

Space and Cyberspace: The Effect of Food Delivery Platforms on Retail Real Estate

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Motivation: Food delivery platforms and the city

- Online economic activities can generate offline effects and reshape urban structure
 - ▶ E-commerce platforms replace local stores \Rightarrow “retail apocalypse”
 - ▶ But FDPs are different: They are tied to local stores
- **Will FDPs make retail spaces less or more valuable?**
- Why study the spatial consequences of online food delivery platforms?
 - ▶ A massive, recent shock to urban retail
 - ★ Founded recently: DoorDash (2013), Uber Eats (2014)
 - ★ Rapid scale: > 50M monthly users, millions of drivers
 - ▶ Profound changes to: (1) Consumer behavior (2) Retailer demand for space

Outline & Main Findings

Will FDPs make retail spaces less or more valuable?

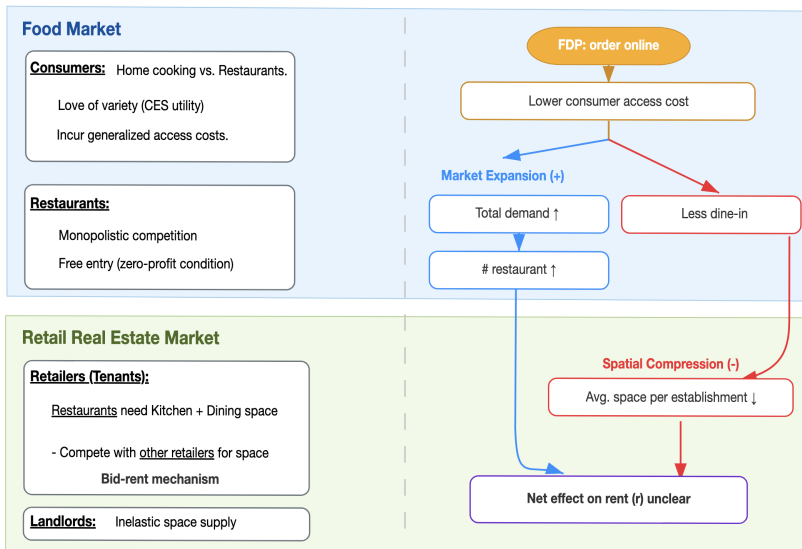
- Presentation Outline

1. *Framework*: How do online FDPs affect retail space?
2. *Empirical Strategy*: FDP rollout across US cities & staggered DiD
3. *Results*: Impact on retailers and real estate markets

- Key findings: FDPs **increased** demand for and value of retail space

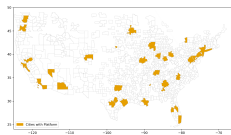
- ▶ Tenants: Number of retailers **+2%** (demand)
- ▶ Price: rent **+1%**; transaction price **+0.7%**
- ▶ Quantity: no significant change for leased and new constructed spaces (supply)

Conceptual framework: How FDPs affect the offline economy



Empirical Strategy: Staggered Rollout of FDPs Across US Cities

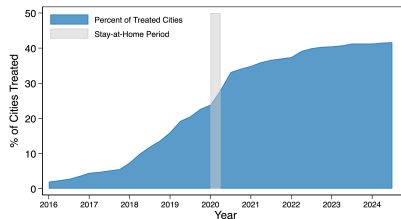
- Apply the staggered DiD method for causal estimation (Callaway and Sant'Anna, 2021)
 - ▶ A city is treated when its residents have access to FDP services



2016



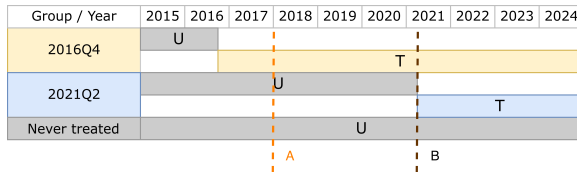
2024



- Compare treated vs. control cities on:
 - ▶ Local retailers: number and sizes of establishments, tenant composition
 - ▶ Retail real estate market: rents, space, and new construction
- Exclude confounding pandemic effect:
 - ▶ Restricting analysis to the pre-COVID period
 - ▶ Controlling for COVID death rate

Empirical Strategy: Staggered Rollout of FDPs Across US Cities

- A city is *treated* when its residents have access to FDP services
- Traditional TWFE estimators are biased due to using already-treated units as controls



- Solution: Callaway & Sant'Anna (2021) Estimator
 - Avoids bias by only including **never-treated** or **not-yet-treated** observations in the control group
- Solving the selection problem of platform strategic expansion
 - Including neighborhood and time fixed effects
 - Adding interactions between year fixed effects and baseline city characteristics as covariates
- Standard errors are clustered at the city level

FDP & Local Retailers

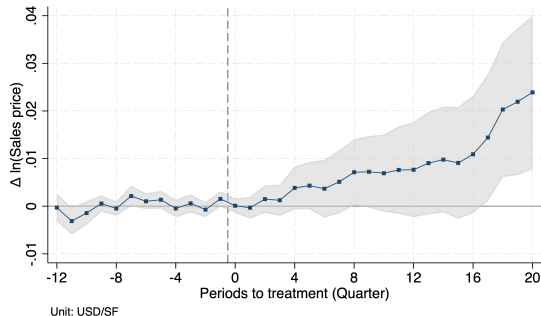
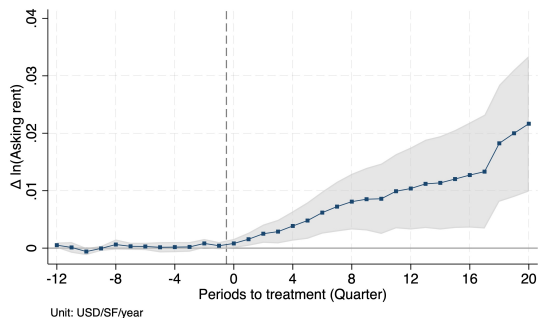
- *Market Expansion Effect*: The number of retailers increased by 2%
- *Spatial Compression Effect*: The share of small establishments (size < 2,500 sqft) increased by 0.4%

⇒ FDPs generate a positive demand shock to the retail real estate market

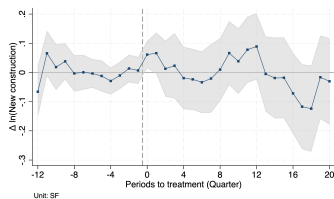
- Changes in the composition of the local retail sector:
 - ▶ relative decline in traditional shopping (clothing stores, department stores)
 - ▶ increase in restaurants and non-tradable service amenities (manicure, hair salon, etc.)

FDP Entry Increased Rent & Property Value

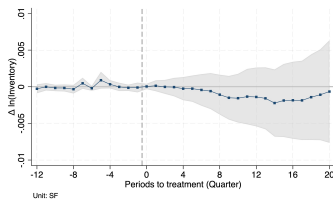
- Asking rent per sqft increased by 1%; property value increased by 0.7%
- For an average-sized fast food restaurant, its annual rent increased by ~\$900



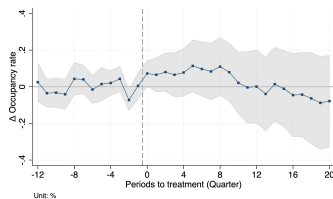
The Supply of Retail Space Is Inelastic to FDPs



(a) $\ln(\text{Construction})$



(b) $\ln(\text{Inventory})$



(c) Occupancy Rate

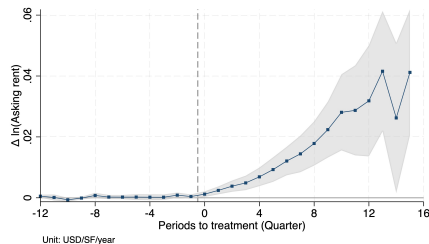
CoStar's unique dataset makes testing of retail space supply responses possible

1. **Construction in the past 12 months:** No significant change even many periods after the treatment
2. **Total retail floor space:** Also unchanged; suggesting no conversion from other property types
3. **Occupancy rate = (occupied space) / (total space)** no significant change

Robustness Checks

- Results remain robust when:
 - ▶ Excluding COVID-19 effects
 - Restricting analysis to the pre-COVID period
 - Add the death rate of COVID-19 as covariate
 - ▶ Restricting the sample to urban areas
 - ▶ Excluding never-treated cities from the control group
 - ▶ Alternative staggered DiD specifications
- Placebo test with non-retail establishments: no effect

Pre-COVID period only: 2015 - 2019



Conclusion

Answer to the research question: FDPs make retail spaces *more* valuable.

1. FDPs cause a positive demand shock to the retail real estate market

- ▶ Unlike other e-commerce platforms, FDPs keep strong ties with local retailers
- ▶ Model shows competing forces: *Market Expansion (+)* vs. *Spatial Compression (-)*
- ▶ Empirical finding: The number of retailers **increased by 2%**, overweighing the spatial compression effect

2. Landlords capture part of the platform-generated surplus

- ▶ Retail rents **+1%** & property values **+0.7%**
- ▶ Why? Positive demand shock + highly **inelastic supply** of floorspace
 - ★ Retailers compete for limited retail space, bidding up the rent
 - ★ Consistent with the *Ricardian Theory of Rent*, the surplus is captured by the owners of the scarce factor (landlords), not the technology adopters (retailers)

Thank you!

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