

Preventing Bankruptcy After Bailout: The Future of Green Vehicles



John D. Graham, Dean
School of Public and Environmental Affairs
grahmjd@indiana.edu



Laura Cavagnaro, MPA '09
School of Public and Environmental Affairs
lcavagna@indiana.edu

It is encouraging that Congress sees the U.S. auto industry's financial crisis as an opportunity to promote energy conservation. Congress has given the Big Three until March 31 to develop a plan to profitably manufacture and sell fuel-efficient vehicles.

But insisting on a policy of green vehicles may have a perverse consequence: eventual bankruptcy or a need for more bailout funds. The reason is simple: No auto company can make money selling fuel economy when the price of fuel is less than \$2 per gallon.

If Congress enacts a bailout with green-vehicle stipulations, it may need to provide stronger encouragement for consumers to purchase green vehicles. Some policy options to consider are:

- Re-offer income tax credits for consumers who purchase new fuel-efficient vehicles.
- Institute a “feebate” system that offers a rebate to consumers who purchase green vehicles and extracts a fee from those who buy fuel-hungry vehicles.
- Increase non-monetary incentives, such as permitting vehicles with hybrid engines in High Occupancy (HOV) lanes in urban areas, even if the vehicle has only one occupant.

Depression in the Auto Sector

The financial meltdown and credit crunch have exacerbated a downturn in sales of new cars and SUVs in the United States. From a 2006 peak of nearly 17 million new vehicle sales per year, sales in 2009 are projected at about 11 million per year. As the credit crunch has spread worldwide, new vehicle sales have slowed everywhere from Europe and Russia to China and India.

Profit margins at Honda, Toyota, Nissan, BMW and Daimler are rapidly disappearing while the “Big Three” (GM, Ford and Chrysler) are facing the prospect of bankruptcy proceedings in 2009. The Big Three have already shed 150,000 jobs since 2006, and more layoffs are expected in 2009. If one or more of them collapse, the adverse ripple effects among their shared suppliers could cause the other two to collapse as well.

President-elect Obama and Congress so far have one key stipulation: the Big Three must retool their plants and offer large volumes of highly fuel-efficient vehicles such as hybrids, plug-in hybrids, clean diesels and electric cars. With support from President Bush, Congress has already compelled auto makers to raise the average mileage of new cars and light trucks from 25 to 35 miles per gallon by 2020.

In an effort to help finance retooling, the U.S. Congress in 2007 authorized \$25 billion in financial support for green vehicles (e.g., low-interest loans for retooling expenses). The Bush administration is working to provide near-term liquidity for the Big Three. Larger infusions of government support are expected in 2009.

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Professors Matthew Auer, Ken Richards,
and JC Randolph



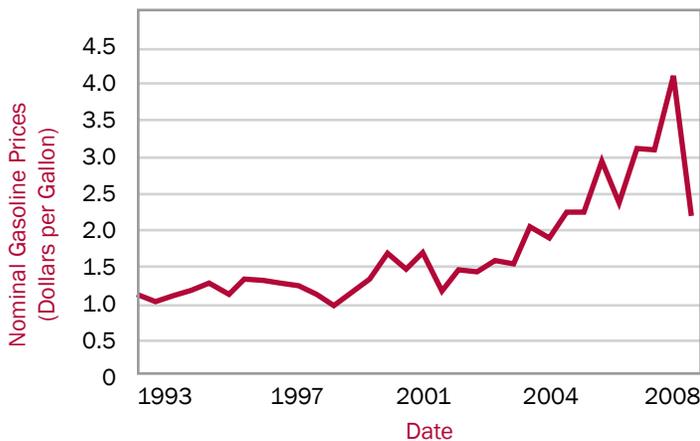
The Collapse of Oil Prices

The stipulation that Detroit sell green vehicles is ignoring a fundamental reality: the recent collapse of world oil prices. From a peak of \$147 per barrel in July of 2008, the price has plummeted to less than \$40 per barrel in late 2008. Further price declines in 2009 are possible as the global recession deepens and as demand for oil declines more rapidly than the supply adjustments. The OPEC ministers are calling emergency meetings to cut production but have already admitted that the best they can do is hold the world price at \$75 per barrel. Given the history of price cheating among these cash-hungry countries, OPEC may fail to curb the collapse of world oil prices, just as OPEC failed in the 1980s and 1990s.

If the Big Three adhere to the financial and regulatory stipulations of the federal government, they will roll out in model years 2010 to 2015 a growing number of “green vehicles” that achieve 35 to 50 miles per gallon. Yet, the ambitious plans for green technology beg a key question: Who will purchase these vehicles?

The national average price of fuel at the pump has already dropped well below \$1.80 per gallon and, unless the world oil price suddenly rises again, it is reasonable to project that buyers of 2010 cars and SUVs will have faced low fuel prices for almost a year.

U.S. Retail Gasoline Prices (All Grades, All Formulations)



The consumer’s interest in a hybrid vehicle that achieves 40 miles per gallon will be dampened if the price of fuel is less than \$2.00 per gallon. This is not a concern in Europe where taxes keep fuel prices well above \$5 per gallon. However, fuel prices at the pump may remain low in the USA for at least several years.

Green Technology Isn’t Cheap

If the auto makers could produce green vehicles at a lower cost than fuel-thirsty vehicles, the prospects of low fuel prices would not discourage the new vehicle offerings in the years ahead. But the harsh reality is that green vehicles are costly to produce and pricing information is sometimes deceptive (e.g., some green vehicles are sold at a loss to the manufacturer).

First, there is the cost of retooling plants to offer green vehicles instead of gasoline-powered engines. At some of the flexible new plants that Honda and Toyota have built in the United States, the conversion costs – while significant – are manageable. But at the older plants owned by the Big Three, the conversion costs can approximate the costs of building an entirely new plant.

Second, and more importantly, it costs more to produce a green vehicle. For example, when hybrid engines were first introduced by Toyota and Honda, they increased the cost of producing a car by about \$5,000-\$10,000 per vehicle. (Hybrids are more expensive because they have two power systems instead of one – a battery pack and a gasoline engine). Fortunately, with cost savings from better batteries and smaller gasoline engines, the extra costs of hybrids have been reduced by almost 50% – but the cost premium remains significant.

The modern diesel engine has been offered in cars for more than a decade in Europe. VW’s new diesel-powered cars in the U.S. achieve 40 miles per gallons on the highway. Yet a diesel engine costs \$1,000-\$5,000 more than a gasoline engine, depending on the size of the vehicle and the use of specialized materials and emissions control devices. While many are excited about plug-in hybrids or electric vehicles, the cost premium on these vehicles is even larger (due to larger battery systems).

Disinterested Consumers?

When vehicle manufacturers offer consumers a fuel-saving feature that costs anywhere from \$1,000 to \$10,000 more per vehicle, a small percentage (1 to 5%) of consumers – sometimes wealthy ones – will buy the green technology because they are concerned about the environment or energy security, or they may be fascinated with the latest technology. But the vast majority of new car buyers will insist on tangible value. Studies of new car buyers

suggest that a net payoff from an investment in green technology must occur within about three years of purchase of a new car.

When fuel prices are \$4 per gallon for regular gasoline, a motorist who drives 10,000 miles per year and gets 25 miles per gallon faces a three-year fuel expenditure of \$4,800. Now suppose that an investment in a similar-yet-green vehicle can accomplish 40 miles per gallon. The three years of fuel expenditures are now only \$3,000. If the cost of producing the green car is less than \$1,800, there is hope for the producer and consumer to be better off. But if fuel prices are less than \$2 per gallon, it is unrealistic to expect that most consumers will be interested in paying the premium for a green car.

Toyota's marketing experience with the Prius is consistent with these rules of thumb in the industry. After the initial burst of sales to environmentalists and technologists, Toyota found that the Prius sold much better when fuel prices were high. When fuel prices were low, Toyota was forced to offer special financing deals or incentives to move the Prius off the dealer lots. Consumer tax credits and special access to HOV lanes in large cities also spurred sales of the Prius. Fearing the downturn and low fuel prices, Toyota has delayed a decision to build a new plant that would produce the Prius in Mississippi.

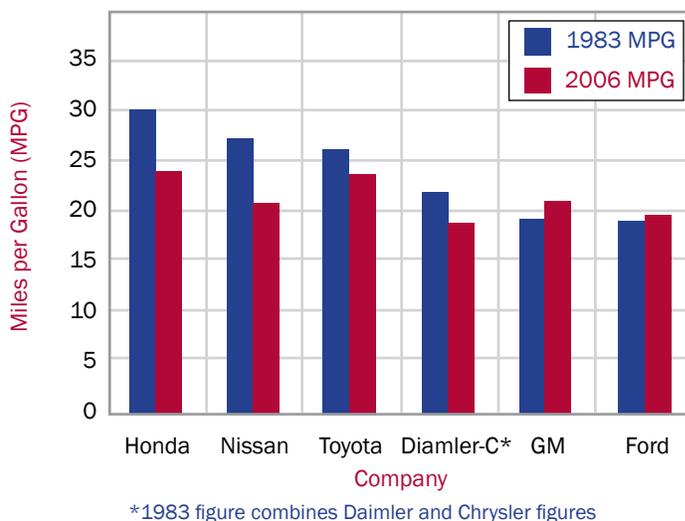
An important untold secret is the success of both Honda and Toyota over the last two decades: their market shares and profits were enhanced less by offering energy-efficient vehicles than by gradually increasing the size of their cars and expanding their market shares in the lucrative U.S. markets for pick-up trucks, vans and SUVs. Most recently, Toyota challenged the Big Three with a redesigned Tundra, a large pickup truck offering stunning performance and more than 30 configurations. As fuel prices have declined, the pickup truck is now resuming its place as the largest-selling vehicle in America.

Won't Oil Prices Rise Again?

Green-vehicle optimists correctly point out that the collapse of oil and fuel prices in 2008 is temporary. Those prices will rise again as the global economy recovers from the current recession, as household incomes rise, and as demand for world oil again outstrips the production of oil and oil substitutes (including ethanol). By 2030, the International Energy Agency is projecting that the world price of oil may climb to \$200 per barrel.

However, the fate of the Big Three and their suppliers will be determined by what happens in the next five model years, not what happens in 2030. Given how deep the global recession appears to be and how fast alternative energy supplies are developing, oil prices,

Average Fuel Economy of New Cars and Light Trucks, 1983 vs. 2006

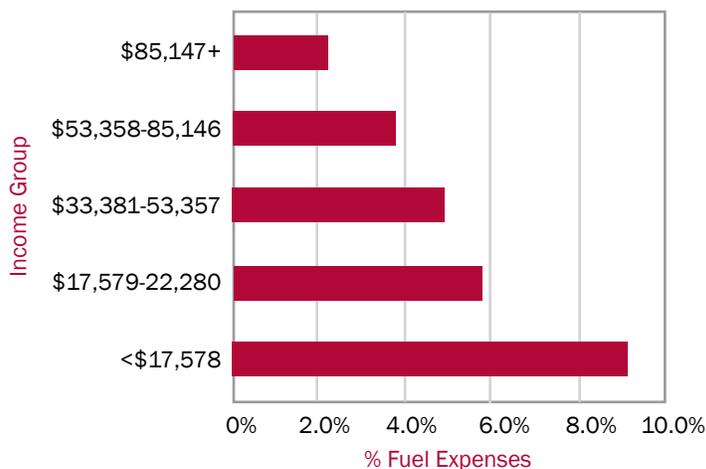


fuel prices and household income levels may not rise rapidly in the next five years. As Congress goes forward with a bailout and green-vehicle stipulations, it may be wise to accompany this policy with some strong encouragements for consumers to purchase green vehicles.

Policy That Works

The most obvious policy option is a rapid rise in the federal gasoline tax or at least a floor on fuel prices. But this option is unacceptable to politicians and voters (especially in a recession) and it has a serious adverse consequence: it hurts disproportionately consumers at the lower end of the income distribution. There are, however, additional steps that policy makers can take to raise consumer interest in green vehicles while fuel prices and household incomes remain suppressed.

Spending on Gasoline as a Percentage of After-Tax Income, 2005



1. Re-Offer Income Tax Credits

In 2005 Congress authorized generous income tax credits (\$1,000 to \$3,500 per vehicle) for consumers who purchased new fuel-efficient vehicles with hybrid and clean-diesel engines. These credits are scheduled to expire soon. Congress should consider re-offering these credits.

Congress has recently offered large tax credits (up to \$7,500 per vehicle) for plug-in hybrids and electric cars, but these credits will have little practical effect until engineers accomplish breakthroughs in battery technology and recharging stations are built throughout the country.

2. Enact “Feebates”

A more promising approach would be a new “feebate” system that offers a rebate to consumers who purchase green vehicles and extracts a fee from consumers who purchase fuel-hungry vehicles. In order to protect the taxpayer, the formula for rebates and fees can be set to ensure revenue neutrality (i.e., no net increase in taxation).

If policy makers make no adjustment for vehicle size or weight, the smallest, most fuel-efficient vehicles will be favored. But an adjustment for size and weight will better protect safety and align the tax credits with the federal government’s size-based system for regulating the mileage of new cars and SUVs. Some parents with large families and some small businesses need a large passenger vehicle. Tax policy should encourage them to purchase vehicles that achieve above-average fuel economy in their preferred size class.

If the feebate system is not adjusted for vehicle size or weight, it may penalize large families and create a perverse incentive for cash-strapped manufacturers to offer downsized vehicles that impose safety risks on their occupants. A size-adjusted feebate system could respect the consumer’s interest in vehicle size and reward the engineering innovations in green technology that occur within each size class. Thus, a large pickup truck that has “best-in-class” fuel economy (e.g., due to a clean diesel engine) might merit a rebate. (Toyota’s Tundra is not superb in fuel economy and is not yet offered with a diesel option). Since sales of trucks, SUVs and vans will not vanish after a bailout, consumers of these vehicles need an added incentive – beyond fuel prices – to purchase fuel economy.

3. Expand Non-Monetary Rewards

Consumers will respond to non-monetary as well as monetary signals, but some states and localities are actually removing non-monetary incentives to purchase green vehicles. In some regions of

the country, vehicles with hybrid engines are permitted on HOV lanes in urban areas, even if the vehicle has only one occupant. This practice should be extended rather than curbed. If this policy creates too much congestion on HOV lanes (as has been suggested in Northern Virginia), the proper solution is not to eliminate the privilege but to focus it on a more limited class of vehicles that achieve the highest fuel economy within size or weight class.

Summary

A bailout of the Big Three will not work if companies must offer green vehicles at a time when fuel prices and household income levels do not support the sale of these more expensive vehicles. If market conditions are not favorable, companies will be forced to sell green vehicles with large discounts or cash-back offers, which will create the financial losses that heighten the risk of bankruptcy after a temporary bailout.

Thus, since Congress has decided to pursue a bailout with stipulations – implicit and explicit – that force production of green vehicles, it would be wise for policy makers to accompany this policy with a series of monetary and non-monetary incentives that encourage consumers to purchase green vehicles, especially if fuel prices and income levels remain low in the foreseeable future.

Further Reading

- Ryan Keefe, Jay Griffin, and John D. Graham. The Benefits and Costs of New Fuels and Engines for Light-Duty Vehicles in the United States. Risk Analysis, in press.
- National Research Council. The Effectiveness and Impact of Corporate Average Fuel Economy Standards, National Academy Press, Washington, DC, 2001.
- U.S. Congressional Budget Office. Reducing Gasoline Consumption: Three Policy Options, 2002.

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