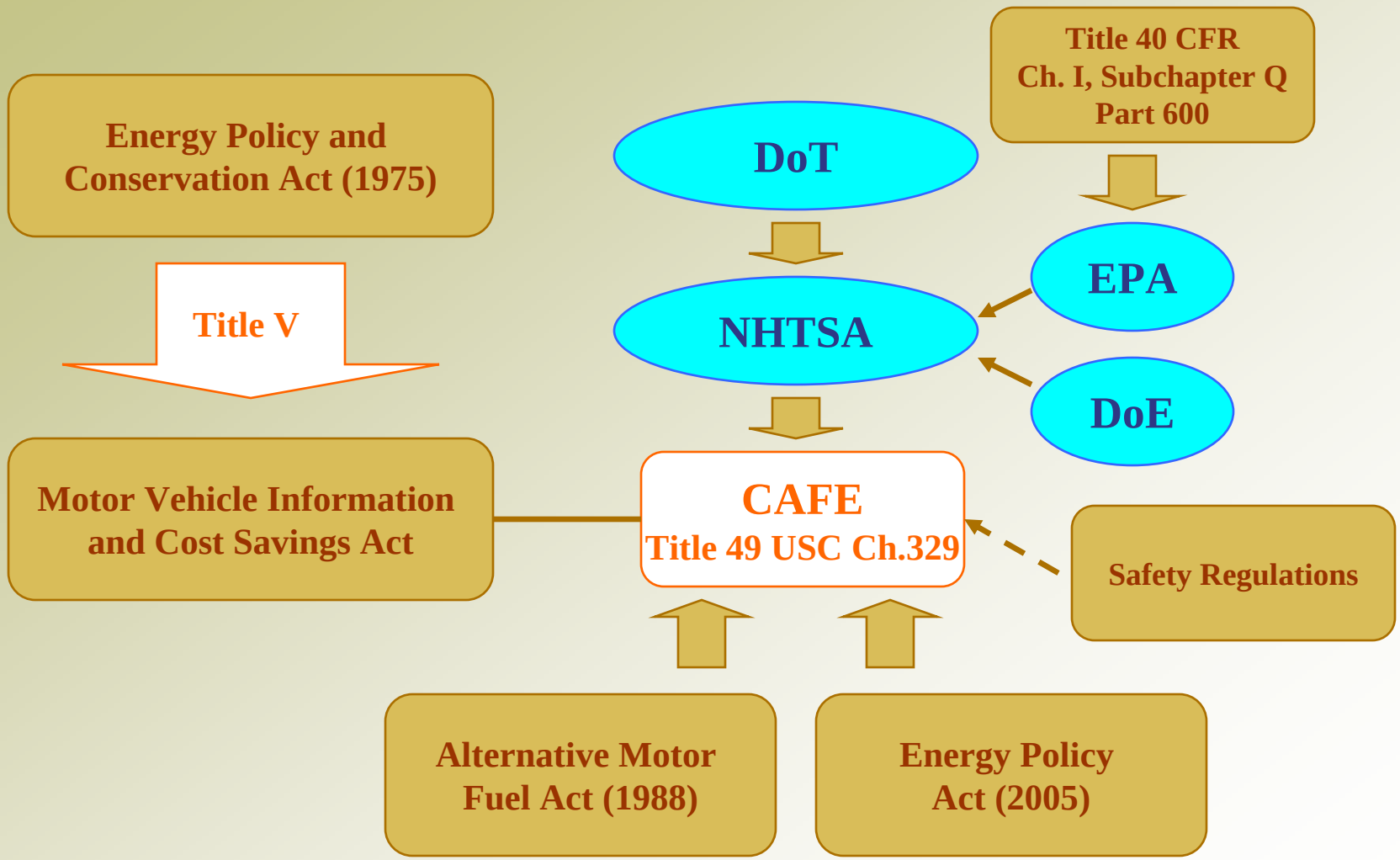
The Corporate Average Fuel Economy Program: Past, Present, and Future

Gustavo Collantes
Research Fellow
Belfer Center for Science and International Affairs
Kennedy School of Government
Harvard University

Presentation Overview

- Introduce the regulatory context
- Exploration of regulatory so-called “loopholes”
- The recent light-duty truck program
- Discussion

Regulatory Context



The Congressional Intent

- Definition of the regulatory object:
  - Passenger automobile is a "4-wheeled vehicle that is propelled by ***fuel*** (or by ***alternative fuel***) manufactured primarily for use on ***public streets***, roads, and highways (except a vehicle operated only on a rail line), and rated at not more than ***6,000 pounds*** gross vehicle weight."
- Also vehicles between 6,000 and 10,000 lbs if:
  - "an average fuel economy standard under [Chapter 329 for these vehicles] is feasible"
  - "An average fuel economy standard under [Chapter 329 for these vehicles] will result in significant ***energy conservation*** or the vehicle is substantially used for the ***same purposes*** as a vehicle rated at not more than 6,000 pounds gross vehicle weight."

Rulemakings

- Passenger cars standards set in 1975, binding in 1978
- LDT up to 6,000 lbs set in 1977, binding in 1979
- LDT up to 8,500 lbs set in 1978, binding in 1980
- Combined 2WD-4WD standards set in 1982
- Standards reduced a couple of times
- Rulemakings prohibited 1996-2001
- 2006 LDT dual-structure program

Lowering Standards: The Role of the Courts

- 1984, reduction of standards for 2WD, 4WD, and combined
- Decision upheld in Center for Auto Safety v. NHTSA, U.S. Circuit Court of Appeals, D.C.
- Subsequent reductions in standards for MY 1986, 1987-88, and 1989.
- Decision for MY 1986 upheld in Public Citizen v. NHTSA, U.S. Circuit Court of Appeals, D.C.

How Are Standards Set?

- "Maximum feasible average fuel economy level" (U.S.C. § 32902(a))
- Consider: "technological feasibility, economic practicability, the effect of other motor vehicle standards of the Government on fuel economy, and the need of the United States to conserve energy." (U.S.C. § 32902(f))
- "Least capable manufacturer"

Hot Spot #1: How is Fuel Economy Estimated?

- City and highway fuel economies estimated separately

$$FE_{\text{fleet}} = \frac{\text{Total sales}}{\dfrac{\text{Sales}_{\text{model 1}}}{FE_{\text{model 1}}} + \dfrac{\text{Sales}_{\text{model 2}}}{FE_{\text{model 2}}} + \ldots}$$

- Estimates corrected to approximate real-world conditions
- Then, combined fuel economy estimated as:

$$FE_{\text{comb}} = \frac{1}{\dfrac{0.55}{FE_{\text{city}}} + \dfrac{0.45}{FE_{\text{highway}}}}$$

- Example: Toyota Prius, 64.8 mpg city, 66.6 mpg highway
- Energy Policy Act of 2005 directed revision of these tests

Hot Spot #2: CAFE and Alternative Fuels

- Fuel economy of alternative fuel-capable vehicles, dictated by Alternative Motor Fuel Act (AMFA) of 1988.

$$\text{Fuel economy}_{\text{alt fuel}} = \frac{\text{Actual fuel economy}_{\text{alt fuel}}}{0.15}$$

- AMFA intention: Address the chicken-and-egg dilemma
- Flex-fuel vehicle fuel economy: $$FE = \frac{1}{\frac{0.5}{FEgas} + \frac{0.5}{FEalt}}$$
- Maximum fuel economy increase due to alt fuel: 2.1 mpg
- Alt fuels provisions active through 2004; possible extension to 2008

Who Likes AMFA and Who Doesn't?

- Alliance to Save Energy
- American Council for an Energy Efficient Economy
- Center for Auto Safety
- Environmental Defense
- Natural Resources Defense Council
- Public Citizen
- Renewable Fuels Association
- Sierra Club
- Union of Concerned Scientists

- Alliance of Automobile Manufacturers
- Colorado Corn Administrative Committee
- DaimlerChrysler
- Ford Motor
- General Motors
- Maryland Grain Producers Ass'n
- Minnesota Corn Growers Ass'n
- National Corn Growers Ass'n
- National Ethanol Vehicle Coalition
- Sen. Allard, Sen. Ashcroft, Sen. Bayh, Sen. Bond, Sen. Grassley, Sen. Hagel, and Sen. Levin
- Governors of Kansas, Missouri, New Mexico, and Wisconsin

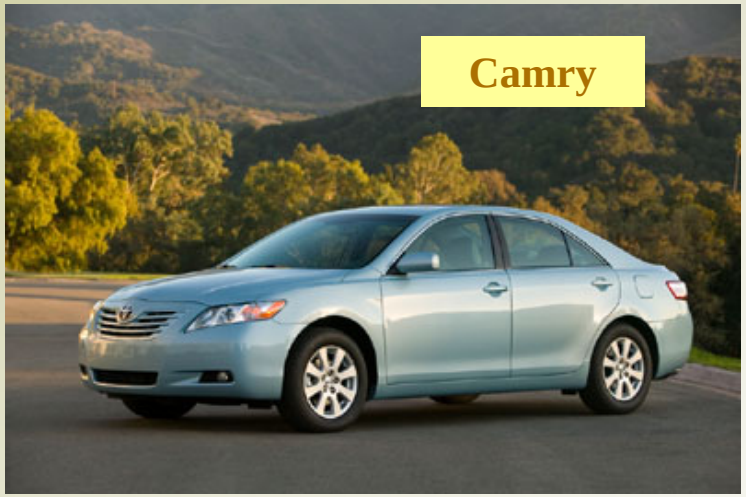
Question:

Are the AMFA provisions a real loophole in CAFE?

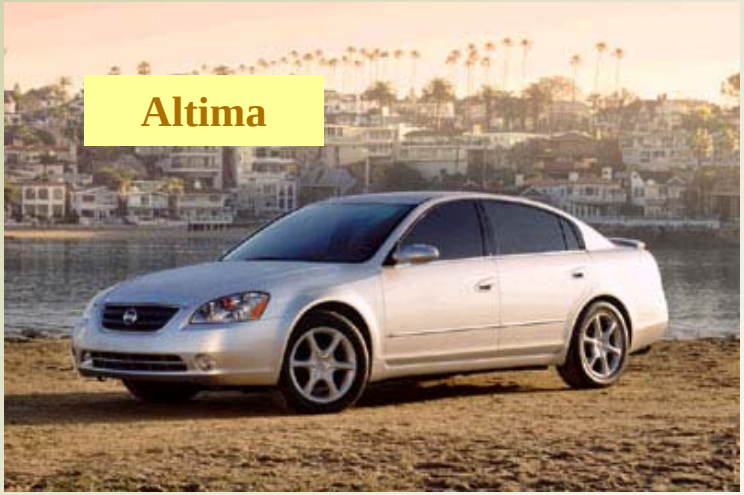
Hot Spot #3: CAFE and Safety

- The link between weight/mass and safety
- How much should CAFE think about safety?
  - Statutory direction
  - NHTSA's safety standards
- The willingness to pay for safety Ad campaign
- Kahane's studies (1991-97)
- NAS recommendations

Safety and Vehicle Size (Ross and Wenzel)



Safety and Vehicle Size (cont.)



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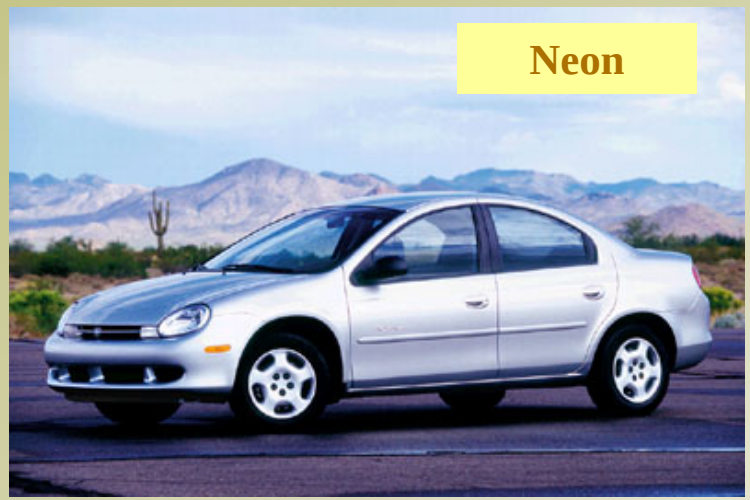
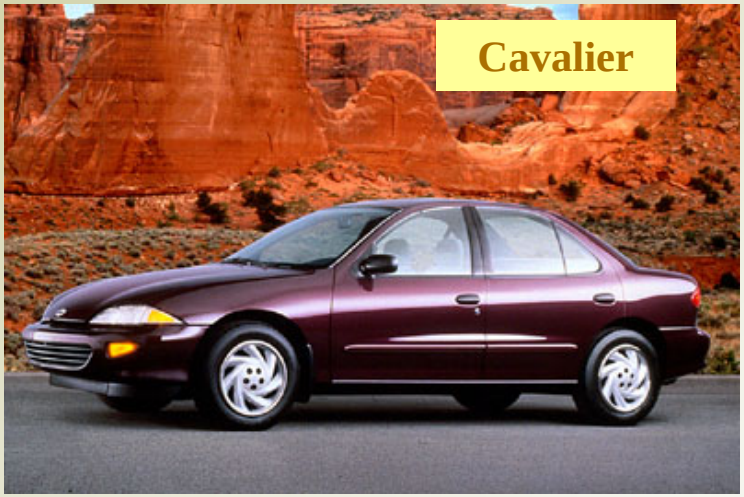




Popular, relative inexpensive compact models with poorer safety record

(Ross and Wenzel, 2002).

Question:

How to weaken the (technical and political) link between CAFE and safety?

Hot Spot #4: The CAFE-Dead Zone

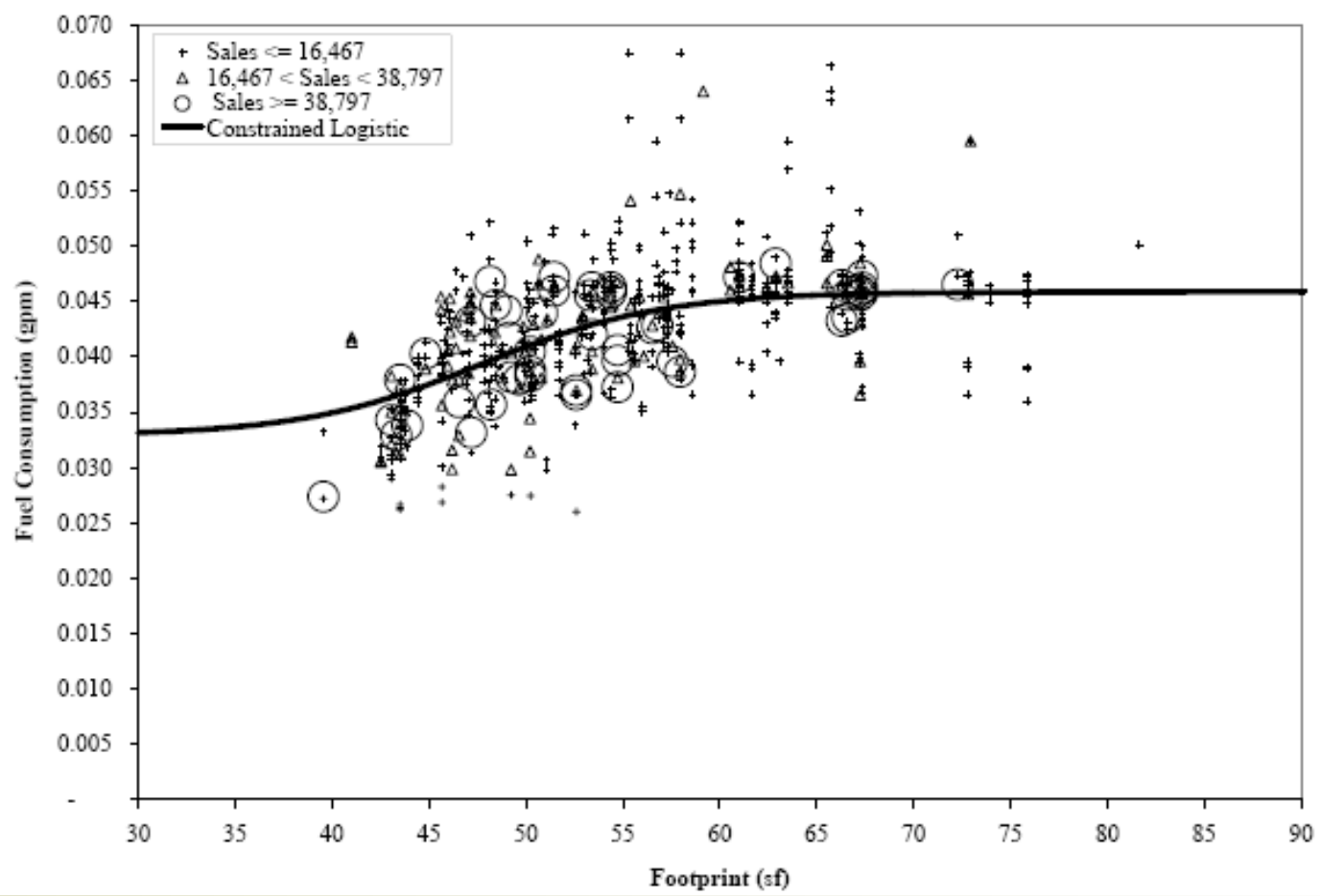
The 2004 Light-Truck Rulemaking

- Secretary Mineta's letter to Congress (2001)
- DoT and Related Agencies Appropriations Act FY2001
- NAS study commissioned
- NHTSA issued NPRM in 2005 and Final Rule in 2006
- Two-path compliance: Unreformed (2008-2011) and Reformed CAFE
- Unreformed CAFE targets:
  - 2008: 22.5 mpg
  - 2009: 23.1 mpg
  - 2010: 23.5 mpg

The Reformed LDT CAFE

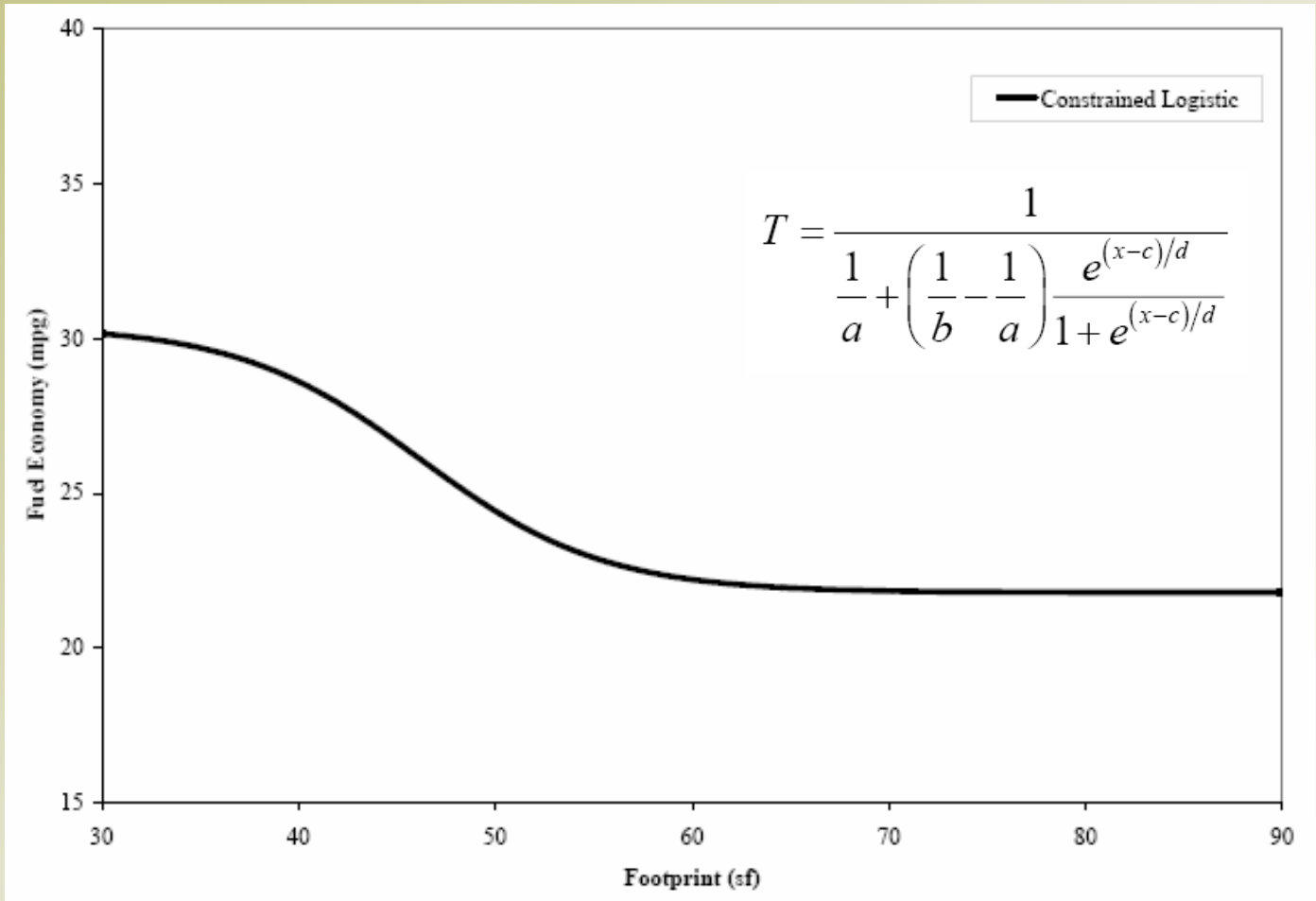
- Sets fuel economy requirements based on vehicle "footprint" (wheelbase times track width)
- Seeks balance of industry-wide marginal costs and marginal benefits
- Harmonic average used to estimate manufacturers' CAFÉ
- Moves away from the notion of "least capable manufacturer."
- Rationale:
  - Increases fuel savings because "all" manufacturers have to increase fuel economy
  - Enhanced safety, compared to Unreformed CAFE
  - More equitable, because it protects "full-line" manufacturers
  - More market-based, because it respects consumer choice

The Reformed CAFE's Continuous Function



Source: NHTSA

The Reformed CAFE's Continuous Function (cont.)



Question:

Should CAFE protect a market demand for larger vehicles?

THANK YOU!