

# The Price of Hate: Household Finance and Non-Pecuniary Preferences

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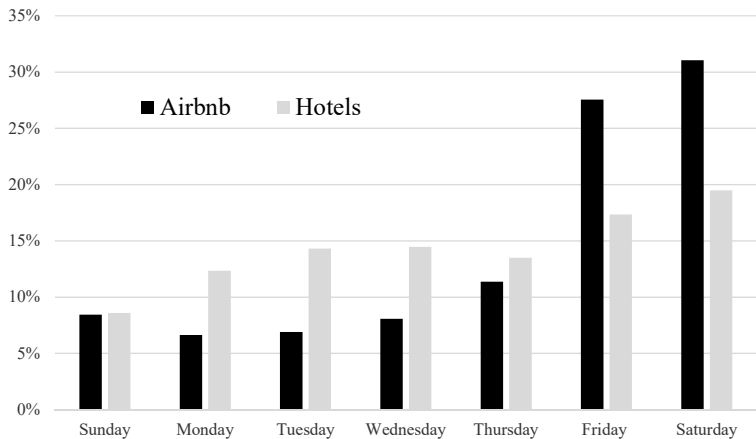
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- The “sharing economy” allows households to monetize idle assets.
- Households can monetize their
  - House (Airbnb.com, which is valued at over \$30 Billion)
  - Backyard (Dogvacay.com)
  - Car (Getaround.com)
  - Savings (Prosper.com)
- However, the ability to monetize assets in the sharing economy depends critically on a household’s ability to set listing prices.
- The listing prices set by households may be confounded by idiosyncratic non-pecuniary preferences, in contrast to hotels.

# Airbnb as a Laboratory for Studying Household Finance

- We examine Airbnb listing prices and rental incomes in college towns around college football home games.
- Airbnb data has three advantages:
  - ① College football rivalries involve strong emotions that may confound the listing prices set by households.
  - ② Hotel prices are available on the same days as Airbnb listing prices to provide a benchmark for demand.
  - ③ Observe unit-level listing prices and rental incomes on home games against rival teams and non-rival teams.
- Rivals are identified from the sports media (OSU-Michigan, Florida-Florida State).
  - Date of the first game and won-loss record are the main determinants of a rivalry.

## Revenue (%) by Weekday



- Empirical Question: Do households set listing prices to maximize rental income?
- **No:** Airbnb hosts set listing prices that are “too high” on games against rival teams and earn less rental income.
- Financial constraints mitigate the impact of rival teams on listing prices.
- No evidence that providing accommodation to rival fans is costlier.

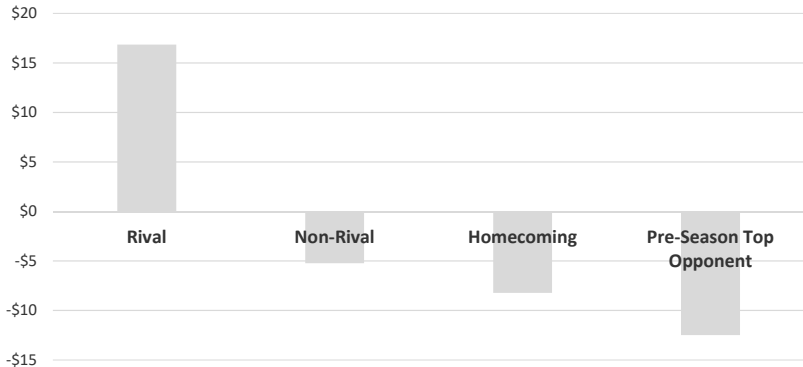
# Example #1: Florida State Home Games in Tallahassee

- Against fifth ranked Notre Dame, Airbnb listing prices and rental incomes both averaged \$201 (100% occupancy).
- Notre Dame is not a rival of Florida State.
- Five weeks later against the unranked University of Florida, Airbnb listing prices increased to \$267 while rental income declined to \$67.
- University of Florida is a rival of Florida State.
- In general, for every \$1 in rental income earned on games against top 25 non-rivals, Airbnb rental income is \$0.71 on games against rivals (compared to \$0.96 for hotels).

# Listing Premiums

- An **Airbnb Listing Premium** is computed at the *unit level* for each home game.
- This premium equals the listing price on a home game minus the average listing price across all home games.
- Similarly, a **Hotel Listing Premium** is computed at the *college town level* for each home game.
- The Hotel Listing Premium provides a proxy for demand.

## Difference in Listing Premium: Airbnb - Hotels





# Summary Statistics

| Airbnb                     | Number of Units | Listing Price | Rental Income   | Listing Premium |
|----------------------------|-----------------|---------------|-----------------|-----------------|
| Rival                      | 31              | \$277.06      | \$176.36        | <b>\$28.77</b>  |
| Pre-Season Top 25 Opponent | 33              | \$259.57      | \$185.05        | \$7.06          |
| Incoming Top 25 Opponent   | 32              | \$260.55      | <b>\$198.35</b> | \$8.87          |
| Homecoming                 | 31              | \$247.13      | \$144.54        | \$2.90          |

- As the supply of units does not change, price reflects variation in the demand for accommodation.

# Financial Constraints

- Experian provides the average credit utilization score for each zip code.
- Financially constrained (unconstrained) hosts have listings in zip codes where the average credit utilization score is above (below) the college town's median score.
  - Airbnb rentals require frequent monitoring.
  - Hosts with multiple listings concentrate them in one zip code.
- Credit utilization is based on credit card balances, not tax-advantaged mortgage debt.

## Example #2: Financial Constraints

- On games against rivals, financially unconstrained hosts increase their listing prices by 60% more than financially constrained hosts.
- On games against highly-ranked non rivals, financially unconstrained and constrained hosts earn the same rental income.
  - \$189 versus \$187, respectively
- On games against rivals, the rental income of financially unconstrained hosts is 20% lower.
  - \$149 versus \$184, respectively

# Discrimination

- Standard discrimination has the host simply denying accommodation to fans of a rival team at any price.
- However, guests can instantly book accommodation on Airbnb without host intervention.
- Over 95% of hosts enable the Instant Book in our sample.
- Instead, the listing premium quantifies the amount a host requires to overcome their preference against rival fans.

# Airbnb Listing Premium

- Examine whether a unit's listing premium is higher on games against rivals after controlling for hotel prices and game characteristics.
- Control variables include
  - Home Team's Rank
  - Opposing Team's Rank
  - Distance between the teams
  - Indicator for Prime Time Game
  - Indicator for Top 25 Pre-Season Opponent
  - Indicator for Homecoming
  - Number of Airbnb Units
  - Hotel Listing Premium

# Airbnb Listing Premium

|                       | Airbnb Listing Premium |
|-----------------------|------------------------|
| Rival                 | 24.499***<br>(5.298)   |
| Opponent's Rank       | -0.388<br>(-1.143)     |
| Home Team's Rank      | -0.056<br>(-0.474)     |
| Homecoming            | -2.168<br>(-0.361)     |
| Distance              | 0.660<br>(0.346)       |
| Hotel Listing Premium | 0.792***<br>(4.121)    |
| Observations          | 6,564                  |
| R-squared             | 0.084                  |
| Number of Units       | 1,320                  |

# Hotel Listing Premium

|                  | <u>Hotel Listing Premium</u> |
|------------------|------------------------------|
| Rival            | 9.819*<br>(1.981)            |
| Opponent's Rank  | -0.176<br>(-1.297)           |
| Home Team's Rank | 0.091<br>(0.656)             |
| Prime Time Game  | 11.601***<br>(3.261)         |
| Homecoming       | 12.812***<br>(3.588)         |
| Distance         | 0.898<br>(0.505)             |
| Observations     | 236                          |
| R-squared        | 0.336                        |

Rival is not consistently positive

# Rental Income

|                                       | <u>Rental Income</u> |
|---------------------------------------|----------------------|
| Airbnb Listing Premium                | 0.752***<br>(14.342) |
| Rival                                 | -5.190<br>(-0.544)   |
| Airbnb Listing Premium $\times$ Rival | -0.284**<br>(-2.241) |
| Opponent's Rank                       | -0.645<br>(-1.695)   |
| Home Team Rank                        | -0.270<br>(-1.016)   |
| Homecoming                            | -6.404<br>(-0.873)   |
| Hotel Listing Premium                 | 1.518***<br>(4.812)  |
| Observations                          | 6,564                |
| R-squared                             | 0.299                |
| Number of Units                       | 1,320                |



# Financial Constraints and Listing Premium

|                       | Financially<br>Unconstrained | Financially<br>Constrained |
|-----------------------|------------------------------|----------------------------|
| <b>Rival</b>          | 31.992***<br>(4.000)         | 20.087***<br>(4.180)       |
| Opponent's Rank       | -0.195<br>(-0.509)           | -0.545<br>(-1.035)         |
| Home Team's Rank      | 0.018<br>(0.153)             | -0.078<br>(-0.390)         |
| Homecoming            | -2.622<br>(-0.339)           | -2.506<br>(-0.428)         |
| Hotel Listing Premium | 0.811***<br>(2.866)          | 0.717***<br>(4.284)        |
| Observations          | 2,854                        | 2,639                      |
| R-squared             | 0.102                        | 0.066                      |
| Number of Units       | 572                          | 536                        |

# Financial Constraints and Rental Income

|                                | Financially<br>Unconstrained | Financially<br>Constrained |
|--------------------------------|------------------------------|----------------------------|
| Rival                          | -4.697<br>(-0.507)           | 0.512<br>(0.039)           |
| Listing Premium                | 0.637***<br>(7.122)          | 0.783***<br>(13.522)       |
| Listing Premium $\times$ Rival | -0.502***<br>(-3.256)        | 0.065<br>(0.525)           |
| Opponent's Rank                | -0.950*<br>(-1.734)          | -0.261<br>(-0.505)         |
| Home Team's Rank               | -0.383<br>(-1.182)           | -0.332<br>(-0.952)         |
| Hotel Listing Premium          | 1.656***<br>(4.671)          | 1.326***<br>(3.071)        |
| Homecoming                     | -8.396<br>(-0.796)           | 6.120<br>(0.860)           |
| Observations                   | 2,854                        | 2,639                      |
| R-squared                      | 0.248                        | 0.340                      |
| Number of Units                | 572                          | 536                        |

- Our results pertain to **entire units** on Airbnb that physically separate guests from the local population.
  - As the minority, rival fans likely have a preference for entire units on Airbnb.
- In contrast, as the majority, home team fans are more willing to book shared units on Airbnb.
- On games against rivals, Airbnb listing prices increase for entire units but not shared units.
- Thus, Alumni can book shared units on games against rivals to avoid the high listing prices of entire units.

# Over-Estimation of Demand

- Our results are inconsistent with the over-estimation of demand, which itself is a more general pricing error.
- Financially unconstrained (financially sophisticated) hosts are not predicted to over-estimate demand more than financially constrained hosts.
- Hosts of entire units are not predicted to over-estimate demand more than hosts of shared units.

# Placebo Test

- Urban areas such as Los Angeles are classified as locations with more than 1,000 Airbnb listings.
- College football fans are not driving demand for accommodation in urban areas.
- Therefore, games against rivals are predicted to exert an insignificant impact on listing prices and rental income.
- Placebo test supports this prediction.

# Cost of Providing Accommodation

- No indication that providing accommodation to rival fans is more costly (higher propensity for damage):
  - No reason for financially unconstrained hosts to incur greater damage.
  - Airbnb hosts do not require larger damage deposits on games against rivals and have \$1 million in insurance from Airbnb.
  - Hotels are also exposed to damage but their prices are not higher on games against rivals.
  - Airbnb retains the credit card information of guests, and also has hosts rate guests following their stay.
  - No evidence that units booked on games against rivals are unavailable for rent the following week due to repairs.

- Airbnb hosts set listing prices on games against rivals that are too high, resulting in lower rental income.
- Evidence that household financial decisions are confounded by idiosyncratic non-pecuniary preferences regarding college affiliations.
- The suboptimal pricing attributable to these preferences is mitigated by financial constraints.