth, it has likely contributed to it. CAFE is clearly not responsible for all this growth.

It is important to note that the cost of driving includes more than the financial expense of operating a vehicle such as fuel and repairs. CAFE standards do lower the financial cost, but other factors play a role in the overall cost of operating a light-duty vehicle and can be useful predictors on how much people drive. Other cost are any barriers that make driving light-duty vehicles less preferable. This can involve a variety of aspects. The quality of roads or the abundance of safety hazards may make driving less preferable. The time it takes to commute by car due to traffic may make other means of transport more attractive. Even the availability and financial cost of parking a vehicle plays a role. How great or small this cost is dependent on government planning. State control of infrastructure such as public transportation, bike lanes, density of development, zoning, road construction, parking minimums, and federal highways all have an influence outside the purview of CAFE. For example, city governments that have zoning policies that encourage denser building development i.e., New York City will have fewer miles driven within their jurisdiction when compared to cities that promote less dense development. A more spread-out city such as Atlanta will have more vehicle mileage due to the inability to get around on foot or by other means. For example, a University of California, Irvine study found that “comparing two California households that are similar in all respects except residential density, a lower density of 1000 housing units per square mile (roughly 40% of the weighted sample average)

⁴ This statistic was calculated by removing non-CAFE vehicles such as combination trucks, motorcycles, and Buses from the USDE “Maps and Data - Annual Vehicle Miles Traveled in the United States” data.

⁵ According to the Diesel Technology Forum: “The 2020, year-end U.S. truck vehicles-in-use data shows that almost about 75 percent of all commercial vehicles are powered by diesel engines, and among the largest trucks (Class 8) diesel vehicles-in-use accounted for 97 percent of the overall population.”

⁶Motor gasoline (finished): A complex mixture of relatively volatile hydrocarbons with or without small quantities of additives, blended to form a fuel suitable for use in spark-ignition engines. Motor gasoline, as defined in ASTM Specification D 4814 or Federal Specification VV-G-1690C, is characterized as having a boiling range of 122 to 158 degrees Fahrenheit at the 10 percent recovery point to 365 to 374 degrees Fahrenheit at the 90 percent recovery point. Motor Gasoline includes conventional gasoline; all types of oxygenated gasoline, including gasohol; and reformulated gasoline, but excludes aviation gasoline. Note: Volumetric data on blending components, such as oxygenates, are not counted in data on finished motor gasoline until the blending components are blended into the gasoline.

⁷ The exact statistic is 1.72457618. This was calculated using the population by decade statistics provided by the United States Census Bureau at <https://www.census.gov/programs-surveys/decennial-census/decade.1970.html>.

implies an increase of 1200 miles driven per year (4.8%) and 65 more gallons of fuel used per household (5.5%)” (Brownstone & Golob, 2009).

To put it simply, cities that are designed to support car travel will experience more of it, other things equal. Governments that build cities which encourage substitutes and complements to driving such as foot traffic, biking, and public transportation will see more people traveling using those methods.⁸

Upon occasion CAFE standards might well lower travel and other costs. But this does not necessarily improve consumer benefits. Suppose we passed a law subsidizing steak and taxing hamburgers. The former would be less expensive, and the latter more so. Would this promote economic welfare? Of course not, assuming that the present allocation of resources for these two goods is at least roughly congruent with people’s tastes.⁹ Even the harshest critics of the free enterprise system have never contended that the ratio of these two foodstuff does not at least loosely follow consumer tastes. Suppose a law were passed that prohibited the production of any car with greater quality than the Ford Focus, or the Volkswagon bug, both fine automobiles. Then, assuming this legislation were obeyed, there would be no more Maserati’s, Rolls Royces or any such luxury vehicle. The costs of driving would plummet. But it is difficult to believe that this would increase human happiness or economic welfare.

It is difficult to say quantitatively how large of a role these other costs play when compared to CAFE standards. What is important, however, is what they have in common. These contributing factors all decrease the cost of driving. How does this square with CAFE? In September 1988, the Federal Trade Commission studied the effects of raising the 26.5 miles per gallon standard to 27.5 miles per gallon. They estimated that, over a 15-year time horizon, this alteration would increase gas consumption by 200 million gallons per year, rather than decreasing it (Galles, 2002). Already two out of the four goals of the new CAFE standards have been missed. They raised rather than reduced petroleum consumption and have increased instead of lowered greenhouse gas emissions.

It seems that if regulators wanted to reduce the amount of miles driven, and therefore fuel consumption, they should be increasing the cost of driving, not decreasing it. To accomplish this many have proposed a gasoline tax. In a 2003 Congressional Budget Office study which compared total long-run annual costs to achieve a 10 percent reduction in gasoline consumption they found that a Corporate Average Fuel Economy standard of 31.3 mpg for cars and 24.5 mpg for light trucks and a gasoline tax of 46 cents a gallon would together place a 2.4-billion-dollar cost on consumers (The Congressional Budget Office, 2003). This is equivalent to roughly 3.2 billion dollars in 2020 currency. Although the cost consumers are burdened with is the same under each policy, under the gasoline tax drivers are indirectly incentivized to drive less (US Department of Transportation). For each mile driven they are incurring a larger cost than they would have without a gasoline tax. CAFE standards would increase the initial cost of new cars. Even though a policy such as the gasoline tax is more in line with the policy goals of congress and the NHTA it likely has a greater political cost. A 2018 Gallup poll on commuting found that 83% of Americans commute to work by car. Even though this number is decreasing from the 2007 figure of 91% it is still a large number of people to potentially anger with a direct tax on something that is essential to their daily life (McCarthy, 2018). The CBO for 2003 estimates it would cost about \$228 annually for each vehicle (Congressional Budget Office, 2003). This will likely cause many motorists

⁸ Vancouver, British Columbia, Canada, is one such example. See on this Block, 2022.

⁹ If it were not, market forces would tend to move us in the direction of the allocation between them desired by the public. For example, if there were too much of one good, profits in it would fall, leading entrepreneurs as if by “an invisible hand” to produce less of it. if there were too little of one good, profits in it would rise, leading entrepreneurs as if by what Smith (1776) thought was God’s hand to produce more of it.

to hold off on replacing their older less fuel-efficient vehicles. This contributes to the increased amount of fuel consumption by Americans.¹⁰

Not only will they hold on to their older cars for longer but when they eventually upgrade to a newer vehicle, they will likely increase the number of miles that they drive overall. This is a crucial point the Trump administration attempted to make in 2020 but critics failed to understand. During the second 2020 presidential debates Trump stated in regards to his slashing of Obama era fuel efficiency standards, “What’s happening is the car is much less expensive and it’s a much safer car, the car has gotten so expensive because they have computers all over the place for an extra bit of [fuel economy]” (Gallagher, 2020). In other words, according to Trump, the cost of vehicles are increasing because of CAFE standards, which force manufacturers to implement new and expensive technologies to lower their mpg numbers. It is clear that if regulators are looking to reduce fuel consumption, Corporate Average Fuel Economy is not the answer. If the goal is less fuel consumption, then any policy that would tend to increase the population is not the answer; further, any policy that promotes longer commutes is not the answer.

In addition to this many of the critics of fuel efficiency standards would likely vehemently oppose fossil fuel subsidies as well. They might argue that subsidies promote the use of fossil fuels which pollute our environment. This is ironic because like fossil fuel subsidies, Corporate Average Fuel Economy standards subsidize pollution as well, yet only appear to receive a fraction of the backlash.¹¹

III Life and Death

Not only do CAFE standards affect new vehicle purchases, they also impact the type bought. We can see just how sensitive consumers are to the cost of driving by examining the relative shift in sales of cars to light-trucks. In the modern era consumers as a whole prefer to purchase SUV’s and pickup trucks for a variety of reasons (US Bureau of Economic Analysis). However, between the years 2004 and 2005, after a 25-year downward trend in the sale of cars, every category of automobile increased its market share while every category of light-truck decreased. In 2005, cars made up 45 percent of new vehicle sales which is a percent higher than the 44 percent of the previous year. It would then go up to 47 percent in 2007. A Congressional Budget Office (CBO) study determined:

“U.S. new-vehicle market shares have been such that a price increase of 60 cents per gallon (a 20 percent increase if the base price is \$3 per gallon) is associated with an average increase in the market share of new cars¹² of 2.6 percentage points (the sample average is 46.4 percent)” (CBO, 2003).

These marginal changes in consumer preference are not of much consequence, especially when light-trucks have continued to dominate the vehicle market. However, it is actually a matter of life and death, and it just so happens that CAFE standards exacerbate the issue. At first glance this is hard to see. According to the Insurance Institute for Highway Safety (IIHS) “A bigger, heavier vehicle provides better crash protection than a smaller,

¹⁰ According to the Transportation Research Board’s 2006 report, “Commuting in America III: The Third National Report on Commuting Patterns and Trends” there are more folks driving, fewer folks walking, more folks driving alone, folks driving longer distances ... There are many reasons that have nothing to do with CAFE that might explain the increasing driving behavior in the USA

¹¹ For any given level of activity (i.e. miles driven), stricter CAFE standards reduce fuel consumption and GHG emissions. A variety of factors (more people; less car-pooling; longer commutes; less walking; larger people; higher mpg.) promote more activity or miles being driven. Is CAFE the primary cause? That is not pellucidly clear, although in our prudential judgement this is indeed the case. However, it cannot be denied that this regulation likely plays an important explanatory role in this phenomenon.

¹² Presumably, this is because new cars have better fuel economy

lighter one, assuming no other differences. The longer distance from the front of the vehicle to the occupant compartment in larger vehicles offers better protection in frontal crashes. Heavier vehicles also tend to continue moving forward in crashes with lighter vehicles and other obstacles, so the people inside them are subject to less force” (IIHS, 2021).

It seems that CAFE standards would help solve this problem by decreasing the cost of driving because gasoline expenses will be lower for drivers. This lower cost would translate into increased demand for light trucks because they would be less sensitive to changes in gasoline prices. This is true and would be a benefit except for the fact that CAFE standards also incentivize manufacturers to change the way they go about building the vehicles in their fleets. In order to increase fuel efficiency, they often decrease the weight of their vehicles. This renders vehicles across the board less safe and already small light-weight vehicles which faced existing safety concerns because of their weight even more dangerous. A National Academy of Sciences study using National Highway Traffic Safety Administration (NHTSA) data found that every 100 pounds of weight removed causes 322 annual deaths. It is estimated that this may cause 1300 to 2600 deaths per year (Malkin, 2020). This should not be taken lightly. The number of deaths will only rise as the United States continues to put more and more drivers on the road each year.¹³

DiLorenzo (1999) points “to the carnage that has been created by corporate average fuel economy (CAFE) standards. To meet these standards the automobile industry has dramatically downsized its fleet, making cars narrower, shorter, and lighter. The result, according to a study by Robert Crandall published in the *Journal of Law and Economics*, is responsible for approximately 2,500 additional traffic fatalities each year.

“Consumers have responded to this government-mandated death and carnage by buying millions of larger sports utility vehicles and minivans. This in turn has caused the ever-arrogant regulators and their accomplices in the environmental movement to begin advocating special taxes and regulations on these larger vehicles with the intent clearly to drive them from the market.”

IV Market Innovation

Let us remember that all of this occurs because the market alternative would apparently lead to worse environmental and economic outcomes. Critics of a deregulated system claim that without government intervention fuel efficiency standards would not increase, leaving us with a more pollution filled society. This can clearly be seen in pre-1978 data changes, which saw a 13% increase in fuel efficiency standards from 1975 to 1978 (Environmental Protection Agency, 2019). This took place years before the minimum fuel efficiency standards took place, which brings into question the usefulness of CAFE.

However, it is not beyond reason to assume that companies anticipated the future regulations by improving their fleet fuel efficiency ahead of schedule. Therefore, critics may argue that this increase does not reflect actual market driven progress. Critics might also point out that fuel economy was stagnant or even decreasing during the decades before fuel economy standards were introduced. From 1950 to 1970 the fuel economy of all motor vehicles decreased from an average of 13.1 mpg to 12 mpg (US Energy Information Administration). While it is impossible to argue with the general trends of the vehicle industry it does not tell the complete story. It overlooks the astounding amount of innovation in fuel economy technology being researched. Much of this new technology was actively being pushed into the market and was often a key selling point for consumers. Despite what

¹³ For an alternative viewpoint on reducing traffic fatalities, in this case via privatization, see Block (2009)

we may think of the people of the mid twentieth century they were in fact concerned about fuel economy.¹⁴

The 1960 Chevrolet Corvair is a perfect example of this sentiment. In a May 1960 advertisement, the first line reads: “Even though the Corvair’s main virtues are economy and efficiency...” The ad would then mention that the Corvair was a “magician on milage” stating that “your gas dollars will now go farther... because the Corvair delivers miles and miles and miles per gallon”.¹⁵ To be more precise the 1960 Corvair delivered consumers a fuel economy of 20.7 miles per gallon according to Motor Trend magazine, which awarded the Corvair car of the year in 1960 (Motor Trend, 2009). The 20.7 mpg estimate is 40% more efficient than the fuel economy average of 12.4 mpg in 1960 (US Energy Information Administration). The Corvair would also beat out the 1979 CAFE passenger car standard of 18 mpg (US Department of Energy). The Corvair was also not just an outlier. Other domestic vehicles such as the Ford Falcon which claimed in one of its commercials a fuel economy of “30 miles a gallon” (Falcon Club of America, 2019). The 1970 AMC Gremlin in one of its launch day advertisements claimed a fuel economy of 23 mpg (Automotive history, 2021).

The desire for more economic vehicles is further demonstrated by the increase in the share of foreign cars in the United States market during the sixties and seventies. Honda went from 0.04 percent of the market in 1964 to 1.4 percent in 1976 (Knoema, 2020). The vehicles that were being marketed by Honda at the time were cars such as the 1976 Honda Civic which they claimed had a combined fuel efficiency of 36 mpg (BionicDisco.com, 2017). The underlying lesson from this should be that there was not only consumer demand for more economic vehicles, but that demand was actively being met with innovative fuel efficient vehicles far before CAFE. It would also be wise to note the reason that demand for fuel efficient vehicles pre-CAFE is not reflected in the EIA average fuel economy data. One must not simply take from the data that in the fifties and sixties American’s wanted and bought inefficient vehicles until fuel economy standards were put in place. The fact that it takes time for new innovations to become the standard should be factored in.

The prime example of green innovation in the modern automotive market is the rise of the electric vehicle. The most noteworthy of the competitors in this market is Elon Musk’s Tesla, which has produced an entirely electric vehicle fleet. In addition to this in recent years other companies such as General Motors and Ford have both hopped into the electric vehicle bandwagon. Supporters of Corporate Average Fuel Economy standards might be quick to take credit for this since one of their primary goals was to promote alternative fuel sources and innovative technologies, but they would be wrong in doing so. Electric vehicles do tend to have a lower cost of driving per mile with that of the standard Tesla Model 3 only 2.7 cents per mile.¹⁶ This is based off the 2019 cents/ kWh of 10.54 (US Energy Information Administration, 2020) and the standard Tesla’s city/highway range being 26 kWh/100 miles (United States Department of Energy, 2019). The national average gasoline cost of gasoline in 2020 was 2.258 dollars (US Energy Department Information). With this information we can determine that a similar gas vehicle such as the 2020 Toyota Avalon, which has a combined 25 mpg fuel efficiency, cost around 9 cents¹⁷ per mile (USDE Office of Energy Efficiency and Renewable Energy, 2021). This is 6.3 cents per mile more expensive than a

¹⁴ We suggest that perhaps consumer demand, in addition to CAFE, drove the shift to cheaper, lighter, more efficient vehicles.

¹⁵ This claim is based on information gathered from an online antique shop selling vintage magazine advertisements that feature the 1970 Corvair. The shop and the referenced listing can be found at <https://www.etsy.com/au/listing/638473921/vintage-chevrolet-corvair-car-ad>.

¹⁶ The exact figure is 2.7404 cents per mile.

¹⁷ The exact figure is 9.032 cents per mile.

Tesla. Even though an entrepreneur like Musk might see an opportunity here to provide consumers with a vehicle with a lower cost of driving, the relative consumer benefit of an electric vehicle decreases each year. CAFE standards are lowering the cost for driving. So, from a consumer perspective as CAFE standards increase, the benefit of switching to an electric vehicle, and the case for CAFE, decreases. In other words that gap in cost per mile will slowly close over time as the fleets become more and more efficient.

The implication for those who support green energy is profound. Not only can supporters of CAFE standards not take credit for the Teslas of the world, but they must also acknowledge the fact they are indirectly¹⁸ disincentivizing the creation of electric vehicles. To support this argument let us assume that objectors to deregulations are right in their belief that the market will not lead to an increase in fuel efficiency or at least not to a large enough degree to measurably reduce atmospheric greenhouse gases. If that is the case, if we go back to 1978 when CAFE standards began to be enforced and select one of the most popular cars of the year it will be the 1978 Oldsmobile Cutlass which sold over 632,742 units (Lisa, 2021). This automobile had a combined fuel efficiency of 18 miles per gallon (About Automobile). This aligns with the 18-mpg standard for that year. (USDE). So for cars that were at that level the cost per mile using 2020 gasoline prices would be approximately 12.5 cents per mile¹⁹ driven.²⁰ That is an 9.8 cent gap when compared to the previously mentioned Tesla's cost per mile of 2.7 cents and a 3.5 cent gap when compared to the Toyota Avalon's 9 cent cost per mile. For the consumer who is trying to determine the best vehicle mileage wise CAFE standards have thus effectively reduced the incentive of switching to a Tesla from a standard gasoline car by 3.5 cents per mile.²¹ For a motorist who drives 15,000 miles a year that is a 525-dollar cost that CAFE standards have eliminated from consumers yearly driving and therefore 525 fewer reasons²² to switch over to a cheaper and greener alternative such as the Tesla.

If CAFE standards had not existed and fuel efficiency did not increase, then there would be a far greater incentive to create a vehicle that greatly reduced driving cost. In this scenario one could even say that CAFE standards delayed the onset of green products such as electric vehicles. Corporate Average Fuel Economy standards do not promote but rather stifle innovation. Of course, some may argue that after you take into account the subsidies²³ that green companies such as electric vehicle companies receive, the effect Corporate Average Fuel Economy may have on consumers might not matter. The country would still get fuel efficient vehicles and innovative companies such as Tesla. While this argument may be valid it still does not undermine the criticism that looking at CAFE on its own fails according to its own standards. The goal to "promote the advancement of innovative technologies" is simply not accomplished by this program.²⁴ It is likely that without regulation the market would have introduced electric vehicles on its own and therefore there was no need for CAFE.

It could be argued that advances in improving fuel economy are innovative technologies. If they were endogenous, this would be true. But CAFÉ standards are

¹⁸ If CAFE makes conventional vehicles more affordable in times of rising oil prices; it makes these vehicles more competitive vis-à-vis EVs

¹⁹ The exact figure is 12.5444...

²⁰ This statistic was calculated by simply dividing the EIA 2020 gasoline average of 2.258 dollars by 18 mpg.

²¹ This 3.5 cent figure comes from the difference between the cost per mile of the Oldsmobile and the Toyota Avalon.

²² CAFE standards save this driver an estimated \$525 per year.

²³ It is difficult to mention this phenomenon of green subsidies without thinking of Solyndra. See on this Carden, 2011; Stephens and Leonning, 2011; Welch, 2011.

²⁴ United States Department of Transportation Corporate Average Fuel Economy (CAFE) Standards at <https://www.transportation.gov/mission/sustainability/corporate-average-fuel-economy-cafe-standards>

exogenous to the marketplace. Another motive for CAFE was to increase energy security. But such international trade considerations are too far afield for the more local focus of the present paper. On yet another matter, the question arises: Has anyone been imprisoned for violating CAFE standards? The answer is no; however, financial penalties have been levelled at violators.²⁵

V. Analogies

CAFE standards, it might be contended, have good purposes; were implemented with good intent. The goal was to reduce our carbon footprint. But according to that old aphorism, “the road to hell is paved with good intentions.” In order to see this more clearly, let us consider a few analogies.

Housing standards. There are homeless people. This is a serious problem. And, yet, some people are hogging up more than their fair share of residential space. How would most people react if we proposed a maximum standard of 500 per square feet per person? A family of 5, thus, can occupy a building of 2500 square feet, but no more.²⁶

The best thing that can be said for these standards is that they are silly. They constitute a rights violation. Imagine, putting people in jail for being too fat, or too slow, or for occupying additional housing space, which they paid for with their own honestly earned money.

Are these good rules? A case can be made for them similar to the one that are brought forth on behalf of CAFE. Perhaps it will now be easier to see the flaws in those arguments with the benefit of these analogies. The entire “standards” exercise is reminiscent of the Procrustean bed²⁷ of ancient fable.²⁸

VI Conclusion

Not only does Corporate Average Fuel Economy not lower fuel consumption and protect the environment it creates a new set of problems which revealingly demonstrates the issues that arise when the government does not grasp fundamental economic theory.²⁹ In terms of CAFE achieving its goals of decreasing our petroleum consumption, increasing the availability of alternative fuel vehicles, promoting the advancement of innovative technologies, and lowering greenhouse gas emissions it has utterly failed.

We can only offer these conclusions on a tentative basis. Based on the above considerations the present authors are led to conclude, only provisionally, that the CAFÉ

²⁵ Regulatory Tracker (2019)

²⁶ Only one house per customer. Summer cottages will be a thing of the past, unless people are willing to occupy 50% of their allotted space in it, or 33%, if they want three domiciles, etc.

²⁷ In the ancient Greek mythology, Procrustes, an evil giant, would either cut off the limbs of people too tall to fit in his bed, or stretch out the limbs of those who were too short to fit it. See on this: https://www.google.com/search?q=Procrustean+bed&sxsrf=APq-WBumjXWWrT44qmtcD2ZmHlwPaJXjgA%3A1648783442377&source=hp&ei=UnBGYsDxFM389APLmL6wCQ&iflsig=AHkkrS4AAAAAYkZ-YIQUI7yJ6dNzzQcPYWQICk8g3KZH&ved=0ahUKEwjA4pH79PH2AhVNPn0KHUuMD5YQ4dUDCAk&uact=5&oq=Procrustean+bed&gs_lcp=Cgdnd3Mtd2l6EAMyBQguEIAEMgUIABCABDIFCAAQgAQyBQgAEIAEMgUIABCABDIFCAAQgAQyBQgAEIAEMgUIABCABDIFCAAQgAQyBQgAEIAEOgcIIxDqAhAnUL8PWP4dYI8kaAFwAHgAgAFjiAGgAZIBATKYAQCgAQKgAQGwAQo&scient=gws-wiz

²⁸ For an awkwardness in this regard, see Golden, 2021.

²⁹ We allude, here, to the notion that there are reverberations, boomerangs, price elasticities which have to be taken into account. Yes, of course, initially, better mileage per gallon would lead to less fuel being used. But, if this also led to more driving, it is conceivable that this effect toward more fuel consumption would swamp the first effect.

program is the failure we argue that it is.³⁰ We therefore call for more research in order to know more definitively the results of this program. *Ceteris* is never *paribus* in all real-world studies, and we have not ruled out the possibility that some of the negative effects to which we point may have emanated from causes other than CAFÉ. Modesty should be the watchword for our own framework, analysis and conclusions. How can subsequent researchers reach a more rigorous conclusion? One possibility would be econometric analysis, which of course constitutes a statistical attempt to hold all other phenomena constant, so that we can more clearly see the effects of this one public policy.

A referee of this Journal challenges us in this way: “If not CAFE then what and why?” We have answered the “why?” at least to our own satisfaction, all throughout this paper. What about the “what?” What alternatives are there to CAFÉ, and, indeed to all other possible governmental carrots and sticks? Our response is to rely upon more traditional elements of law. Automobile pollution is merely a trespass of smoke, dust and other such particles. How does law ordinarily and traditionally handle trespass? Why, by suing the perpetrator! (Rothbard, 1982). Thus, no additional public policy need be created to address this problem; it can be resolved by the courts. Of course, there are difficulties here. Each motorist creates an infinitesimally small part of the overall problem. There is in law a famous doctrine, “*de minimus*”: the law does not concern itself with trifles. It would be silly to try to sue each car owner on an individual basis. However, if the roads, streets and highways were all privately owned (Block, 2009), there would be far fewer people against whom to target a lawsuit. When a nightclub makes noise at 3 a.m., neighbors do not sue individual partiers; rather, they bring a lawsuit against the nightclub owner for creating an unwarranted disturbance. The same would apply to motorists’ pollution.

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³⁰ A referee of this Journal asks, which other approaches could be used to incentivize switching to electric vehicles and thus improving air quality? First of all, it is by no means pellucidly clear that electronic energy sources are more environmentally beneficial than alternatives. They, too, use scarce resources, and/or are unreliable, dependent upon weather conditions (the wind does not always blow), time of day (for solar). However, putting that aside, the usual governmental methods for accomplishing anything are either carrots (e.g., subsidies, benefits, penalties for competitors) or sticks (penalties, taxation, regulations). It is difficult to see why any of these alternatives would be inferior to CAFÉ.

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