

Government Advertising in Market-Based Public Programs: evidence from the Health Insurance Marketplace

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Discussion by Brad Shapiro

NBER Health Care

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Empirical Study of the Economics of Advertising

- Extremely Frustrating.
 - Public discourse around advertising often makes little economic sense.
- Deeply Unsatisfying.
 - Hard (impossible?) to convincingly write the kind of paper that applied microeconomists are used to writing (and refereeing).

My plan

- Provide some broader context
 - Generic difficulties of empirical studies of advertising.
 - How it is different from much of applied micro
- This paper.
 - No exception to the typical difficulties.

Frustrating: Politically Motivated Reasoning

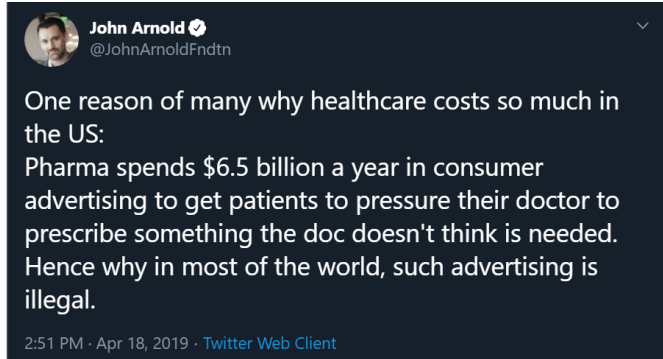
- Used for politically motivated reasoning
 - Ban or encourage advertising as the preferred way to change undesirable market outcomes.
- Attractiveness is clear.
 - Easy intervention.
 - Feels like only hurting “evil corporations”.
- Important to actually plausibly estimate the effects.
 - And accompany that with sound economic thinking.
 - WARNING: some sarcasm ahead...

Don't like sugar? Ban advertising!



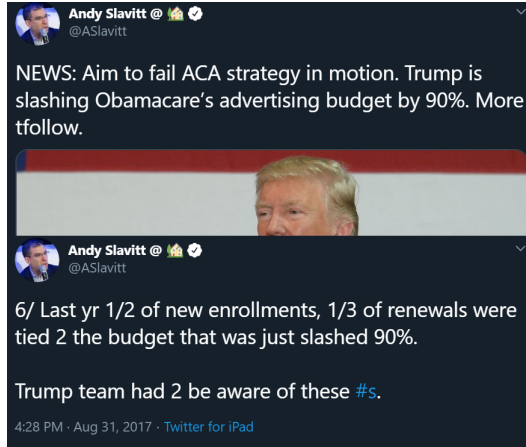
It's not like people actually think sugar is delicious or anything...

Health care costs too much? Ban drug advertising!



Who doesn't want to take more drugs when they aren't sick? Sign me up!

Want to prevent ACA collapse? Advertising!



1. The ACA is a fantastic product that everyone should buy.
2. If we don't interrupt Game of Thrones with an ad, market is toast.

Seriously, though

- The extent to which ACA advertising works to support the market is **(1) important** and **(2) not clearly established**
- Not the main focus of this paper. But the paper **is** informative on this.

Studying Advertising is Deeply Unsatisfying

- We're trained to think carefully through economic mechanisms in data
 - Competing hypotheses → Policy quasi-experiment → Event Study or RD plot → Heterogeneity Analysis → Infer mechanism → Magnitudes → Policy Implications

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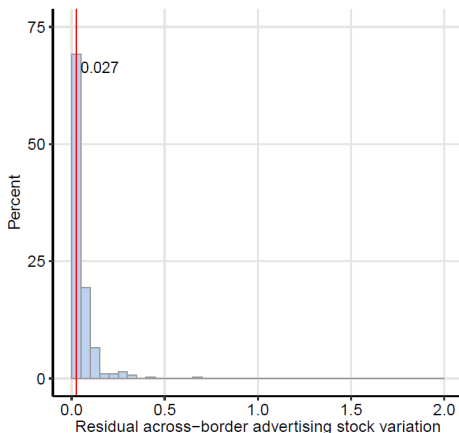
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- I'll run through exactly why using one of my papers to illustrate.
 - Shapiro, Hitsch & Tuchman (2020)
 - We estimate advertising effects independently across 288 brands.

Empirical Realities: Treatment Variation is Subtle

From Shapiro, Hitsch & Tuchman (2020)

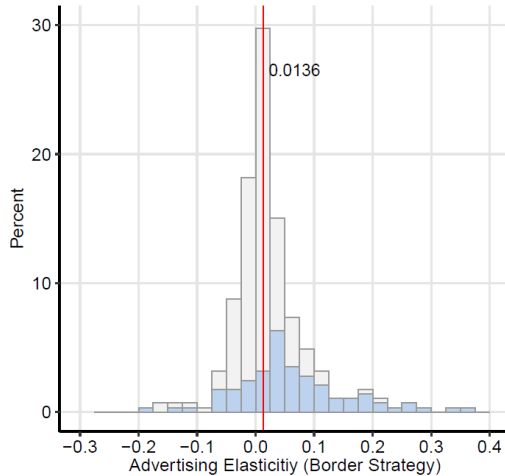


Relevant treatment variable typically only deviates $\sim 3\%$ from baseline.

Nothing like differential rollout of Medicaid Expansion, for example.

Empirical Realities: Main Effects are Small

From Shapiro, Hitsch & Tuchman (2020)



$\sim \frac{2}{3}$ of brands have long run ad elasticity not statistically different from zero

Empirical Realities: Noise in Estimation

From Shapiro, Hitsch & Tuchman (2020)

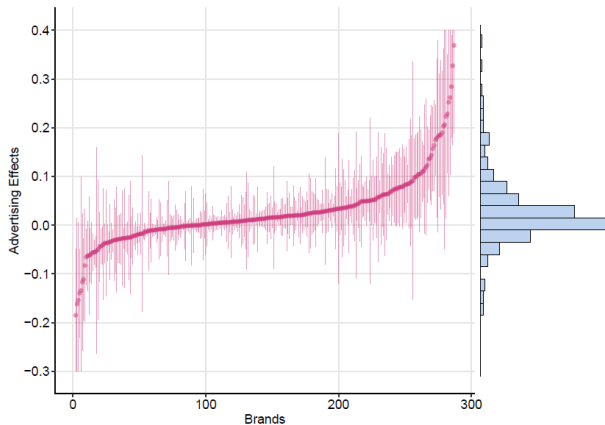


Figure 10: Advertising Effects and Confidence Intervals using Border Strategy

Biggest ad effects in magnitude are (by far) the noisiest

Difficult to Measure → Difficult to Optimize

From Shapiro, Hitsch & Tuchman (2020)

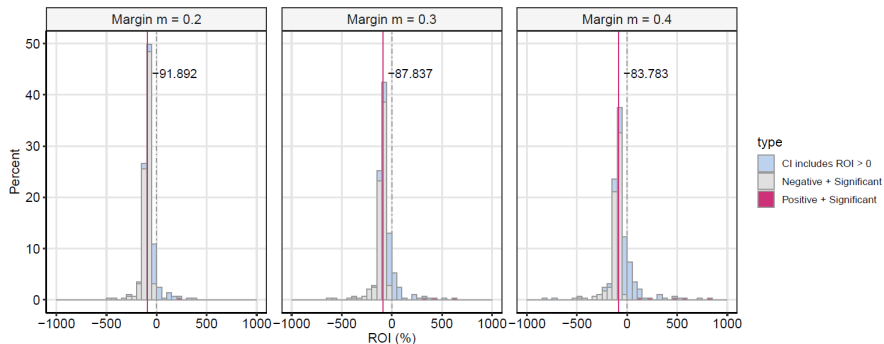


Figure 11: Distribution of Average ROI of Weekly Advertising

- ~70% of brands have marginal ROI that is **negative and significant**
- Raises doubts about using FOCs for identification and inference.

A Plea to Authors & Referees of Advertising Papers

- Put on Statistician Hat.
 - Is what you want to do (or want the author to do) possible, statistically speaking?
 - e.g. R2: “Author needs to do much more to establish the mechanism”
- Put on Economist Hat.
 - Is the main effect by itself important and interesting? Established?
 - Asking for mechanism because it is “what we do”? Or because it is most important?

What if The Mechanisms are Really Important?

- Triangulate to a set of empirically “plausible mechanisms”
 - Use ancillary moments, additional outcomes (e.g. search, re-purchase, health outcomes etc), structure
 - Rule things out, even if can’t identify **the** mechanism
- Use appropriately cautious language and interpretation
 - “Consistent with”; “Plausible”; “Can’t rule out”
- Unfair to expect the perfect event study or RD plot followed by clear/obvious patterns of heterogeneity.

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- Unfair to expect the perfect event study or RD plot followed by clear/obvious patterns of heterogeneity.
- Rely on a body of evidence rather than counting on single definitive paper.

This Paper

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- Government advertising expands market, private advertising less so, which leads to the posited structural model and counterfactual analysis.

Statistician Hat

Table 4: The Effects of Advertising on Market-level Enrollments

	(1)	(2)	(3)	(4)
Fed Spend (\$)	0.041 (0.027)	0.041*** (0.015)	0.050** (0.022)	0.050** (0.022)
State Spend (\$)	-0.028 (0.024)	0.019 (0.023)	-0.011 (0.030)	-0.008 (0.029)
Priv Spend (\$)	0.006 (0.011)	0.011 (0.012)	0.023 (0.019)	0.024 (0.018)
Navi Spend (\$)				-0.055 (0.120)
Dem Spend (\$)				0.049*** (0.017)
Rep Spend (\$)				-0.015* (0.008)
No. of Insurers	0.046*** (0.007)	0.012* (0.007)	0.012 (0.008)	0.013 (0.008)
Market Size	0.000 (0.000)	-0.009*** (0.003)	-0.026*** (0.006)	-0.026*** (0.006)
BorderYear FE	Y	Y	Y	Y
County FE		Y	Y	Y
RatingYear FE			Y	Y
N. Obs.	18,862	18,812	18,154	18,154
Adj. R ²	0.707	0.911	0.916	0.916

Main Effect t-stat ≈ 2.3 , CI = [0.006, 0.094]

interactions/comparisons will be underpowered

The Cross Partial We Want

Table 23: Coefficient Estimates: Interaction between Federal and Private advertising

	(1)
Fed Spend (\$)	0.117* (0.064)
State Spend (\$)	-0.034 (0.067)
Priv Spend (\$)	0.087* (0.051)
Fed Spend (\$) × Priv Spend (\$)	0.022 (0.086)
No. of Insurers	-0.091*** (0.026)
Market Size	-0.021*** (0.005)
FirmBorderYear FE	Y
FirmCounty FE	Y
FirmRatingYear FE	Y
N. Obs.	36,558
Adj. R^2	0.942

The important cross-partial, $\frac{\partial^2 Q^{priv}}{\partial A^{fed} \partial A^{priv}}$, can't really be estimated.

Suggestive Evidence: $\beta^{fed} > \beta^{priv}$?

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N. Obs.	18,862	18,812	18,154	18,154
Adj. R ²	0.707	0.911	0.916	0.916

Not a statistically significant difference.

Suggestive Evidence: $\beta^{rival} \leq 0?$

Table 5: Estimated Coefficients in Insurer-Level Demand Model

	(1)	(2)	(3)	(4)	(5)	(6)
Fed Spend (\$)	-0.009 (0.059)	0.079 (0.050)	0.132*** (0.049)	0.125** (0.055)	0.126** (0.054)	0.129** (0.055)
State Spend (\$)	0.012 (0.042)	-0.050 (0.056)	-0.032 (0.059)	-0.033 (0.068)	-0.029 (0.067)	-0.028 (0.066)
Priv Spend (\$)	0.217*** (0.034)	0.307*** (0.049)	0.148*** (0.040)	0.093** (0.046)	0.092** (0.046)	0.090** (0.046)
Rival Spend (\$)					-0.037 (0.047)	-0.043 (0.046)
Navi Spend (\$)						-0.390 (0.265)
Dem Spend (\$)						0.049 (0.036)
Rep Spend (\$)						0.017 (0.019)
No. of Insurers	-0.190*** (0.017)	-0.203*** (0.021)	-0.188*** (0.025)	-0.091*** (0.026)	-0.089*** (0.026)	-0.087*** (0.025)
Market Size	0.001*** (0.000)	-0.012*** (0.004)	-0.022*** (0.005)	-0.021*** (0.005)	-0.021*** (0.005)	-0.022*** (0.005)
FirmBorderYear FE	Y	Y	Y	Y	Y	Y
County FE		Y	Y			
FirmCounty FE				Y	Y	Y
FirmRatingYear FE			Y	Y	Y	Y
N. Obs.	39,782	39,750	38,296	36,558	36,558	36,558
Adj. R ²	0.791	0.822	0.895	0.942	0.942	0.942

Can't rule out some large positive values.

Some Thoughts: Evidence on Mechanism

- Hard to be confident that we've identified **the** correct mechanism.
 - $\beta^{private} < \beta^{gov}$ & $\beta^{rival} \leq 0$, not significant comparisons.
 - Can't estimate most relevant cross-partial, $\frac{\partial^2 Q^{priv}}{\partial A^{fed} \partial A^{priv}}$.
- Mechanism is plausible given data, but difficult to rule out others. For example:
 - Advertising is about awareness, gov. & priv. nearly perfect substitutes.
 - Geographic heterogeneity in ad effectiveness.
 - Gov. gets first dibs. Private fills the gap.
 - Different counterfactual implications.

Some Thoughts: Eqm Model

- Structural model: is the data speaking or the structure?
 - Cross partial that is pivotal to counterfactual ($\frac{\partial^2 Q^{priv}}{\partial A^{fed} \partial A^{priv}}$) is inferred, not estimated.
- How much do we trust that these firms are solving FOCs?

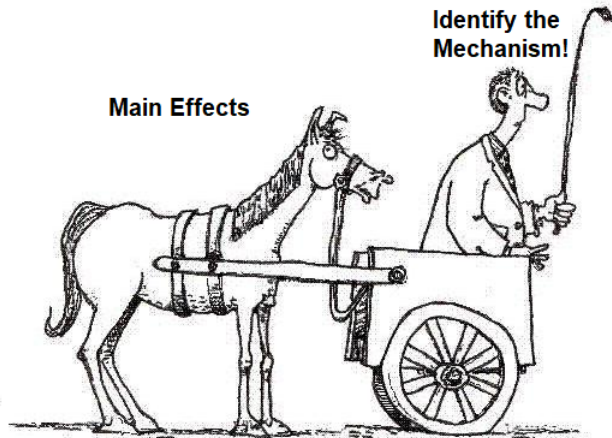
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- Overall, I view as a nice economic analysis of what happens **if** this is the mechanism and firms behave in this way.

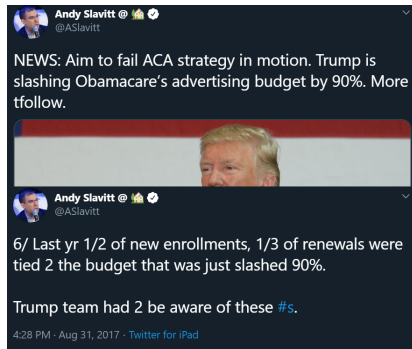
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- How much do we trust that these firms are solving FOCs?
- Overall, I view as a nice economic analysis of what happens **if** this is the mechanism and firms behave in this way.
- These thoughts are very much **not unique** to this paper.
 - Must settle for imperfect/unsatisfying answers when trying to analyze advertising mechanisms.

Let's Pause for Just a Second



Economist Hat



- Important people think advertising is responsible for 50% of enrollments!
 - This paper can resoundingly reject that magnitude.
- In the words of Joe Biden, that's a "Big F*&%#n Deal"!

Personal Opinion, More Generally

- We may miss out on answering important policy questions because we are committed to usual style of paper.
 - If the main effect is the most important unanswered question, maybe we shouldn't have 2/3 of our papers be about mechanisms.
 - We, as authors and referees, should be more open minded to that possibility.
- Perhaps this is why we have AER: Insights.
 - I contend we should be more generically OK with shorter papers that convincingly answer important questions.
 - No need to relegate all of them to a single elite journal.

In the Weeds

- Increase precision in the main effects by pooling state+federal+private advertising.
- Standard errors should be two-way clustered, (1) DMA-year and (2) Panel Unit (either county or plan X county).
- Is the federal government advertising lifting all private plans proportionately? Is that informative on mechanism?
- $Ad^{priv} \times Ad^{fed}$ shows up in additional heterogeneity analysis, positive point estimate, but imprecise.
 - How do we think about that with respect to the strategic behavior implied by the equilibrium model?
 - My intuition is we just don't have power to say much directly from the data, unfortunately.
- Why not make the demand model more flexible so the data can inform substitution a little bit more than the structure? Could consider an inside/outside option nested logit.

Thank you

- Nice paper that has a great paper hidden within it.
- I think it actually undersells what is a **very important** point.

