Is CARS a Clunker?

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Frederic Bastiat’s nineteenth century parable tells the story of a shopkeeper whose window is broken by a careless son. Initially, everyone sympathizes with the shopkeeper, but when the glazier arrives he praises the lad for having provided a new job. Presumably, any additional spending that the now more affluent glazier makes would only add to the praiseworthiness of the careless son. But the glazier’s work is what is seen; what is unseen is the lost work and spending of the shoemaker who otherwise would have received additional business from the shopkeeper had the window not been broken. Bastiat rightly concludes that the net effect on society is the lost value of the broken window. In this early benefit-cost analysis, the careless son receives no praise.

Today, the U.S. government appears to be hiring window breakers in the form of the Car Allowance Rebate System (CARS) program. Dubbed “Cash for Clunkers,” the program pays people to trade in old autos and trucks (which are destroyed) for new ones. But the cash for clunkers program is more complicated than the Bastiat parable. There are additional real economic losses in the form of overconsuming new automobiles (the subsidy induces people to buy new vehicles even though their willingness to pay for new vehicles is less than the going market price). This raises the possibility that the waste exceeds the value of the destroyed vehicles. On the other hand there are real economic benefits stemming from a reduction in air pollutants and, if these are large enough, destroying valuable assets could be a net benefit to society. We weigh these costs and benefits in the next sections.

THE COSTS

On the cost side, the program destroys valuable assets. Vehicles eligible for destruction must be driven to the lot, owned and insured by the same owner for the entire year prior to surrendering the vehicle. In other words, these vehicles must be functioning, useful vehicles. The government purchase price is either $3,500 or $4,500 depending on the gain in average miles per gallon of the new vehicle over the retiring vehicle. Based
on preliminary data, the average payout is approximately $4,200 per vehicle.\footnote{1}

What is the average value of the retired vehicles? Surely the value will be below the buy-in price, and substantially below in many cases. To be conservative on the cost side we initially assume that the average value of the retired vehicles is $1,000. This is the equivalent of Bastiat’s window. It represents a pure loss of wealth to the vehicle owner and is the cost of participating in the cash for clunkers program.

Taxpayers lose $4,200 per vehicle in the form of the price subsidy given to CARS participants. But this is not a pure loss to society because the CARS participants are deriving some value from the subsidy. How much value do they obtain from the $4,200 subsidy? Each participant will receive a value somewhere between $1,000 and $4,200. If the value of the subsidy were less than $1,000, the participant would not be in the program (recall, the participant had to surrender a $1,000 clunker). For many of the participants, in particular those who would not have bought the car absent the subsidy, the value of the subsidy will be far less than $4,200. For simplicity, we will assume there is no impact on the market price for vehicles. If so, the effective new-vehicle price to participants in the program is lowered on average by $4,200. We estimate the consumer surplus (value to the participant of the $4,200 price subsidy) at $2600—some participants will value the subsidy close to $1,000 and others close to the full $4,200. We are invoking some linearity and constant distribution across the demand function and again no change in the market price due to the program. The average national cost per vehicle then is $2,600. There is a $4,200 loss to the taxpayer, but the CARS participant gains $1,600 per vehicle ($2,600 in the value of the price subsidy less the $1,000 loss of the clunker). Up to this point, we have ignored the benefits from reducing air pollutants.

THE BENEFITS

Less fuel consumption means less air pollution—lower emissions of greenhouse gases (primarily CO2) that contribute to climate change and lower emissions of fine particulate matter (PM2.5) including the effects of SOx, NOx, NH3, and VOCs that have adverse health impacts. As of August 17, the average mpg of the retired vehicles is 15.8 while the average mpg of the newly purchased vehicles is 25.0.\footnote{2} If we assume that the average miles driven per year are 12,000\footnote{3} and the new and old vehicles are driven identically, the program will cut gasoline consumption by 280 gallons per year per vehicle. The vehicles bought for destruction by the program are old and, as we have assumed, of low value. So, it is reasonable to assume that they face near-term natural mortality. A vehicle with a market value of $1,000 is likely to be scrapped when faced with a major repair (transmission or engine work, for example). We assume that the average clunker would have lasted 3 more years at which time a new, higher mpg vehicle would be purchased. So, environmental benefits come from consuming 280 fewer gallons per year per vehicle for three years. This works out to a total of 840 fewer gallons of gasoline burned per vehicle.

There are reasons to believe that actual gasoline saving might be less. First, drivers of the new higher mpg vehicles are likely to drive more miles per year than they did with their old gas-guzzling clunkers. Second, some of the retiring vehicles may have been traded in

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for strategic gain. For example, a couple with two old vehicles, one a truck and the other a small compact car, might trade-in the truck for a new small compact to take advantage of the subsidy. Later, the old compact would be sold and a new truck purchased. Both of these factors reduce the mpg gain calculated above. On the other hand, the old clunkers could have a useful life greater than three years or might otherwise be replaced after natural retirement with low-mpg vehicles and these two factors would raise the saved-gasoline estimate. On balance, 840 fewer gallons per vehicle seems an acceptable ball park estimate.

In a February 2009 article published in the Proceeding of the National Academy of Sciences, Jason Hill and coauthors estimated that the CO2-related climate change cost of burning one gallon of gasoline (including all downstream effects) is 37 cents/gallon. Their estimate for the health-related cost of conventional pollutants associated with fine particulate matter is 34 cents/gallon. Together these make a fairly comprehensive set of values for the social cost of burning gasoline, and hence benefits that we can attribute to lower gasoline consumption due to the clunker program. At 71 cents/gallon, the environmental benefits of the clunker program (ignoring discounting) are 840 fewer gallons at a 71 cents/gallon benefit. This is about $596 per vehicle.

While it is tempting to add the macro-economic effects of employment into these estimates, we believe that doing so would be a mistake. We follow Bastiat and the usual benefit-cost analysis in ignoring them. We are not denying that there may be some desirable transfer of wealth to those who are unemployed, but it is not coming through any new real economic wealth created in society.

**THE NET: WHY CARS IS A CLUNKER**

With per vehicle environmental benefits at $596 and the costs at $2,600 per vehicle, the clunker program is a net drain on society of roughly $2,000 per vehicle. Given the approximately 700,000 vehicles in the program, we estimate the total welfare loss to be about $1.4 billion. The welfare loss would be even greater if we fine tuned our estimate of the social cost per gallon to account for the spatial mix of clunkers. Clunkers, especially the trucks that comprise a large percentage of the traded-in vehicles, may have been retired disproportionately from rural locations where the social costs of pollutants are significantly lower. Also, if the average value of clunkers exceeds our conservative figure of $1000, then cost of the program would be higher. Even if the environmental gains were double our estimate, the net drain would still be close to $1 billion. While a more rigorous analysis would no doubt adjust these figures, we doubt that the basic conclusion would change.

Clearly, the CARS program is very popular. The initial $1 billion allocated to the program was quickly exhausted and congress fast-tracked an additional $2 billion. The popularity of CARS should be no surprise: it gives participants a substantial gift. Meanwhile the burden of the program is dispersed over a large group of taxpayers. Concentrated benefits create vocal advocates while diffused costs produce silent apathetic opponents.

All in all, the CARS program appears to be broken windows for modern times.

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NOTES
4. The CARS program costs the average taxpayer about $22: $3 billion divided by 138 million taxpayers.

REFERENCES AND FURTHER READING