

Nathan Schiff, Jacob Cosman, Tianran Dai, Delivery in the city: **Differentiated products competition among New York restaurants**, *Journal of Urban Economics*, Volume 134, 2023, <https://doi.org/10.1016/j.jue.2022.103509>.

The study analyzes differentiated product competition in both the geographic and product space using a dataset of 555,000 New York City restaurant menus from 68 consecutive weeks and 11,700 unique restaurants. The authors compare “treated” restaurants facing a nearby entrant to “control” restaurants with no new competition, matching restaurants both by characteristics of the incumbent restaurant’s location and the restaurant’s online food menu text. Additionally, they also estimate the response to entry in product (online food menu) space and the effect of entry intensity on the likelihood of incumbent restaurant exit.

The main contribution of the paper is the documentation of systematic evidence on spatial competition in two different dimensions, for a monopolistic competition large market.

Their results suggest that restaurants facing competition from a new entrant do not change their prices, products, or service differently from restaurants without new competition. These null results are relevant for multiple reasons:

- 1) The estimates are low in magnitude (in general less than 1% of the dependent variable) and in general, they have a good enough precision. However, in some cases, the noise is quite high which makes some of the results questionable.
- 2) The null results provide an important economic takeaway: in the context of large markets, assuming away local competition may be an empirically plausible simplification and therefore it can be reasonable to use models of global competition.
- 3) The findings are consistent across a number of robustness checks examining different outcomes, competitive distances, durations, and heterogeneity in the characteristics of incumbent restaurants and local areas. Moreover, they provide two different identification strategies. Notwithstanding, in the empirical design they make too many design choices and it is unfeasible to test the robustness of all of them.
- 4) The null results are consistent with a CES model. But as the authors mention, there are several other potential explanations that can lead to the same results, so the paper does not provide a satisfactory answer in this regard. They propose an interesting case in which, contrary to the hypothesis of choosing locations to soften competitive intensity, similar restaurants are more

likely to co-locate, which has been observed in a number of cities (Leonardi and Moretti, 2022). Unfortunately, data limitations prevent testing these explanations and going further in the study of the mechanisms in this case.

Lastly, although there are multiple papers proposing ways to analyze empirically entry and competition in differentiated products markets, for example (Schaumans and Verboven, 2015), they contribute to the methodology literature by presenting a two-stage matching procedure that can be exported to other fields apart from urban economics, especially cases in which the differentiated products are conveyed via text.

They use data from Grubhub, a large online food delivery service, official data from New York City restaurant inspections, and Yelp reviews (to identify the new entrants over the analyzed period). Additionally, they use census tract data about socioeconomic characteristics. As they use fixed effects at the restaurant and time level in most of the specifications, additional sources of data are not required. However, the dataset has several constraints that limit the conclusions: the data on restaurants is mostly confined to online menus, not all restaurants use Grubhub, and they only observe restaurants in a single large city. This last point is important because New York is a very particular city: it is by far the city with the highest population and density of population in the US and 37% of its habitants are immigrants (NYC Mayor's Office, 2017).

Additionally, they use four dependent variables to understand the price and product response to competition: the median price of the food items from the online menus, the 95th percentile item price, the number of menu items, and the mean price change at the item level. Nevertheless, we can think of multiple other factors that restaurants can change in order to face new rivals and that are not in the data, such as food or service quality, and interior space improvements, among others.

Regarding the methodology, the paper does not use a randomized experiment, and they have to make great efforts to come up with a comparable control and treatment group, making the causal identification far from ideal. However, they construct a relatively good dataset and their empirical design, although not ideal, allows them to answer a question that has not been widely studied in the empirical literature. It will not be surprising if in the future more papers follow this methodology to study different cities or markets. Additionally, although the econometric analysis is not standard, they provide the formal derivation of the specification in the Appendix and the empirical design used is not unnecessarily complicated.

The main challenge in studying the response to entry is that firm location choice is endogenous. To solve that, it is required a substantial number of adjustments to get causal estimates. There are a number of stages in which I think they should provide a more robust analysis:

- 1) For the construction of the product space, they use a metric called “cosine similarity” to calculate a scalar measure of the similarity of two restaurant menus based on their text (“menu distance”). The reference they use, Damashek (1995), is quite old by taking into account the recent progress in text analysis algorithms. Especially I am not convinced by the treatment they do of the text by creating 3-word n-grams.
- 2) They use likelihood of entry to ensure that they are comparing treated restaurants to control restaurants in similar areas. The paper would look more convincing if they provided further analysis of the results of this procedure in the results section instead of in the Appendix, so the reader is able to assess better the validity of the model they use.
- 3) It should be stressed more that some measures such as entry or exit of a restaurant in the market have a relevant degree of measurement error. They mention it but they do not account for it when estimating the coefficients.

A lot of thought has been given to the paper. The research is carefully executed and the paper is well-written. The authors answer a relevant question that can influence for example the way researchers make assumptions when thinking about monopolistic models in large markets. They provide an exhaustive analysis, by estimating the response of incumbent restaurants to competition from new entrants in both geographic space and product space and additionally by analyzing the effect of entry intensity on the likelihood of incumbent restaurant exit. The empirical design is not standard and far from ideal but they have relatively good data and provide multiple robustness checks and a formal definition of the specification.

The article is appropriate and fits well in the Journal of Urban Economics, it can probably be considered to be above the bar. Moreover, the study shows a clear future research path, which is to replicate the analysis for other cities or markets of different sizes to know if the strategic responses analyzed in the paper are dependent or not on market size.

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