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Press Release

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NEW PHOENIX CENTER STUDY QUESTIONS WHETHER AMAZON PREFERENCES ITS HOUSE BRANDS

Analysis suggests the ability to detect a preference in Amazon's product returns from public data faces challenges and may be impossible.

WASHINGTON, D.C. — Analyzing the order in which products are presented to customers by online retailers (or the returns presented by search engines) is receiving considerable attention as government scrutiny of large, online vendors intensifies. Over the years, Amazon has been accused of, and criticized for, allegedly favoring its house-brands in its search results, prompting the ire of some on Capitol Hill.

Amazon denies any favoritism in its algorithm for its own brands. A recent study entitled *Self-Preferencing at Amazon: Evidence from Search Rankings* by Professors Chiara Farronato, Andrey Fradkin, and Alexander MacKay, put Amazon's claim to the test. Over several months, the professors tracked the Amazon-search activity of nearly two hundred volunteers, recording the order in which products appear along with product attributes like price, ratings, and whether the product is an Amazon brand. Statistical analysis was then used to evaluate whether Amazon's house-branded products rank higher in search returns than might be supported by the product's attributes — at least the few attributes contained in the data. For the most part, the study did not find evidence to support a meaningful systematic preference for Amazon-branded products; the house-branded products ranked only a few spots above expectations but averaged a middling rank and rarely appeared in the top-ten of listings, despite having highly favorable attributes like low prices, high ratings, and many reviews.

But are the findings of the Farronato, Fradkin, and MacKay study reliable? In a new analysis released today entitled *Can Self-Preferencing by An Online Retailer Be Detected? A Monte Carlo Simulation*, the Phoenix Center's economists draw on their prior research on this topic to demonstrate that the Farronato, Fradkin, and MacKay study's findings are presumptively illegitimate, and for several reasons. The central defect in the Farronato, Fradkin, and MacKay study is the application of Ordinary Least Squares regression to a variable measuring the ordered sequence of search returns. The data are incompatible with the statistical method. The Phoenix Center's analysis demonstrates using Monte Carlo Simulation that applying Ordinary Least Squares regression to search results provides systematically biased coefficients, frequently indicates a preference where none exists, and

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often fails to detect a preference when one is present. Moreover, the standard errors are incorrect, precluding hypothesis testing using traditional methods.

“Professors Farraonato, Fradkin, and MacKay study an interesting and policy-relevant question, but their analysis is spoiled by an invalid statistical procedure,” says study co-author and Phoenix Center Chief Economist Dr. George S. Ford. “While perhaps not obvious at first glance, statistically analyzing the sequence of search returns is challenging. Multivariate regression models are systematically biased, unreliable, or inapplicable. We have yet to find a valid approach to use with these sorts of data and worry that there may not be one.”

A full copy of Phoenix Center Policy Bulletin No. 64, *Can Self-Preferencing by An Online Retailer Be Detected? A Monte Carlo Simulation*, may be downloaded free from the Phoenix Center’s web page at: <https://www.phoenix-center.org/PolicyBulletin/PCPB64Final.pdf>.

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