J O I N T C E N T E R
AEI-BROOKINGS JOINT CENTER FOR REGULATORY STUDIES

Increasing CAFE Standards: Still a Very Bad Idea

Andrew N. Kleit and Randall Lutter*

Regulatory Analysis 04-04
June 2004

* Andrew N. Kleit is a Professor of Energy and Environmental Economics at the Pennsylvania State University. Randall Lutter is the Chief Economist in the Office of Planning at the Food and Drug Administration. The results expressed herein are solely those of the authors and not necessarily those of the Food and Drug Administration.

J O I N T C E N T E R

AEI-BROOKINGS JOINT CENTER FOR REGULATORY STUDIES

In order to promote public understanding of the impact of regulations on consumers, business, and government, the American Enterprise Institute and the Brookings Institution established the AEI-Brookings Joint Center for Regulatory Studies. The Joint Center's primary purpose is to hold lawmakers and regulators more accountable by providing thoughtful, objective analysis of relevant laws and regulations. Over the past three decades, AEI and Brookings have generated an impressive body of research on regulation. The Joint Center builds on this solid foundation, evaluating the economic impact of laws and regulations and offering constructive suggestions for reforms to enhance productivity and welfare. The views expressed in Joint Center publications are those of the authors and do not necessarily reflect the views of the Joint Center.

All AEI-Brookings Joint Center publications can be found at www.aei-brookings.org

Executive Summary

In a recent Joint Center Working Paper, Gerard and Lave (2003, hereafter GL) respond to our recent work (Kleit 2002, forthcoming, Lutter, 2002, and Lutter and Kravitz, 2003) critiquing proposed increases in existing Corporate Average Fuel Economy (CAFE) standards. GL assert that, at least in the right environment, there is a place for CAFE standards. We suggest, however, that GL have not really made any dent in our arguments, and have not provided any rationale for the CAFE program to exist. Indeed, much of the GL argument is self-contradictory.

Increasing CAFE Standards: Still a Very Bad Idea

Andrew N. Kleit and Randall Lutter

1. Introduction

In a recent Joint Center Working Paper, Gerard and Lave (2003, hereafter GL) respond to our recent work (Kleit 2002, forthcoming, Lutter, 2002, and Lutter and Kravitz, 2003) critiquing proposed increases in existing Corporate Average Fuel Economy (CAFE) standards. GL assert that, at least in the right environment, there is a place for CAFE standards. We suggest, however, that GL have not really made any dent in our arguments, and have not provided any rationale for the CAFE program to exist. Indeed, much of the GL argument is self-contradictory.

In Section II of this note, we will review the GL arguments about congestion and the need they assert for an increase in the gasoline tax. Contrary to what GL assert, our position does not necessarily support an increase in the gasoline tax. Section III examines GL's contention about the "rebound effect," the empirically supported application of the first law of demand, that consumers in more fuel efficient vehicles will drive more. Section IV examines arguments about the possible divergence in private and social discount rates. Section V examines GL's concluding remarks.

2. External Effects and "Corrective Taxes"

In our analyses of increases in the current CAFE standards, we point out that, given that consumers will drive more miles if induced into more fuel efficient vehicles, this will increase congestion, accidents, and pollution. We then attempt to quantify those costs on a per mile basis. Taking account of such externalities is both realistic and important. As GL (at 8) report, "[B]y including these external costs, even modest incremental increases in the CAFE standards seem absurd."

Yet then GL take our analysis further, asserting that its logical implications are the imposition of an increase in the gasoline tax of approximately $1.75 per gallon. We would not be embarrassed to support a higher gasoline tax to reduce identifiable externalities, as recent

important work has suggested may be appropriate (Parry and Small, 2002). But that is not what our analysis implies; and it surely does not lead to a tax as large as $1.75 per gallon.

A person gets in their car and drives onto a crowded road. By driving, that person imposes externalities on the other drivers on the road. A gasoline tax at an appropriate level might solve this problem, if all driving imposed the same externality. But all driving does not impose the same externality.

Assume Lutter decides to drive his car from Beltsville to Bethesda, Maryland on Interstate 95 at 5PM on a Monday. It is highly likely he will be creating a congestion externality. Ideally, policy should seek to discourage such behavior.

But now assume Kleit decides to drive his car from Bedford to Bald Eagle, Pennsylvania on Interstate 99 at just about any time. It is quite unlikely that he will cause any congestion at all. Given this, should he pay the increase in gasoline tax that GL suggest?

A better policy might be to focus on congestion pricing. As the Congressional Budget Office (2002, Chapter 5) states, "[p]olicies that target the cost of peak-period driving directly, such as tolls levied during those periods, are better suited for addressing congestion problems." (For a description of congestion pricing options, see Holtz-Eakin, 2003.)

In any event, the GL assertion that our analysis implies support for higher taxes is simply not relevant. We analyzed CAFE standards under current conditions. Higher CAFE standards would be less onerous given a $1.75 increase in the gasoline tax for the simple reason that they would be less likely to be binding. But this is not the world in which we currently reside.

3. The Rebound Effect

As discussed above, the "rebound effect" is an important consideration in weighing the costs and benefits of CAFE standards. According to the first law of demand, as the price of something declines, more of it is consumed.

The first law of demand is easily applied to the impact of CAFE standards. By design, CAFE standards place consumers in more fuel efficient cars than they otherwise would be in. Thus, CAFE standards will cause these consumers to drive more. The relevant question is: how much more?

In a perhaps somewhat rambling discussion, GL (at 8-10), while agreeing that (at 10) "the rebound effect is real," attempt to argue that it is perhaps very small. The core of the argument seems to be stated at page 9:

> Driving a vehicle more implies either that a vehicle is scrapped at an earlier age or that they [drivers] put more miles on a vehicle before scrapping it. This leads to the question of when and why consumers scrap vehicles. If consumers scrap vehicles purely because they become unfashionable, then we expect that miles driven would increase. If, on the other extreme, vehicles were "one-hoss shays," that disintegrate into dust at 150,000 miles, then no additional miles would be driven with this vehicle.

Perhaps better stated, the existence of the rebound effect implies that either consumers drive their cars more miles, or they purchase cars more quickly after driving their vehicles more intensely. The second hypothesis seems somewhat unlikely, given that automobile manufacturers do not generally support higher CAFE standards.

It is an open empirical question as to how the rebound effect manifests itself. At this time, however, it is not an open empirical question that the rebound effect is large and important. There have been literally dozens of studies showing an important rebound effect in gasoline, albeit with a range in the estimates. GL (at 5) summarize this literature accordingly:

> Because CAFE reduces marginal driving cost and encourages more driving, there are costs associated with the CAFE-induced vehicle miles traveled. An average point estimate is that a 10 percent increase in fuel economy (or decrease in fuel prices) leads to a two percent increase in driving [citing to Greene, Kahn, and Gibson, 1999].

Thus, GL join with the Congressional Budget Office and the National Highway Traffic Safety Administration in concluding that 20 percent (2% over 10%) is the appropriate measure of the rebound effect. This is the same number for the rebound effect that Kleit uses in his studies.

GL ask "How Big is the Rebound Effect?" Yet they and we agree. The proper measure of the rebound effect, given the current state of the literature, is 20 percent. There is no actual argument here.

4. The Impact of the Discount Rate

To evaluate the demand for fuel efficiency, it is necessary to discount the future stream of benefits consumers receive from fuel efficiency. Kleit (forthcoming) and Lutter and Kravitz (2003) assume that consumers may discount future fuel economy at relatively high rates—ranging from 20 percent in the former to 7 to 10 percent in the latter. GL assert that the difference between these relatively high rates and "social" discount rates constitutes a rationale for higher CAFE standards. GL's position is incorrect.

First, note that using higher discount rates is not necessary to obtain high costs for the CAFE program. The original Kleit study (2002) used a discount rate of 4 percent and obtained largely the same results as Kleit (forthcoming, as discussed in footnote 14). The discount rate question was a small part of the Lutter and Kravitz critique.

But one cannot draw welfare conclusions based on differing discount rates without understanding *why* the consumer discount rate is relatively high. Orazio, Goldberg, and Kyriazidou (2000) show that many automobile purchasers are liquidity constrained, and therefore face implicit discount rates much higher than the market level. Thus, forcing these consumers into more fuel efficient vehicles would impose real increased costs on them—they cannot obtain credit to pay for the additional costs of the more fuel efficient vehicle, and so have to self-finance or forego the purchase.

A complementary line of analysis arises from the irrevocable commitment aspect of purchasing an automotive. Such a commitment requires the purchaser to forego other options, such as waiting for more favorable purchase conditions. Real options analysis, along the lines of Dixit and Pindyck (1994), implies that such commitments should attain higher rates of return, and therefore higher interest rates should be used in policy analysis to evaluate such commitments. Following along this line, Sutherland (2000) suggests that discount rates for these types of purchases should be raised far above market levels.

More broadly, there is the question of why relatively high consumer discount rates create a market failure that should be addressed by government policy. Assume the government adopts a policy that induces a consumer to buy a more fuel efficient vehicle (or energy efficient appliance). By assumption, that consumer is worse off. Who in society is better off? Perhaps if there is some externality in the consumption of energy, someone else in society is better off. But that is not the argument GL are making. They assert that the divergence in discount rates, *by itself*, constitutes a rationale for public policy. This paternalistic position is incorrect.

5. Conclusion

GL agree with us in the current world that higher CAFE standards induce more congestion, that the rebound effect is real, and that the best estimate of the value of the rebound effect is 20 percent. They note that the presence of congestion costs and other externalities induced by higher CAFE standards makes such standards prohibitively expensive. In all this, we agree with them.

GL incorrectly assert that the existence of congestion costs implies that a higher gasoline tax should be levied. This is not quite true. They also assert that the divergence in discount rates constitutes a rationale for the CAFE program. This is incorrect. To reach this conclusion, one needs to show the reason why such a diversion exists. Then from that rationale, an analyst needs to show how the relevant regulatory policy creates net benefits for society.

GL assert that, if gasoline taxes were greatly increased, CAFE standards would be efficacious policy. We do not agree, but for the present the issue is unimportant. Our analyses were based on current conditions. If gasoline taxes are indeed raised, we would be happy to rejoin GL on this issue. In the meantime, policy makers need to deal with the world in which we all live.

GL are clear about the harms of increases in the current level of CAFE standards. According to them (at 15) "… the CAFE program will continue to create distortions and generate social costs unless accompanied by an increase in prices." They agree (at 6) with Crandall (1992) that "[G]asoline taxes achieve the same fuel consumption level at costs that are seven to ten times less than those of the CAFE program." They assert that the externalities from raising CAFE standards will swamp any benefits.

Yet despite all this they contend (at 14) that, even without an increase in gasoline taxes, "[a] CAFE increase would be better than no action." They make no rational case for this assertion, and much of their paper contradicts their own conclusion.

We stand by our analysis. An increase in the current CAFE standard makes no economic sense in the current environment. Nothing in what GL presents contradicts this position, and much of their argument actually supports it.

References

Congressional Budget Office, "Reducing Gasoline Consumption: Three Policy Options," November 2002 http://www.cbo.gov/ showdoc.cfm?index =3991&sequence=0.

Dixit, A. K., and R. S. Pindyck. *Investment Under Uncertainty.* Princeton, 1994.

Gerard, David, and Lave, Lester, "The Economics of CAFE Reconsidered: A Response to CAFE Critics and A Case for Fuel Economy Standards," AEI-Brookings Joint Center for Regulatory Studies, Regulatory Analysis 03-10. (October 2003) http:// www.aei.brookings.org/ ta_search.php.

Greene, D.L, J.R. Kahn, and R.C. Gibson. "Fuel Economy Rebound Effect for U.S. Household Vehicles." Energy Journal 20, 1999, 1-31.

Holtz-Eakin, Douglas, Director, Congressional Budget Office, "Congestion Pricing for Highways" Statement before the Joint Economic Committee, U.S. Congress May 6, 2003 http://www.cbo.gov/showdoc.cfm?index=4197&sequence=0.

Lutter, Randall "CAFE: The Numbers Behind the Story", AEI-Brookings Joint Center for Regulatory Studies, Policy Matters 02-12, April 2002, http://www.aei-brookings.org/policy/page.php?id=84

Lutter, Randall, and Kravitz, Troy, "Do Regulations Requiring Light Trucks to Be More Fuel Efficient Make Economic Sense? An Evaluation of NHTSA's Proposed Standards," AEI-Brookings Joint Center for Regulatory Studies, Regulatory Analysis 03-2. March 2003 http://www.aei.brookings.org/publications/abstract.php?pid=312.

Kleit, Andrew N., "Impacts of Long-Range Increases in the Corporate Average Fuel Economy (CAFE) Standard," AEI-Brooking Joint Center on Regulation Working Paper 02-10, October, 2002, http://www.aei.brookings.org/publications/abstract.php?pid=284.

Kleit, Andrew N., "Impacts of Long-Range Increases in the Corporate Average Fuel Economy (CAFE) Standard," Economic Inquiry, 42(2) 279-94, Forthcoming, 2004

Parry, Ian, and Kenneth Small, "Does Britain or the U.S. Have the, Resources for the Futures Discussion Paper 02-12, March 2002, http://www.rff.org/Documents/RFF-DP-02-12.pdf

Orazio, A., P. Goldberg, and E. Kyriazidou. "Credit Constraints in the Market for Consumer Durables: Evidence from Micro Data on Car Loans." NBER Working Paper W7694, 2000.

Sutherland, R.J. ""No Cost" Efforts to Reduce Carbon Emissions in the U.S.: An Economic Perspective." Energy Journal , 21, 2000, 89-112.