

Experimentation in Online Advertising

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Motivation

- 2025 US online ad spend: \$300 billion (IAB)
 - Annual spending per firm: \$10,000 ~ \$1,000,000 (ChatGPT)
- Firms need to understand incrementality to optimize ad spend
 - “Half the money I spend is wasted; the trouble is, I don’t know which half”

Platforms offer experimentation tools

 **Meta**
About Conversion Lift

 **Microsoft Advertising**

 **AdRoll**


Google Ads


JD.COM

 **TikTok** for Business

**Measure what
matters with
Conversion Lift
Study**

October 07, 2024

Google Ads incrementality experiment

Google Ads

Tutorials: Conversion Lift

Workspace filter

Campaigns

Overview

Recommendations

Insights

Campaigns

Ad groups

Product groups

Ads & extensions

Products

Videos

Landing pages

Keywords

Audiences

Content

Settings

Change history

Suggested

Labs

Planning

Performance Planner

Keyword Planner

Reach Planner

Ad Preview and Diagnosis

App advertising hub

Shared Library

Audience manager

Bid strategies

Negative keyword lists

Shared budgets

Location groups

Placement exclusion lists

Asset library

Bulk Actions

All bulk actions

Rules

Scripts

Uploads

Measurement

Conversions

Google Analytics

Attribution

Lift measurement

Setup

Business data

Policy manager

Access and security

Linked accounts

Google tag

Preferences

Google Merchant Center

Billing

Summary

Transactions

Aug 23, 2022

Draft campaigns

Select a campaign draft to finish

Campaign #193 created 8/5/2021 3:01 PM

Resume draft

Campaign #180 created 9/28/2020 11:42 AM

Resume draft

Ad performance across devices

Mobile phones

Tablets

0.00%

0.00%

0.00%

Tutorials: Conversion Lift

Google Ads

New product or brand

☐	☐	Campaign #7	Video	Apr 10, 2022	\$500.00/day	Pr
☐	☐	Campaign #8	Video	Mar 5, 2022	\$1,000.00/day	Pr
☐	☐	Campaign #9	Discovery	Mar 5, 2022	\$800.00/day	—
☐	☐	Campaign #10	Video	Jan 16, 2022	\$1,050.00/day	—

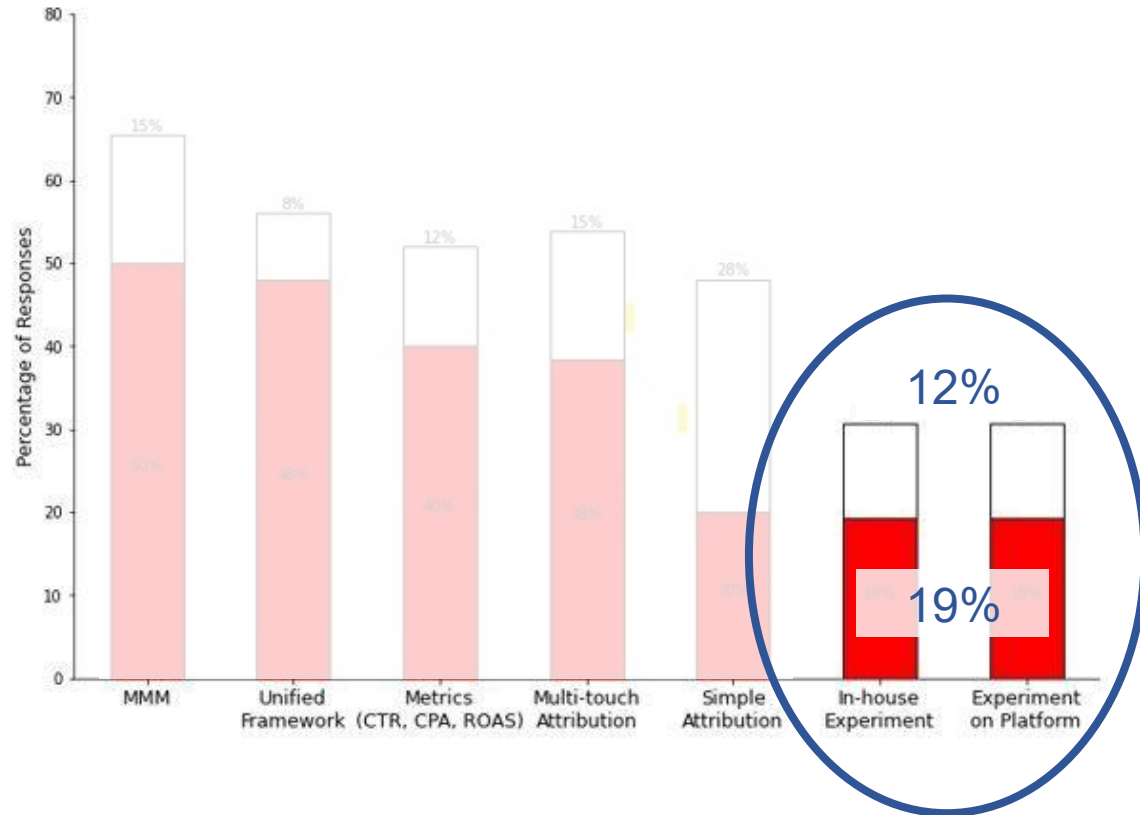
Define your Conversion Lift settings

Choose when to measure conversion lift, review your status, and see recommended budgets

Select date ranges that are between 7 and 56 days

Start date	End date	Status	Current budget ?
Sep 7, 2022	Sep 15, 2022	Medium chance	\$25,000

“Under-usage” of experiments



- 15% of firms had run experiments on Meta
- “Only 12.6% of the 6,777 companies ... had conducted a recent RCT”
- Major social media platform: why is adoption of experimentation services so low?
- Experiments are costly
 - “Rigorous experiment” costs \$50K
 - Minimum ad spend requirement
 - Opportunity cost from hold-out
 - Avg hold-out size on Meta: 16% for 32 days
 - “Overly optimistic about ad effectiveness”

Measurement tools affect ad revenue



Conversion Lift isn't available for all Google Ads accounts. To use Conversion Lift, contact your Google account representative.

“Conversion Lift available for Video, but not for Display and Search.
Reach out to your Google account representative.”

Ad platforms also behave strategically in experimentation game



Disabling tests with a holdout



Holdout tests were paused in the Experiments tool on April 26, 2021.

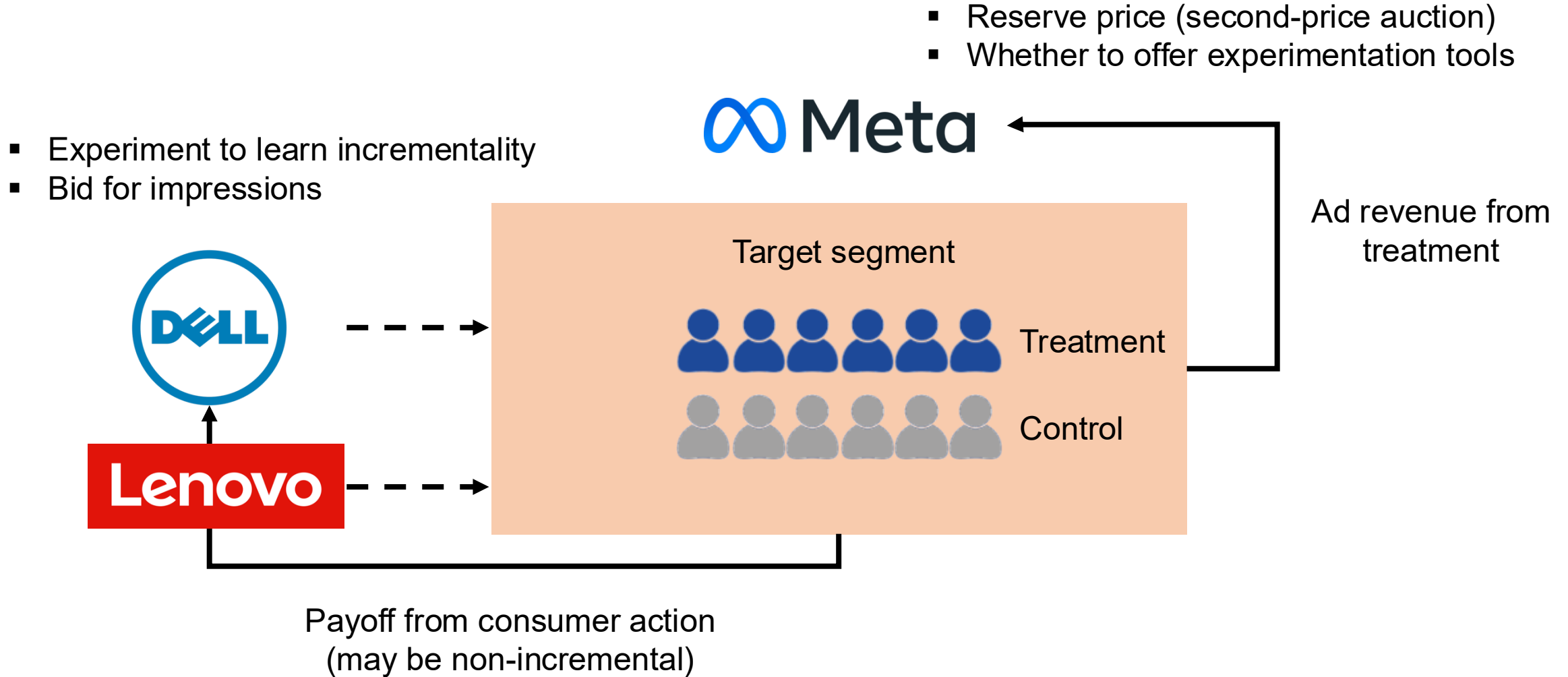
A/B tests with a holdout and Holdout tests in the Experiments tool are no longer available.

Divergent ad delivery creates group imbalance for A/B tests (Burtch et al., 2025)

Research questions

- **When should advertisers experiment?**
 - Depends on fixed cost and opportunity cost (hold-out)
 - Opportunity cost depends on ad price, determined endogenously via auction
 - E.g., low ad price $\Rightarrow$ high opportunity cost from hold-out
- **Does ad platform want advertisers to experiment? Under what condition should it facilitate or deter experimentation?**
 - Advertising experimentation improves efficiency, but platform jointly bears opportunity cost

Model



Model (cont'd)

- Ad platform sells ad opportunities via second-price auction across two periods
 - Reserve price: minimum bid to participate in auction
- Two advertisers bid for ad opportunities and decide whether to experiment
 - Advertiser expected payoff per action (e.g., click) normalized to 1
 - Dual costs of experimentation

Fixed cost

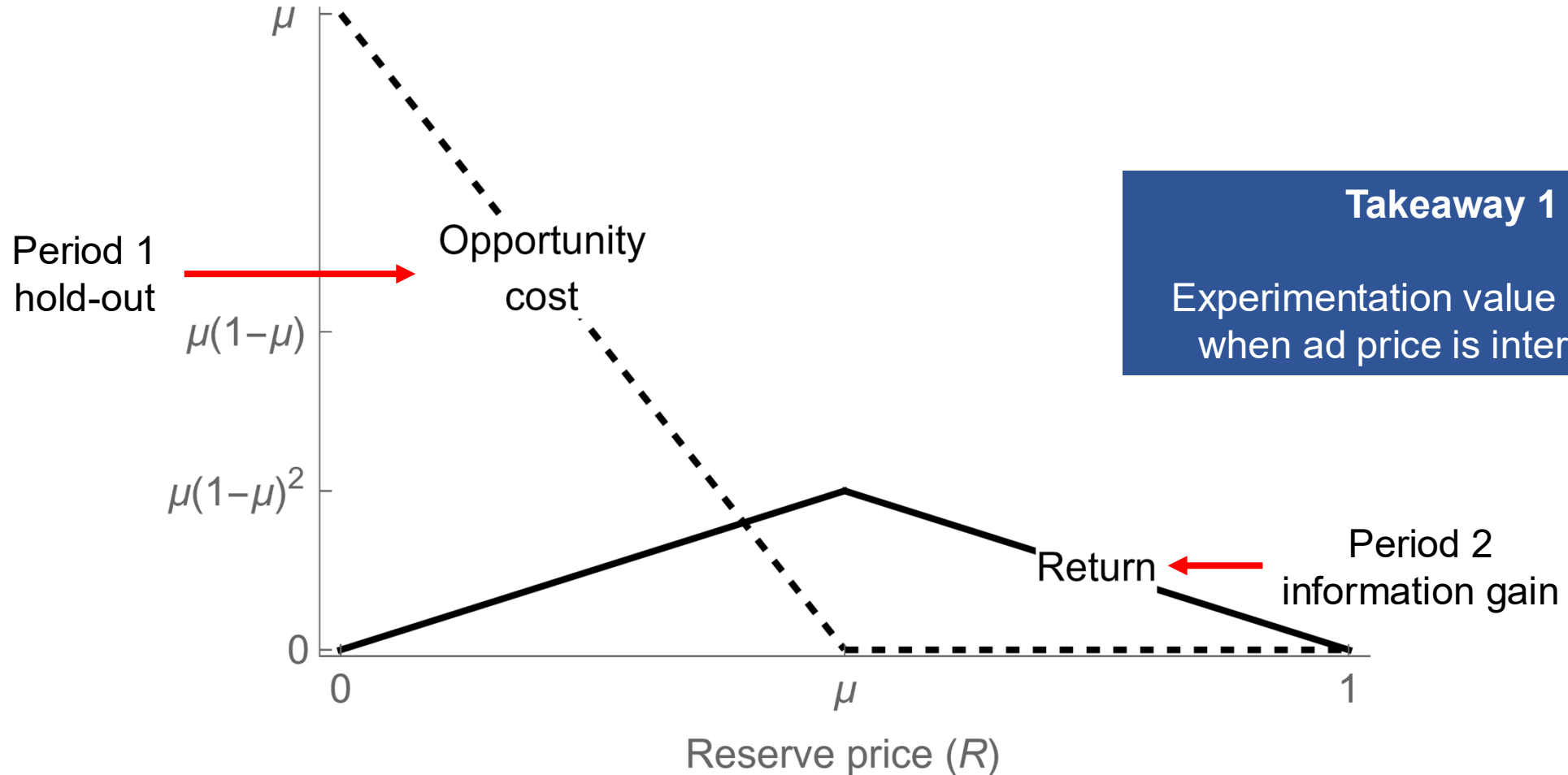
Upfront operational, labor costs

Opportunity cost

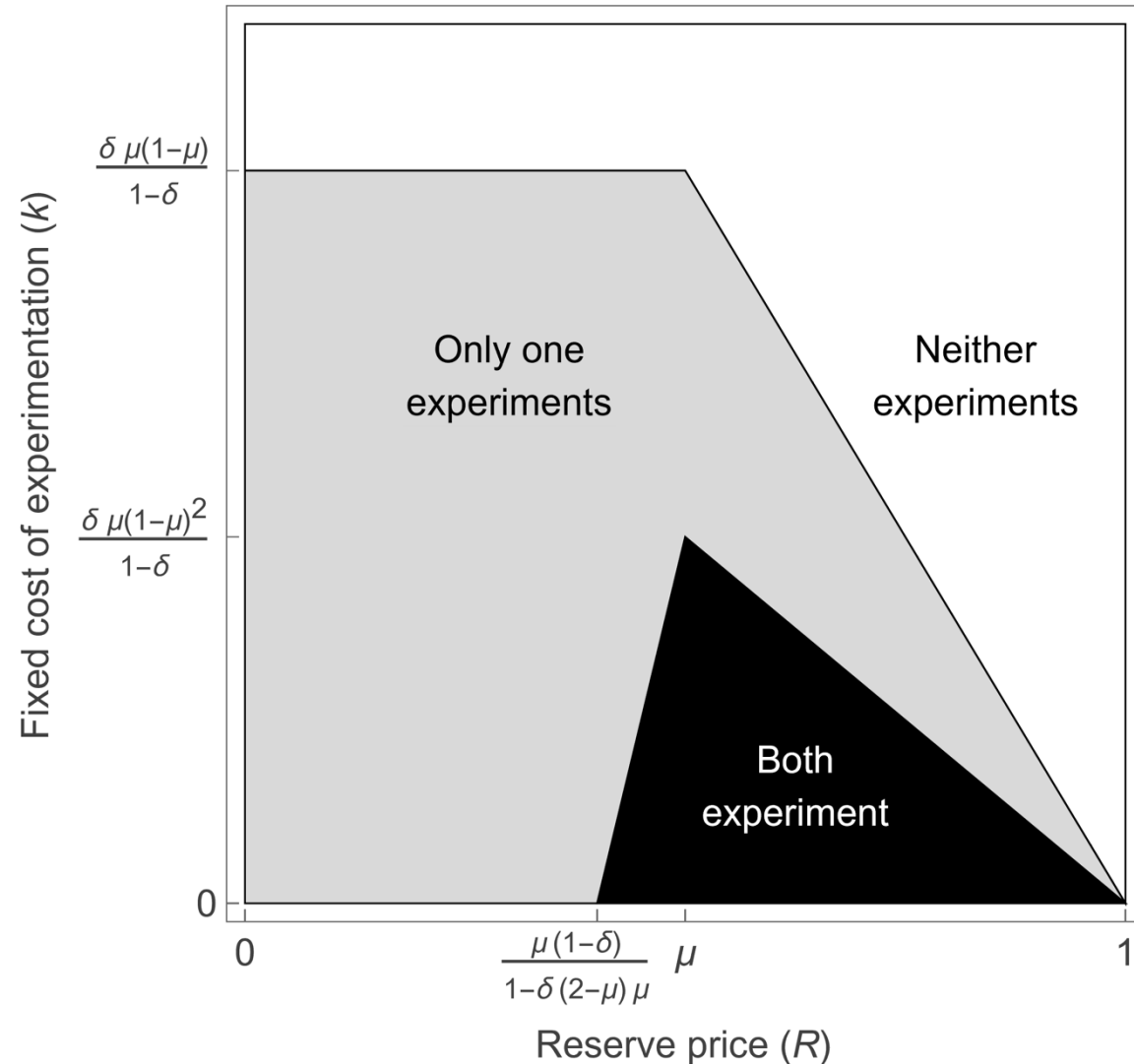
Missed ad opportunities from hold-out

- Ad incrementality
 - Advertisers have a rough idea, but need to experiment to learn precise incrementality

When do advertisers want to experiment?



Advertisers' experimentation decisions



Asymmetric experimentation strategies

- Competitor's experimenting reduces my returns from experimenting.
- Why?

Takeaway 2

Do not always experiment,
even if operational cost is negligible

Summary so far

- Experimentation value highest for intermediate reserve price
 - Low enough that efficiency gains are not extracted away by platform
 - High enough that Period 1 opportunity cost is low
- Even if fixed cost is negligible, don't always experiment
 - Low reserve price increases opportunity cost
 - Competitor's experimenting reduces returns from experimentation

What about platforms?



Google Ads

 Meta

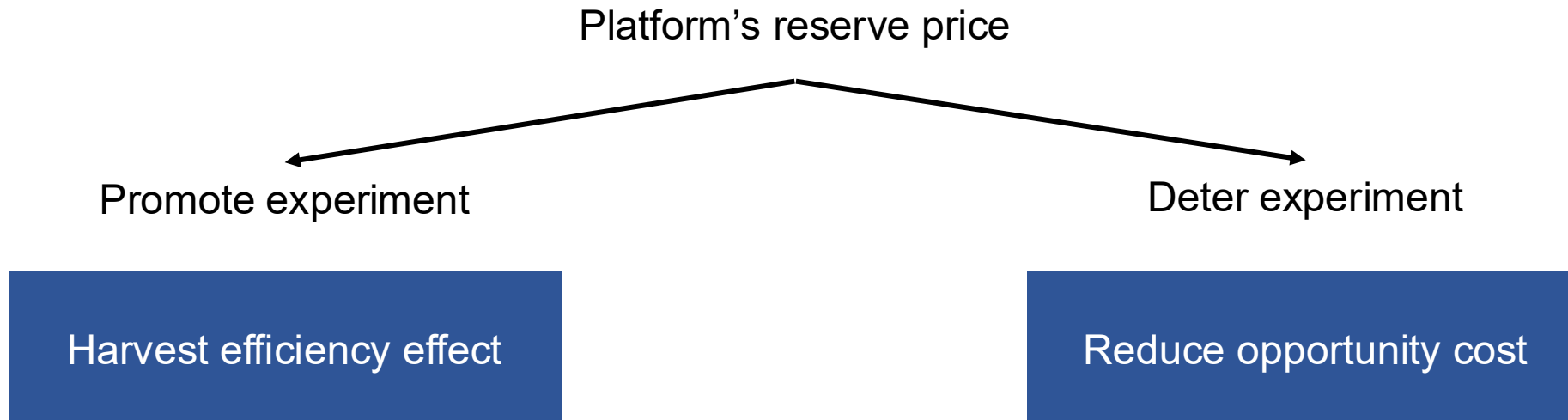
The Meta logo, consisting of a blue infinity symbol followed by the word 'Meta' in a bold, sans-serif font.

 TikTok

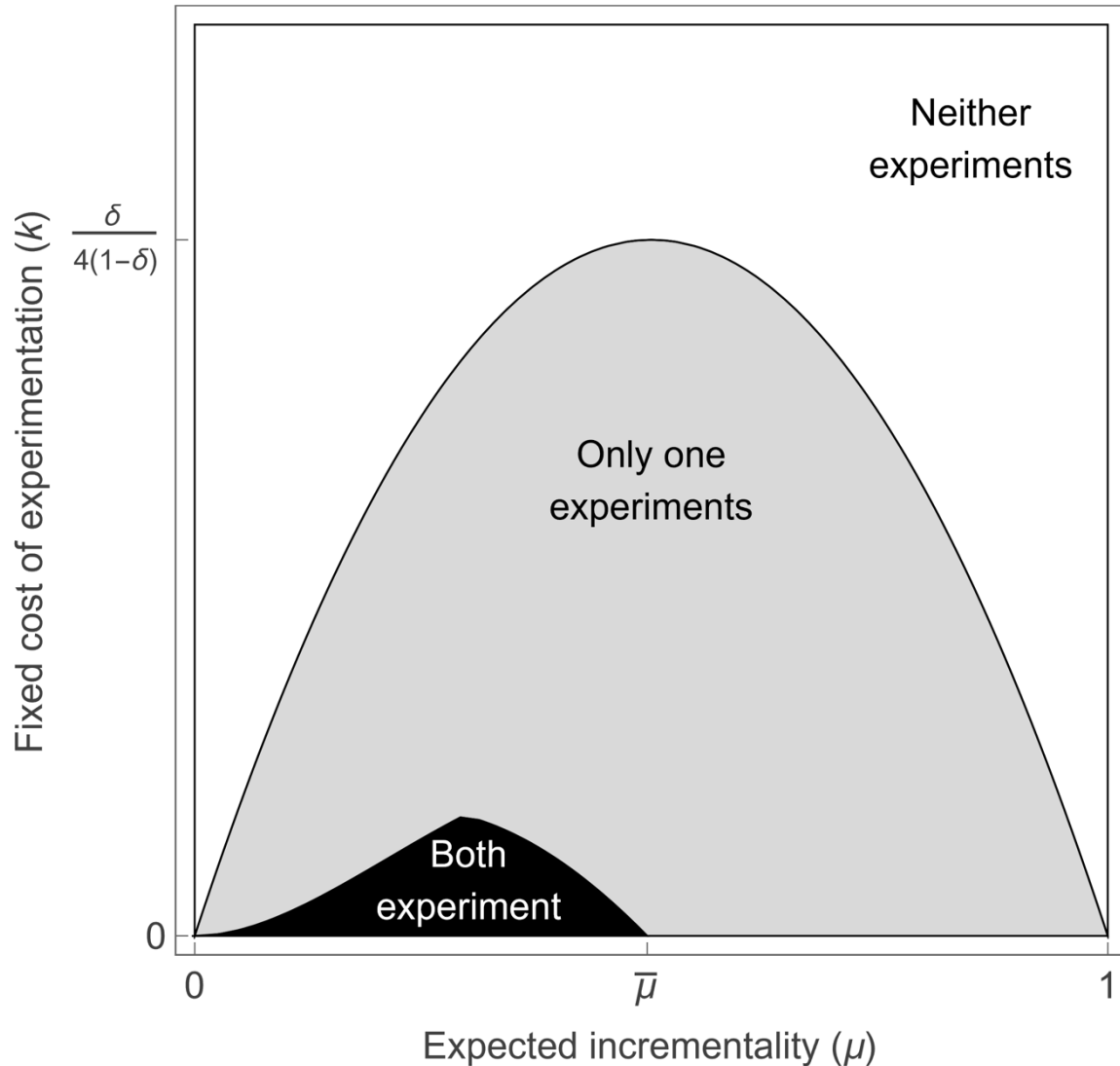
The TikTok logo, featuring a stylized musical note icon in red and black, followed by the word 'TikTok' in a bold, sans-serif font.

Do platforms want advertisers to experiment?

- Platform wants advertisers to know incrementality $\Rightarrow$ create more value
- But experiments are costly $\Rightarrow$ cost transfers to platform



Total equilibrium



Platform jointly bears opportunity cost

- The better the ads (larger μ), the greater the missed ad revenues from hold-out
- Decrease reserve price to deter experimentation

Takeaway 3

Allowing experimentation distorts reserve price both downward and upward

So what?

- Advertisers
 - Don't benchmark experimentation value in isolation; monitor whether competitors are experimenting
 - If ad price moderate, experiment *more* to mitigate over-paying for non-incremental campaigns
 - If ad price high, experiment *less* because little gains retained

- Platforms



- Promote experimentation if opportunity cost is low, and deter otherwise
- Experimentation and advertising teams should work closely together to jointly optimize platform profit

Q&A

Thank you

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