Performance vs fuel efficiency - Lessons from the past

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Meeting fuel efficiency challenges
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Outline

- Two oil shocks during the 70s
- Cheap oil (and gasoline) 1986-2000
- Extremely volatile 2008
Two oil shocks and no trend?

![Chart showing the real price of gasoline over time]

- The chart indicates two oil shocks in 1975 and 1980, followed by a decline in the real price of gas.
- The price then fluctuates but shows an overall upward trend from 1990 onwards.

The red circle highlights a significant increase in the real price of gas between 1975 and 1980.
1979-80: small beats large

Consumer response in vehicle size purchased

Index =

Small Car  Full-size Car  Leaded gas
CAFE standards in place by 1978

Graph showing the CAFE Standard and real price of gas from 1975 to 2005. The CAFE Standard is represented by a green line, and the real price of gas is represented by a blue line.
Fuel efficiency up substantially

The graph illustrates the fuel efficiency, CAFE standard, and real price of gas from 1975 to 2005. The fuel efficiency and CAFE standard show a steady increase with peaks around 1985 and 1995, while the real price of gas shows a more volatile trend with significant fluctuations.
Producers adjust characteristics of cars

1975 Chevy Impala

1977 Chevy Impala

Shorter and lighter
Producers adjust characteristics of cars
Cheap gas favors performance

Larger and faster

1986 Honda Accord
- 2.0 L 4 cyl 98 hp
- 2.0 L 4 cyl 120 hp

2008 Honda Accord
- 2.0 L 4 cyl 154 hp
- 3.5 L 6 cyl 268 hp
The rise of the SUV

U.S. light vehicle sales

[Graph showing U.S. light vehicle sales with cars and light trucks trends from 1980 to 2008]
Detroit 3 discover light trucks…
...and they grow them
Gas price swings wildly in 2008

2008 Monthly Gas Price

Average Retail Gas Price
Consumer choice in fuel efficiency

![Histogram showing frequency distribution of CAFEavomb for cars (n = 149) and light trucks (n = 139).]
Consumers opt for fuel efficiency (1)

2008 Monthly Gas Price vs. Sales-weighted CAFE (cars)

Note: car CAFE fleet requirement for 2008 MY at 27.5 mpg
Consumers opt for fuel efficiency (2)

2008 Monthly Gas Price vs. Sales-weighted CAFE (Light Trucks)

Note: light truck CAFE fleet requirement for 2008 MY at 22.5 mpg
Summary

- Regulation can force technology
- Take-up rate depends on cost effectiveness
- Consumers have preferences for both performance and fuel efficiency