A Pilot study on Inducing Acceptance of an Increase in the Gasoline Tax

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A paradox

A majority of Americans believe that *human induced* climate change is real and are in favor of reducing consumption of fossil fuels. Most Americans support *some* energy conservation policies such as increased fuel economy standards. However, most economists agree that the most efficient way to reduce fuel consumption is to increase the tax. Most Americans oppose such tax increases. They are consistently the most unpopular solution to the problem.
Central Question

• Are these attitudes so strong as to be unchangeable OR
• Do concerns about climate change make the susceptible to proper persuasion?
• and if so, what messages are necessary?
Relevant Finding

• Dietz et al. 2007 found that Awareness of the Consequences of Climate Change was one of most important predictors, of support for policies to reduce fuel consumption – including tax increase.

• Thus concern about climate change is necessary to support increased taxes.

• But it is obviously not sufficient.
• Dietz, Stern, and Dan (2009) find that people evaluate climate policies, in terms of how well they would achieve their stated goals.
• Thus one possible reason the people are negative about such a tax is that no one has given them convincing arguments that such a tax would work.
Empirical study Phase 1

• Respondents from an undergraduate sociology class \((n=36)\) at MSU

• Late January 2010

• Questionnaire asked the evaluation of a 60 cent per gallon increase in the federal gasoline tax, as a means of substantially decreasing America’s consumption of gasoline.
Results Phase 1

- Only 11% supported while 78% opposed this proposal.
- All were also asked the highest increase that they would support.
  - Mean was 12.9 cents per gallon, Median 7.5 cents per gallon.
Explanations

Respondents asked to explain their view. Most common were

• 1) gasoline is already “too expensive” and
• 2) “People need to drive” so a higher price won’t reduce consumption.
Variants of tax

Participants also indicated somewhat more acceptance of

• a tax increase phased in gradually and

• an increase which supported public transportation and was partially counteracted with decreases in other taxes
  – Rather than one in which the use of the extra revenue was unspecified.
Empirical study Phase 2

• Same population 5 weeks later
• presented an argument either
  a) for reducing fuel consumption in order to prevent serious consequences from climate change OR
  b) for using less gasoline and more renewable energy in order to protect America’s economic and military security.
Next, asked *all* their view of a 60 cent increase in the gasoline tax provided

- the tax is phased in gradually over four years,
- half of the additional revenue is used to reduce the federal payroll and income tax; and
- the other half is used to improve public transportation and alternative energy technology.
Results

This combination of persuasive message and tax specification

• Increased *support* of tax from 11% to 18% and

• *strong* support from 0% to 9%
Thinking about European prices

• It then asked all their view of a reasonable price for gasoline,
• then presented European prices, and
• asked again their view of a reasonable price.
• While most respondents were aware that European prices were much higher than American prices (mean estimate =$5.21)
• Being asked about European prices had an important effect on mean estimate of a reasonable price for gasoline
• Mean estimate increased by 55 cents
  – from 2.56 to $3.11
Next part of questionnaire

• “Below, we will present a common argument against such a tax increase and respond to it. Please read this response carefully and indicate your reaction to it below.

• **Argument against a tax increase:** A gasoline tax will *not* reduce fuel consumption, as most people have no alternative to driving.
Response

• **Response:** People have several ways to reduce their fuel consumption (over time), and the tax increase will motivate them to do so.

• A tax increase that is phased in gradually over several years will motivate people to make decisions that will help them use less fuel in the long term without substantially punishing people for past decisions that they cannot undo.
More response

• Raising the pump price will motivate people to purchase more fuel efficient vehicles.
• In countries where the tax on gasoline is high, people drive more fuel efficient cars.
• In the USA, when the price of gasoline has gone up, people have been much more likely to buy more fuel efficient vehicles...
Still More

• Higher pump prices motivate people to car pool more of the time.
  – When gasoline cost well over $3 per gallon in USA, interest in car pooling increased substantially.

• Higher pump prices motivate people to make more use of public transportation, wherever that is a reasonable alternative.
  – When gasoline cost well over $3 per gallon in USA, use of public transport increased substantially.
And finally

• Some of the extra cost in fuel would be refunded by reducing other taxes.

• Some of the revenue from this tax is needed to help develop alternative technologies that don’t require fossil fuels.
Key question

• Imagine the proposed gasoline tax had the following features: (a) phased in gradually over four years; (b) half of its revenue is used to reduce the federal payroll and income tax; and (c) the other half is used to improve public transportation and alternative energy technology.

• What is the highest increase that you would support?
Key results

• The highest acceptable increase was substantially higher in Phase 2 than Phase 1
• mean increased from 12.9 to 47.2 cents per gallon;
• the Median from 7.7 to 49 cents per gallon).
Causal Conclusions

• There were many differences between the two phases
  – Making the tax less immediately onerous
  – Several persuasive arguments
  – Asking people about Europe

• So it is difficult to reach clear conclusions about exactly what caused the change
• However regression analysis suggests
  • that the 55 cent increase in the *reasonable*
    price that came after thinking of European
    prices was associated with a 16.3 cent per
    gallon increase in the acceptable *tax*. 
Next steps

To test the following hypothesis

In order to support such a tax increase, individuals must believe all of the following:

a) that we must reduce fuel consumption
b) that a tax increase will have such an effect
c) that the tax will not be overly onerous.
Belief that tax will reduce fuel consumption can be strengthened by stating both

• that part of the tax increase will be used for public transportation and alternative energy

• and by evidence that the demand for gasoline does have some elasticity
Proposed Method

Use Time-sharing Experiments for the Social Sciences (TESS) an NSF infrastructure project that offers researchers opportunities to test their experimental ideas on large, diverse, randomly-selected subject populations.

TESS fields selected proposals on a random sample of the United States population using the Internet.
TESS thereby allows investigators to capture the internal validity of experiments while realizing the benefits of contact with large, diverse populations of research participants.
Factorial Design

• independent variable A. vary *how soon* serious consequences will happen

• 1) moderately serious consequences predicted for 2015 vs.

• 2) More serious consequences predicted for 2030

• 3) control (no message predicting serious consequences)
(independent variable B)

• give each respondent one of the following messages.
• 1. A higher tax is the most effective way to encourage people to
  • a) purchase more fuel efficient cars. and
  • b) car pool where possible and
  • c) use public transportation where available and convenient
(independent variable B continued)

2. The revenue from the tax can be used to help Americans by being:
   • a. partially refunded by reducing other taxes
   • b. partially used to improve public transit and alternative energy

3. Control condition with none of those

Question: Is it worth seeing if 1) and 2) together work better than either alone?