Sherlocking: The Effect of Platform-owner Entry on the Competitive Behavior of Third-party Firms

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Introduction

The Rise of Platform-owner Entry

Platform owners often compete on their own platforms.

- Amazon Basics ($+$ many others)
- Google Maps/Shopping/etc.
- Apple/Google mobile apps
- Doordash ghost kitchens

This practice is increasingly being scrutinized by policymakers and regulators.

RESTAURANT

TECHNOLOGY

DOORDASH OPENS NEW GHOST KITCHEN WHERE IT DOES THE COOKING

At a new location in San Jose, restaurants can outsource most of their operations to DoorDash.

By *Joe Guszkowski* on Jul. 28, 2021

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I study how third-party firms respond to platform-owner entry on Apple's App Store.
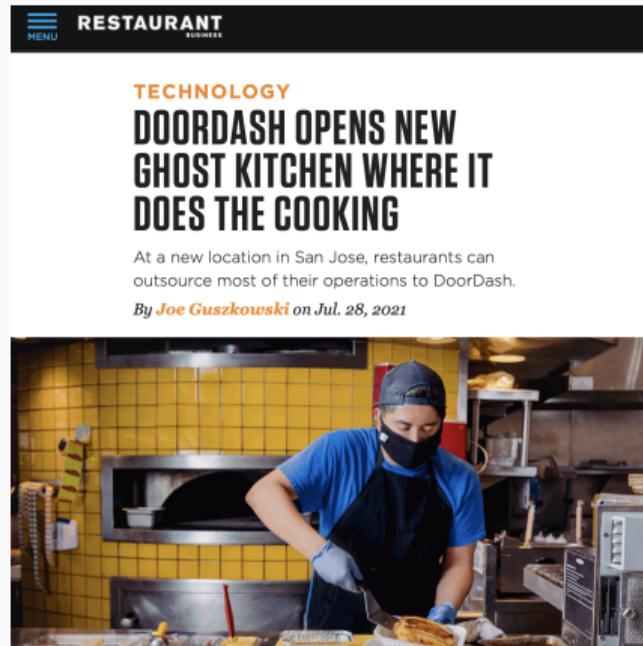
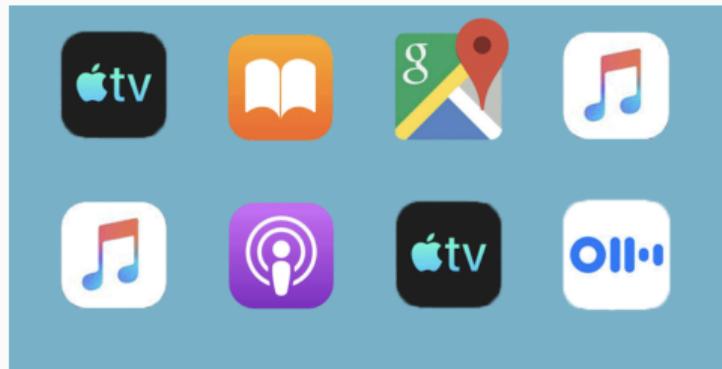How are developers affected by first-party entry?

PHOTO ILLUSTRATION: DAVE COLE/THE WALL STREET JOURNAL

TECH

Apple Dominates App Store Search Results, Thwarting Competitors

Searches for 'music,' 'audiobooks' and other categories rank company apps first, a process some developers find unfair; Apple says algorithm doesn't give own products an advantage

How are developers affected by first-party entry?

- $(-)$ Platform-owner is (often) better resourced
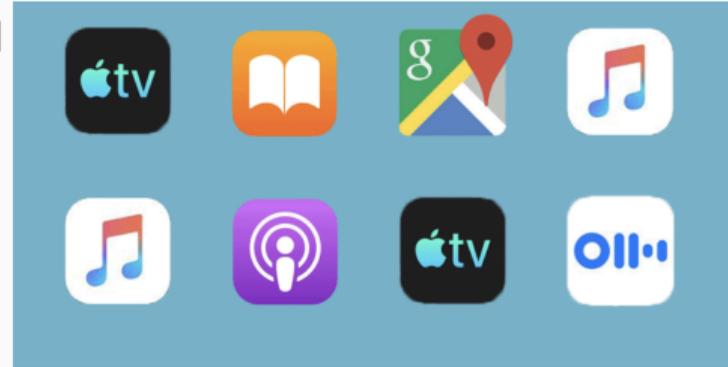

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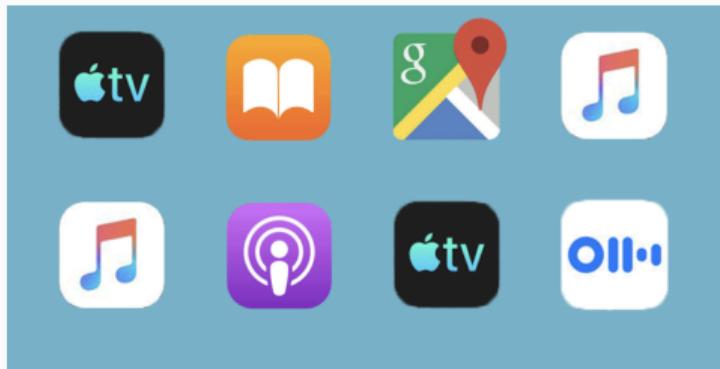- ($-$) Self-preferencing/leveraging market position/power

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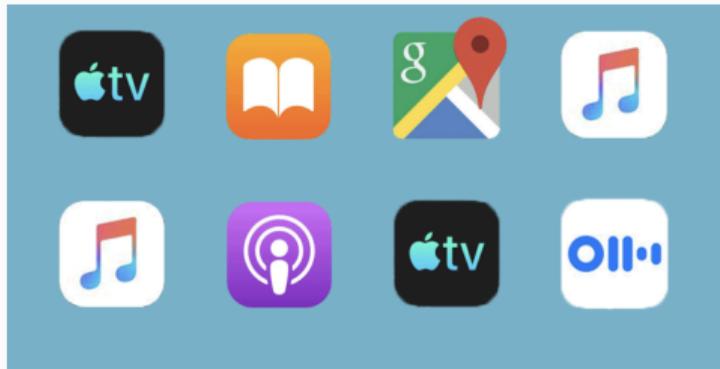- ($-$) Restricting hardware/software access

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- ($+$) Improved API and hardware support

Aidan Fitzpatrick ✓
@afit

Appreciate the incredible support in DMs and tweets. Thank you! ❤️ More flexible APIs, an ecosystem of mounts, & Apple's support won't hurt. Camo Studio goes deep in ways you're unlikely to see out of the box, and I'd like to think its capabilities will he shown off even more.

2:44 PM · Jun 6, 2022 · Twitter for iPhone

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- Using a staggered difference-in-differences design, I estimate the effect on app entry/exit, monetization, and product quality.

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Data & Empirical Strategy

Data Sources

App Dataset (via AppMonsta):

- Monthly panel of all apps in the App Store (treated) and the Google Play Store (control)
  - January, 2015–January, 2022.
  - I restrict to apps ranking $\leq 200^{th}$ for $\geq 10\%$ of the their time on the store.
- 23 markets: 14 standalone, 9 integrated

Empirical Strategy

- Staggered difference-in-differences model at the app-month level.
- I estimate the model using TWFE; findings are consistent across heterogeneity-robust estimators.
- Today: Focus on monetization and quality outcomes
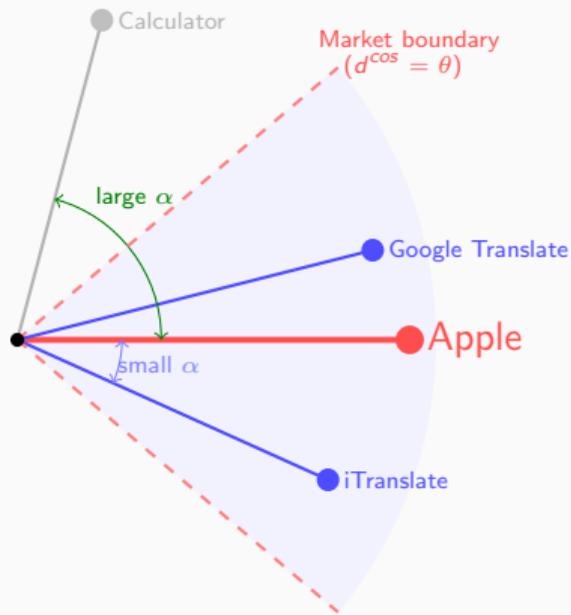 (See paper for analysis of entry/exit behavior.)

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The App Store is a very diverse marketplace ($\approx$1.7m apps).

Problem: Markets are not well-defined.

- App Store categories are too broad

Solution: I use apps' product descriptions to create product markets around each Apple entrant.

- Descriptions mapped to vector space; similarity measured via cosine similarity
- Apps most "similar" to each Apple entrant are assigned to its market
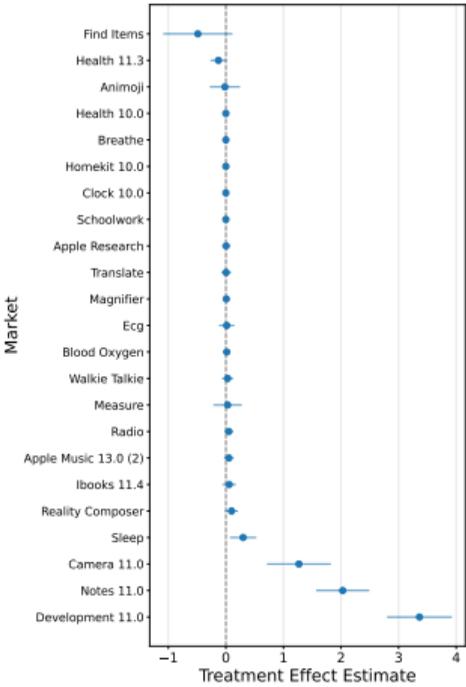

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Empirical Results

How does Apple affect the monetization strategies of incumbents?

- Prices rise, driven by a shift from Free→Paid.

- No effect for Price|Paid

- IAP (micro-transactions) usage falls.
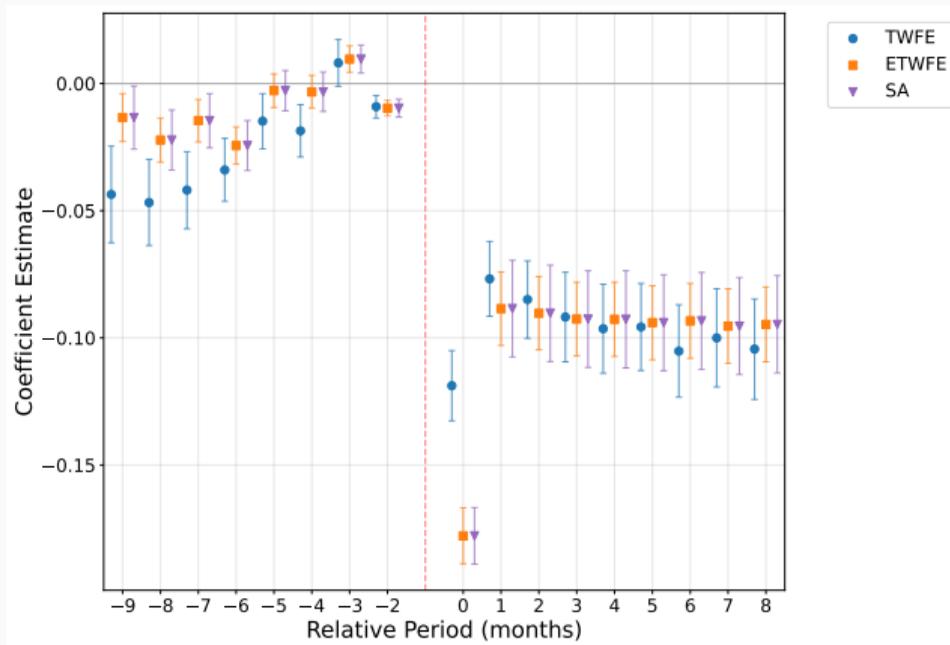
Free

Incumbent Response: Monetization by Market
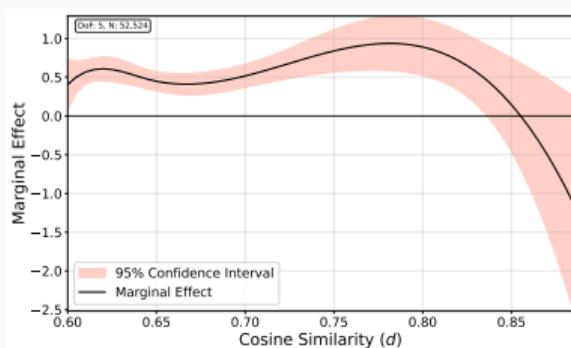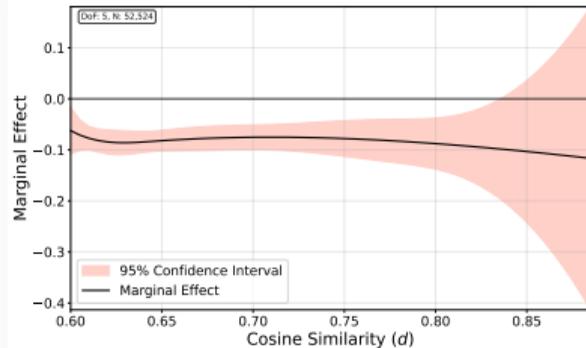

Price

Free

IAP

Apps closer to Apple's entrant may be more affected than distant competitors.

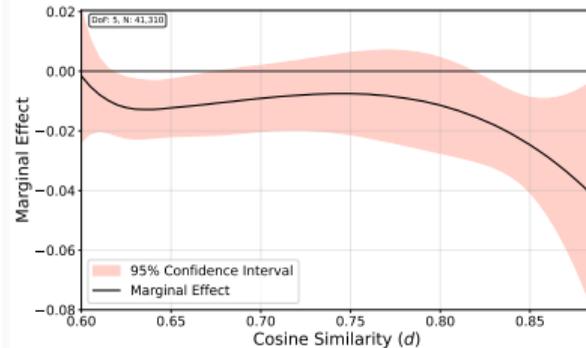- I use B-splines to flexibly estimate how effects vary with cosine similarity.
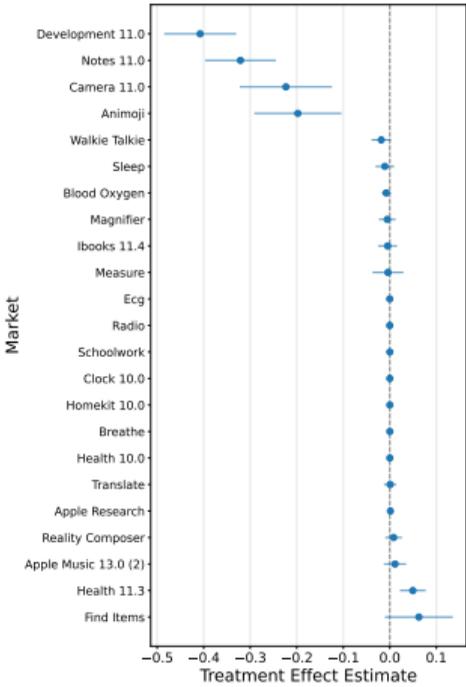
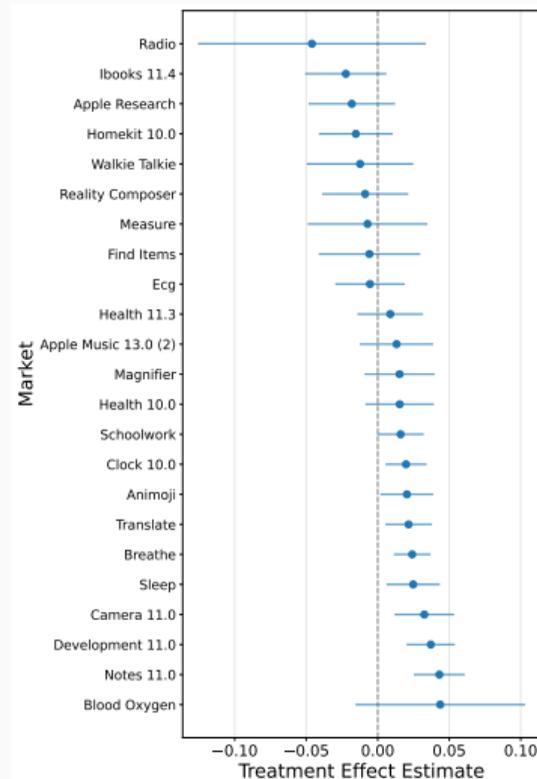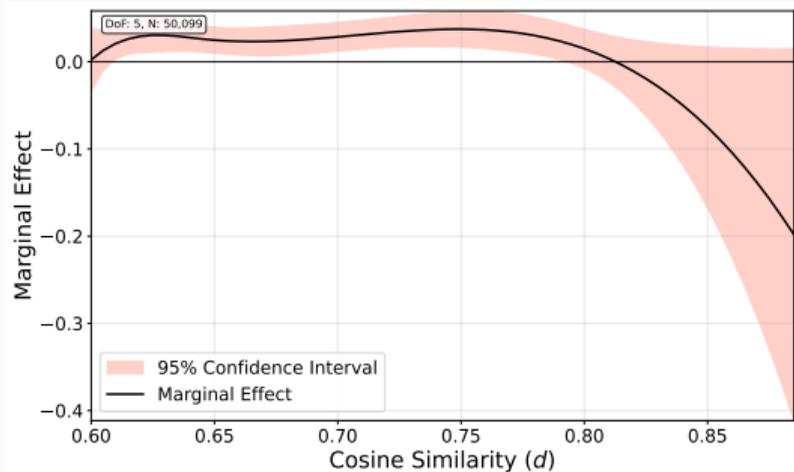Price   Free   IAP

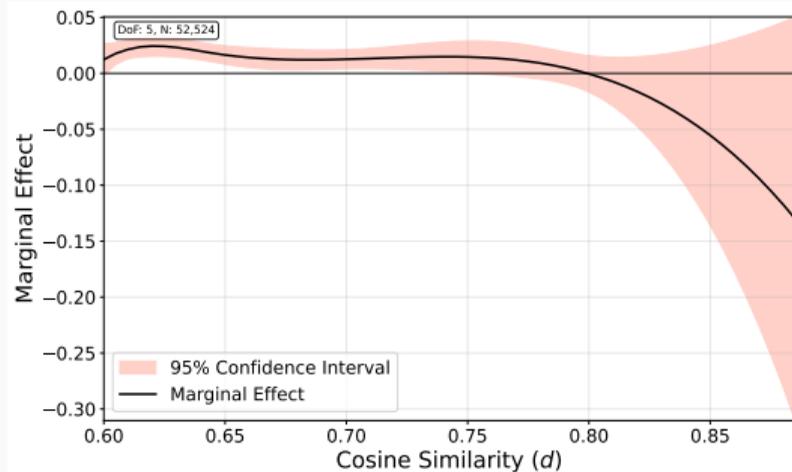# Incumbent Response: Quality

How does Apple affect the quality of incumbents?

- No evidence of an effect on updating frequency.
- Average ratings rise slightly (0.01–0.02 stars)
- User engagement (reviews) increases

Rating Count Growth

Avg. Rating

Rating Count Growth

The Unavoidability Mechanism

OS-integrated features cannot be uninstalled—this fundamentally changes competitive dynamics:

- **Price**: Integrated entry increases prices by $1.17 vs $0.15 for standalone
  - 8-fold larger effect
- **Free apps**: Decline by 16.5pp (integrated) vs 1.6pp (standalone)
  - 10-fold larger effect
- **Rating counts**: Both reduce demand by roughly the same amount

Unavoidability explains the cross-market variation in average effects—integrated entry creates inescapable competitive pressure that amplifies incumbent monetization responses.

Discussion & Conclusion

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Amid growing concerns regarding platform-owner entry, I study how third-party firms respond in the context of Apple's App Store marketplace.

Results vary (in sign & magnitude) by market and proximity to Apple.

- Null finding for 2/3 of market-outcomes
- Effects as much as 10x larger for integrated (OS features) vs. standalone entry

These findings suggest that **broad, uniform policies banning (or otherwise restricting) platform-owner entry are inappropriate**.

- Digital platforms aren't monoliths—they contain many distinct markets.

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