Shaping What Consumers Purchase:
Evaluating the Impact of Self-Preferencing by Big Tech in the American Market

SPI586F

Musab Almajnouni, Kazim Habib, John Kim

December 23, 2022

Table of Contents

1. Introduction

In recent weeks, American legislatures have seen considerable advocacy from Big Tech platforms against nominally bipartisan efforts to curtail self-preferencing practices. There is limited research on the impacts of self-preferencing on consumer behavior. As a result, American enforcement bodies do not have a full picture to determine if and how these practices can be deceptive and impede competition.

This work centers around an experiment designed to isolate the self-preferencing impact on consumer behaviors on Amazon Marketplace and, if there is a sizable impact, determine what types of user interface policy decisions can mitigate its effect. It is a purchasing experiment on an Amazon Marketplace platform replica.

This paper outlines:

- A background of self-preferencing in the American context and globally;
- The research questions the experiment attempts to answer;
- The methods and experiment design;
- Significance and limitations of the study;
- Anticipated results from the study; and,
- Policy recommendations for American legislators and experts interested in Big Tech and antitrust activities.

Due to a delay from the Princeton Institutional Review Board's approval of the experiment, our group was unable to complete the experiment. However, we have provided anticipated results that we expect would have emerged from the experiment. We encourage other researchers to take on this subject area in their work and contribute to literature in this field.

2. Background on Self-Preferencing

Overview of Self-Preferencing

What is Self–Preferencing?

In the US, the largest tech firms often dominate platform services, such as Google's Search or Amazon's Marketplace. In turn, concerns over fairness in operating these platforms are constantly growing among regulators, particularly when these firms offer their own products on these platforms and have incentive to drive traffic to their own product lines. A broad definition will be used in this paper for self-preferencing: "Platforms have the ability and incentives to provide differentiated or preferential treatment to their products and services compared to that provided to rivals – a practice known as self-preferencing."[1]

In recent years, allegations of self-preferencing against these tech firms have emerged, where favored products can be set to a default purchasing option, rank higher in search results, or otherwise gain an advantage to benefit the self-preferencing firm. In fact, self-preferencing has long been standard practice in the tech industry, where even setting Internet Explorer as the default browser in Microsoft Windows is seen as self-preferencing behavior to get an edge over competitors. Naturally, then, self-preferencing can come at the expense of both consumers, who may be coerced into purchasing higher-cost products, and small businesses, who rely heavily on the performance of their goods on these giant buy-sell platforms.

In response to growing concerns around this practice, self-preferencing by tech firms has recently entered the policy foreground, most notably with the Senate advancing the American Innovation and Choice Online (AICO) Act that intended to reel in self-preferencing in the tech industry[2]. The legislation enables the FTC and other enforcers to pursue action against self-preferencing that "materially harm[s] competition" by large companies[3].

Discussion on Antitrust Law and Foundations in the US

American antitrust law and regulations seek to protect against unfair methods of competition.

The consumer welfare standard, coined by Robert Bork in 1978, is a major principle that underpins antitrust policy. This standard argues that antitrust policy "should encourage markets to produce high output consistent with sustainable competition, and low prices."[4] In face of market dominance by these large platforms in e-commerce, the consumer welfare principle faces a competing argument from advocates that call for a focus on protecting small businesses and their economic success.

The CW principle tolerates a significant amount of market power in the economy, to the point that it can provide convenience of options and price to consumers. However, the conditionality on the high output part of the definition matters – that of sustainable competition. The strongest opposition to the CW principle in self-preferencing at least are the ways that monopolies and Big Tech platforms can obscure and impede competition. In turn, enforcement agencies often base most of their actions around the CW principle, such that enforcers closely scrutinize any business practices that raise consumer prices[5].

Current US actions around antitrust revolve around the Sherman Act, the FTC Act, and the Clayton Act[6]. Most relevant to self-preferencing is the Sherman Act, with two provisions governing federal antitrust law. Section 1 of the Sherman Act restricts "concerted action" resulting in a "restraint of trade"[7]. Meanwhile, Section 2 has provisions laid out as follows in *United States v. Grinnell Corp* (1966)[8]:

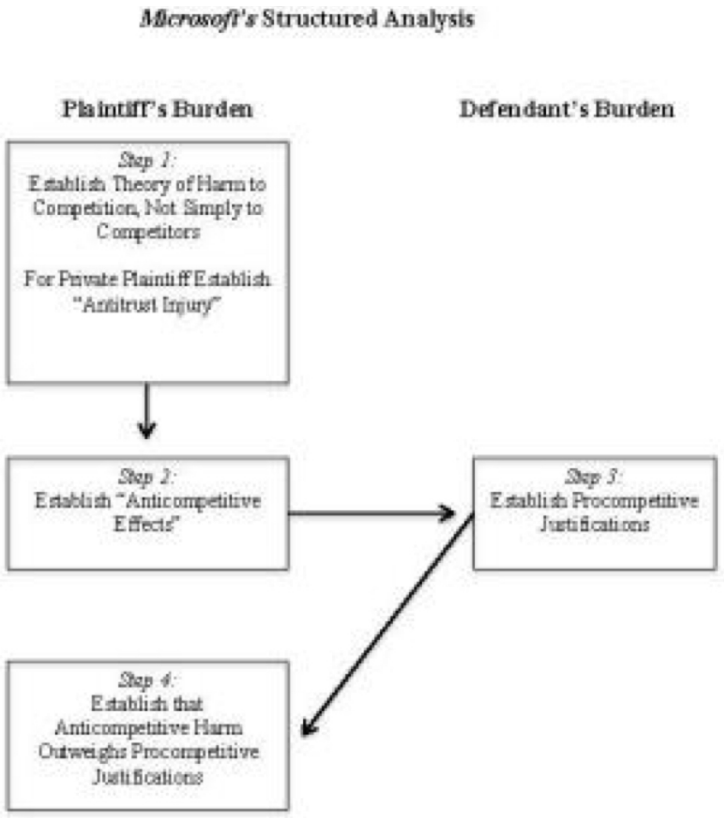
> The offense of monopoly under [Section] 2 of the Sherman Act has two elements: (1) the possession of monopoly power in the relevant market and (2) the willful acquisition or maintenance of that power as distinguished from growth or development as a consequence of a superior product, business acumen, or historic accident.

In turn, there are two major standards applied by courts in antitrust litigation: the *per se* standard and the Rule of Reason. Under the *per se* standard, certain anticompetitive actions by a monopolist are ruled illegal by default (illegal *per se*), while under the Rule of Reason standard, plaintiffs must show a probable "restraint of trade", after which burden of proof shifts upon the defendants to prove otherwise[9].

Issues over which standard to apply in self-preferencing cases emerged in the context of tying, the practice of forcibly selling two goods together, such as in default setting (ex. setting Internet Explorer as the default browser on Windows devices). Originally, since tying by a monopolist was usually considered illegal *per se*, the self-preferencing tying practices by tech companies in setting such defaults may have been ruled illegal. However, in *United States v. Microsoft* (2001), the court ruled that "the rule of reason, rather than *per se* analysis, should govern the legality of tying arrangements involving platform software products", essentially giving an exception to the *per se* standard for tying on platform software, and in turn affording tech company defendants a large advantage in antitrust tying litigation[10].

Thus, modern antitrust self-preferencing litigation, including those that involve tying, is almost always tried under the Rule of Reason under Section 2 of the Sherman Act. Section 2 governs anticompetitive actions by virtue of controlling the largest platform services ("monopoly power"), as relevant to platforms like Google's Search and the focus of our analysis, Amazon's Marketplace. Section 2 analysis takes two parts: first, a status of "monopoly" as determined by market power in, very crucially, what the court defines the "relevant market" as[11]. Second, the "improper behavior"; that is, the actual exclusionary conduct, which courts have taken a wide berth to interpreting[12]. Still, as indicated in the same case of *United States v. Microsoft* (2001), the role of the plaintiffs and antitrust courts generally is to identify exclusionary conduct, ie. conduct that reduces social welfare as a whole[13]. In particular, the court established that anticompetitive conduct must harm consumers (not competitors alone), and it laid out the burden of proof between plaintiffs and defendants (see Figure 1)[14].

Fig 1. Sherman Section 2 analysis of exclusionary conduct, US v. Microsoft[15]



The Federal Trade Commission has a key role in antitrust enforcement.

The Federal Trade Commission identifies its purpose as "protecting the public from deceptive or unfair business practices and from unfair methods of competition through law enforcement, advocacy, research, and education." They are the primary antitrust enforcement body. The FTC as a body has identified the strong need for competition and ensures that it can enforce rules of the market. As it describes, "Competition in America is about price, selection, and service. It benefits consumers by keeping prices low and the quality and choice of goods and services high. Competition also encourages businesses to offer new and better products."[16]

Dark Patterns and Self-Preferencing

One of the common patterns observed in self-preferencing is the employment of dark patterns, defined as "design elements that deliberately obscure, mislead, coerce and/or deceive website visitors into making unintended and possibly harmful choices"[17]. In other words, these are elaborate, indirect factors embedded in online environments designed to make you aware (or in some cases, unaware) of details that might otherwise affect your decision. The most relevant example of a dark pattern in our inquiry into self-preferencing is Amazon's buy box, a designated recommended offer that is algorithmically provided by Amazon for a given product[18]. Because the buy box is the clearer, more obvious, method of purchasing products, many users automatically assume that it is the best or only option for a given product. Dark patterns are important in this debate because many of the values that are campaigned for by the ongoing

conflict in favor of and against self-preferencing—fairness, welfare, and innovation, to name a few—are very ambiguous in nature and spawn widely varying interpretations employed to further opposing viewpoints at times. Equally concerning, the relationship between dark patterns and deception has only recently picked up significant attention by the FTC[19].

Self-Preferencing in Amazon Marketplace and Existing E-Commerce Research

Though Amazon Marketplace is a dominant force in online marketplaces, research on self-preferencing on Amazon Marketplace is limited. Most prior research on Amazon self-preferencing has revolved around the buy box; self-preferencing in the buy box becomes apparent when Amazon designates an offer as "Fulfilled by Amazon" (FBA). In turn, Lee & Musolff find that 26% of consumers consider only the recommended buying option, and that FBA sellers occupy the buy box in 96.46% of orders[20].

The results by Lee & Musolff are eye-opening in evaluating self-preferencing policy: as conducted in the Amazon buy box, they confirm regulatory concerns that consumers limit themselves to self-preferenced offers and that such structures reduce market entry, but Lee & Musolff reject the premise that self-preferencing reduces consumer welfare by offering inferior goods, due to Amazon's lower pricing and quality service[21]. Nevertheless, buy box research on Amazon Marketplace is inherently limited by only evaluating offers *on the same product*.

Similar research on Amazon private label brands that compete directly with other products has been limited, possibly due to Amazon's refusal to publicly acknowledge these brands without government intervention[22]. The most notable research on Amazon private label brands and self-preferencing was conducted by Jeffries & Yin, who found that status as an Amazon private label brand was predictive of occupying the top search listing in 71% of cases[23]. However, Jeffries & Yin leave unclear the monetary costs to consumers and the role of self-preferencing in guiding consumers to act against their preferences.

In any case, self-preferencing allegations have emerged against Amazon Marketplace for ranking its own private label products above products of similar price or quality on search results. Though Amazon allegedly no longer directly "boosts" its products in search rankings, it does maintain top spots in rankings through potentially misleading "featured by our brands" promotions they call "merchandising placements"[24]. These practices were enough for the National Association of Wholesaler-Distributers to submit a complaint to Congress, citing Amazon's "abuse of position"[25]. Thus, self-preferencing by Amazon is not an issue of antitrust policy alone, but also of consumer deception regarding labels on advantaged listings by Amazon private labels.

Existing Narratives around Self-Preferencing - Debate in News and Academia

Self-preferencing attracts its proponents. Notably, tech firms view self-preferencing as a privacy and security issue, pointing to instances where companies like Google and Apple can provide better guarantees of consumer safety and satisfaction by self-preferencing its own network of products, rather than relying on unvetted third parties[26]. Others warn against singling out large tech firms, noting that self-preferencing is a longstanding common business practice and is as innocent as a supermarket or mall positioning their own goods in favorable locations[27].

Still, critics of self-preferencing welcome such targeted action against large tech firms, noting the shrinking revenues (or disappearance) of competing services and the concerns over delivery of suboptimal pricing or inferior products to consumers[28] caused by the prevalence of self-preferencing.

Against Self-Preferencing

Arguments against self-preferencing revolve around a set of ideas including, but not limited to unfair practices, deception, corporate responsibility, customer welfare and the customer experience, and innovation. Hunt et al. describe in detail the proceedings of a European court against Google's shopping service for their unfair disadvantaging of third party sellers, which took the form of ranking them lower as well as enhancing their own display while restricting the appearance of third-party listings[29]. They argue that generally, vertically-integrated platforms (platforms that also own some of the listed products) inherently wield exclusionary power through lower exposure and increased costs, and that these effects are further exacerbated if the platform is dominant. The financial burden eventually makes its way to the consumer, as reasoned here:

> As a consequence, competition is distorted at the upstream or downstream market to the benefit of the platform operator's vertical affiliate (leveraging). Distortion of competition in the upstream or downstream market can lead to indirect foreclosure effects in the platform market, further strengthening the platform operator's dominance … Google's conduct could lead to higher fees for merchants by eliminating competition and increasing Google Shopping's market power, as well as to higher consumer prices if merchants reflected the higher fees in their own prices. … the conduct was likely to reduce CSSs' [(comparison-shopping service)] incentives to innovate, indirectly harming consumers through reduced quality or relevance

Teng conducted one of a few studies that attempts to quantify the effects of self-preferencing, and in his study modeling the consumer search on the Apple app store, he finds that Apple's own apps are more likely to be ranked higher on search results than third-party apps conditional on other factors. He also finds that eliminating identified self-preferencing results in a slight increase of quality in the apps searched on the app store as well as a $2.2 million increase in consumer surplus and a $1.6 million per month increase in third party developer profits[30].

In Support of Self-Preferencing

One of the fundamental ideas that proponents of self-preferencing employ when arguing in its favor is the idea that self-preferencing is not by any means a novel practice, yet that it "had not raised anticompetitive concerns of such magnitude before"[31]. Caminade et al. further proceed to highlight three examples of self-preferencing practices that exist outside of big tech: the use of private labels in retail (such as Walmart's *Great Value*), the promotion of network programming by television channels, and the vertical integration of health insurers and healthcare providers, which can be demonstrated in the example of the merger between CVS and Aetna in which Aetna directed its patients to CVS pharmacies. Another argument quoted by Caminade et al. was the proposition that though self-preferencing behavior can be *unfair*, it is not necessarily *harmful*[18], pointing us to the more abstract argument about what constitutes fairness and harm.

They use economic theory to point out that vertical integration is helpful for consumers, citing the theory of double marginalization:

> "...absent integration, if firms have market power, they will price goods above marginal cost in both the upstream and downstream market, and final consumers pay a price that includes both markups. However, when firms are vertically integrated, the firm has access to inputs at marginal cost, leading to lower prices, and the elimination of one of the two markups. The implication here is that digital platforms may be able to eliminate double marginalization and benefit consumers through lower prices when they introduce their own products."

Another argument responds to the claim that self-preferencing as antitrust behavior stifles competition by emphasizing the value of network effects:

> "Removing all third-party products is counterproductive to the platform because online marketplaces' value stems from network effects, which is defined as "the value of a product, service, or platform depends on the number of buyers, sellers, or users who leverage it." In other words, the greater the number of sellers, the more value an online marketplace derives. Online marketplaces have every incentive to keep third-party products on their platform, thereby only practicing an acceptable form of self-preferencing that does not disincentivize innovation"[32]

Two other arguments are made in support of self-preferencing as a means to enhance the customer experience: that the existence of private label products lowers prices by constraining the price range of third-party products, and that it increases product variety by adding the private label to the roster of available products as well as the potential consequence of rivals adding more products to better compete: for example, Kroger's innovation of a new syrup resulted in Acme's production of four new products, varying in quality, all with different names, in a similar product line. Furthermore, it is often difficult to prove whether a self-preferenced product placement is a result of its own popularity, or a result of platform intervention, as prior research has found that "at least 20 percent of low and middle-income households preferred private-label products over national brands"[33]. This directs our research to attempt to isolate cases in which the self-preferenced product is speculated to be popular of its own accord and encourages future researchers to also consider the share of products that are popular as a result of their quality, not their platform-provided support.

American Legislation Related to Self-Preferencing

The US Senate and House of Representatives were debating the American Innovation and Choice Act, which would outlaw self-preferencing by the largest companies.

The American Innovation and Choice Act (2022) is a bill sponsored by David Cicilline (D-RI) in the House of Representatives, paralleling a companion piece of legislation that was introduced to the Senate by Amy Klobuchar (D-MN) and Chuck Grassley (R-IA) to prohibit large online platforms from engaging in self-preferencing and other acts to limit competition with the platform's terms of service among similarly situated users. Both bills have not received a floor vote yet.

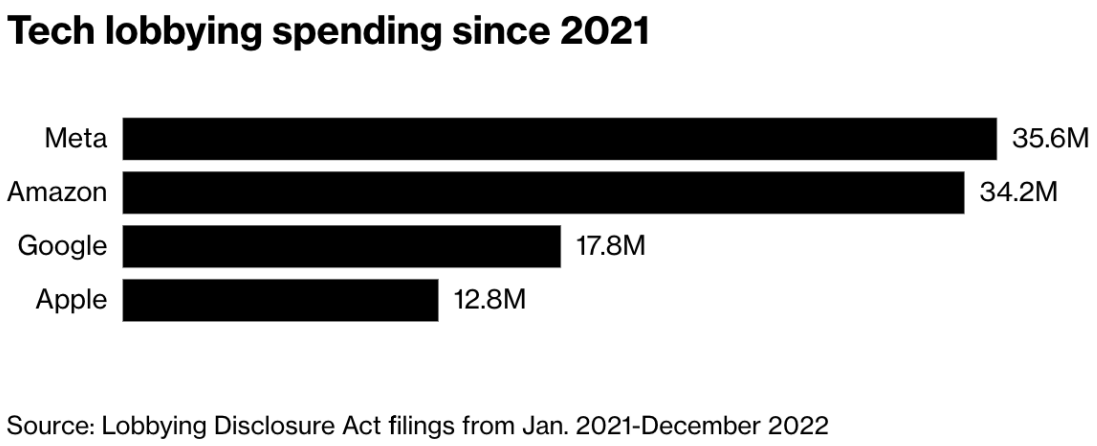
> This bill prohibits certain large online platforms from engaging in specified acts, including giving preference to their own products on the platform, unfairly limiting the availability on the platform of competing products from another business, or discriminating in the application or enforcement of the platform's terms of service among similarly situated users.
>
> Further, a platform may not materially restrict or impede the capacity of a competing business user to access or interoperate with the same platform, operating system, or hardware or software features. The bill also restricts the platform's use of nonpublic data obtained from or generated on the platform and prohibits the platform from restricting access to platform data generated by the activity of a competing business user. The bill also provides additional restrictions related to installing or uninstalling software, search or ranking functionality, and retaliation for contact with law enforcement regarding actual or potential violations of law.
>
> The bill establishes affirmative defenses for the prohibited conduct.
>
> The Federal Trade Commission and the Department of Justice must designate whether an entity is a platform covered by the bill, and both must carry out enforcement activities.
>
> *Summary: S.2992 - 11th Congress (2021-2022)*

The American Innovation and Choice Online Act (AICO) prevents "covered platforms"—defined as an online platform that has a market capitalization of $600 billion and 50,000 US-based monthly users—from certain discriminatory practices including, but not limited to: advantaging the platform's own products and services; using non-public data gathered from the platform to inform decisions concerning the platform's products and services; restricting third parties' access to data that concerns the third party's customers; and restricting the communication of information between third parties and platform users to facilitate business transactions. The bill also provides partial guidance to the penalties applied in such cases where covered platforms violate the bill. Only four companies fit the criteria for a "covered platform": Apple, Microsoft, Alphabet, and Amazon.

The response by Big Tech platforms has to mobilize opposition to stall the legislation.

The bill has seen explicit and persistent advocacy against it from tech industry leaders. As reported on December 20, 2022 in Bloomberg, "hundreds of millions of dollars" over two years in advocacy from trade groups were invested to quash the bills and the Open App Markets Act. As Republicans take over the lower chamber, the party has said they will not bring the legislation to the floor for a vote. As a result, this landmark legislation died before it reached the floor vote. It is notable that Big Tech platforms, even in times of considerable financial strain, still invested so many resources into these lobbying efforts.

Fig 2. Tech lobbying spending breakdown since 2021



Amazon claimed that the legislation would "jeopardize two of the things American consumers love about Amazon."[34] They identify those two things as diversity of consumer choices with low prices and convenience through the promise of fast, free shipping. Amazon also points out that it is distinct from the other Big Tech companies as it acts more as a traditional retailer and the penalties would harm its core business line and small businesses it supports.

The bill identifies 10 types of self-preferencing. Commentators responded to Amazon's critique by pointing out that the burden would be on antitrust enforcement bodies in the US to prove in federal court that these platforms were engaging in conduct harmful to consumers.[35]

Open App Markets Act

The Open App Markets Act, introduced on February 17, 2022, tackles self-preferencing more head on in the context of application stores, prohibiting the practices of requiring third parties to use the platform's in-app payment system, restricting communication between third parties and users, and self-preferencing in search. It prohibits requirements to use the platform-run payment system, restriction of direct communication between third parties and users, and self-preferencing in query searches.

American Legal Cases Related to Self-Preferencing

Two recent lawsuits on the same topic recently occurred: *Epic Games v. Apple* (2021) and *Epic Games v. Google* (ongoing)[36] are two lawsuits filed by game developer Epic Games after Apple and Google removed Epic Games from its platform for directing consumers to a third party payment system, stripping Apple/Google of the 30% revenue commission they charge via the App Store/Play Store (a process known as anti-steering). Epic Games reasoned that Apple had monopoly power over the iOS app ecosystem, and in turn argued their anti-steering behaviors were anticompetitive[37].

The court ruled in favor of Apple on nine of ten counts, but found that Apple's anti-steering behavior was found to be anticompetitive; *Epic Games v. Google* had a similar complaint that resulted in a countersuit from Google. In a split decision, a judge in California ruled against

Apple on one count of violating anti-steering policy under the California Unfair Competition law; on the other nine counts, the court ruled that both parties had improperly defined the relevant market and that Apple did not have a monopoly in the relevant market of "digital mobile gaming transactions"[38]. Nevertheless, the court also found that Apple had sufficient consumer security reasons to force the use of the App Store on iOS devices as well as sufficient intellectual property claims to operate a commission as a licensing fee[39].

While the Epic Games cases left many issues in antitrust litigation up to question, they nonetheless highlight the difficulty and uncertainty in pursuing antitrust litigation against digital platforms. Namely, issues of relevant market definitions, external benefits to consumers, and rights to profit off of intellectual property will certainly continue to be balanced against claims regarding consumer welfare in further self-preferencing litigation.

Comparative Cases on Implementation: Canada

Below are two comparative cases listed: Canada and the European Union. In reviewing their approaches to self-preferencing in legislation and law, American legislators and administrators can evaluate if there are any key lessons to incorporate in future actions.

Competition Act maintains and encourages competition, with flexible definitions.

In the *Competition Act* 1.1 (1985), the purpose of the Competition Bureau is "to promote the efficiency and adaptability of the Canadian economy, in order to expand opportunities for Canadian participation in world markets while at the same time recognizing the role of foreign competition in Canada."[40] Its flexible mission further identifies the importance of small and medium-sized enterprises having equitable access to the market and the need for consumers to receive the benefits of competitive prices and diverse product options. One of the central restrictive trade practices the Act identifies as harmful and enforces action against is abuse of dominant position. In Article 78 (1), this is defined as "any act intended to have a predatory, exclusionary or disciplinary negative effect on a competitor, or to have an adverse effect on competition."[41]

Ineffective enforcement action in Canada has led to increased industry consolidation.

As the US and EU ramp up debates and deliberations over antitrust actions and powers in their respective regulatory agencies, Canada lags behind. In February 2022, the Minister of Innovation, Science and Economic Development announced a review of the Competition Act, with amendments to the Act coming into force on June 23, 2022.[42] His amendments came on the heels of public concern over continued industry consolidation in Canada, enabled by weaker regulatory enforcement powers and investigative authorities. To illustrate, the six Canadian big banks control 80% of the total assets in the financial sector, with the big five US banks controlling around 40%. The top three Canadian telecom companies take in nearly 90% of the sectoral revenue.[43] Increasingly, Canadians have been turning their minds to Big Tech and stronger legislation against the companies, as they watch actions and the debate in the US and the EU on antitrust.[44]

A current package of amendments opens the door to enforcement on antitrust actions by Big Tech.

A package of June 2022 amendments introduced by the Government strengthened evidence-gathering powers, tackled merger enforcement issues, introduced drip pricing as a harmful business practice, increased the fine amount for anti-competitive actions and reclarified definitions around anti-competitive actions. Importantly, the amendment added this example to a non-exhaustive list of anti-competitive actions to include: "selective or discriminatory response by a dominant player to make it more difficult for a competitor to enter the market or grow, or to remove a competitor from a market."[45] And as recorded this past Fall, these anti-competitive actions are on top of mind for corporations. A senior Amazon executive was reported saying that: "if Canada were to adopt US style antitrust legislation – the six bills currently in Congress – we've said it in the US, we'd have to shut down Marketplace. You would see similar action in Canada in response to similar policy measures."[46]

Comparative Cases on Implementation: European Union

EC's decision on Google Shopping indicates their aggressive positioning on self-preferencing.

The European Union has had a much more aggressive approach to regulating e-commerce antitrust behavior. This may have ramifications in platform adopted in similar contexts in the UK, Australia, among others. One key landmark case was the European Commission's (EC) decision on *Google and Alphabet v Commission (Google Shopping)* where in June 2017, the EC found that Google "abused its dominant position on the market for online general search services in 13 countries."[47] Interestingly, the EC made mention of dark patterns and the "eye-catching manner" of the Google results versus other results. The EC called these practices anti-competitive and found harmful effects of that practice on competition.

Similar investigations into self-preferencing from national enforcement bodies like the French Competition Authority followed that landmark ruling. The FCA extended the ruling on self-preferencing in search algorithms into practices in Google's ad tech businesses in June 2021, where Google's publisher ad server DFP self-preferenced its SSP than those to rival SSPs.[48]

Following this, the European Commission's *Digital Markets Act*, which was passed on July 5, 2022[3], designates large online platforms as "gatekeepers" and prohibits them from treating their products more favorably, preventing users from interacting with third parties outside of their platform, preventing users from downloading pre-installed applications on electronic devices, and tracking user data outside of the core platform.

The Digital Markets Act (DMA) is the key EU regulation that showcases the differences in approach between EU and the US.

The DMA, which came into force November 2022 and applicable in May 2023, is the key EU regulation that aims to "ensure that [gatekeeper] platforms behave in a fair way online."[49] In this language and in the legal cases previously explored, the main tenant of the EU approach to self-preferencing is market organization. Importantly, the coverage of the DMA are those core platform services which have a significant impact on the internal market, provides an important gateway to end users, and entrenched positions. Figure 3 shows the quantitative definitions that identify the eligible core platform services.

Fig 3. Criteria behind designation of 'Core Platform Services' in DMA[50]

Qualitative criteria (Article 3(1) DMA)	Quantitative thresholds (Article 3(2) DMA)
1. The undertaking has a significant impact on the internal market.	1. The undertaking has either an annual turnover above **EUR 7.5 billion** in each of the last three financial years or market capitalization or equivalent fair market value above **EUR 75 billion** in the last financial year and it provides the same CPS in **at least three Member States** of the European Union.
2. The undertaking provides a CPS, which is an important gateway for business users to reach end users.	2. The CPS has at least **45 million monthly active end users and at least 10,000 active business users** located or established in the EU.
3. The undertaking enjoys an entrenched and durable position.	3. Threshold (2) above relating to the CPS has been met in each of the last **three financial years**.

Source: White & Case LLP

The DMA imposes obligations on these ‘gatekeepers’. A key one for the purpose of this experiment is provisions against self-preferencing methods used by platforms to ‘preference’ its own products or services over others. Overall, the European Court and EU have both taken stronger action against practices like self-preferencing in Big Tech platforms than jurisdictions in the US and Canada.

3. Research Questions

It is worth noting that all three questions motivating this study are evidence to the lack of information there is for this field, a concerning fact considering the severity of the implications self-preferencing has on our understanding of competitive and antitrust behavior and the regulatory landscape for it. We recognize that these questions may not be comprehensively answered, and that our research might generate further insights that answers questions not listed here. Nevertheless, we list these questions to serve as a logical basis from which our research was designed.

1. Do self-preferencing practices change consumer choice on Amazon Marketplace? As mentioned previously, self-preferencing is not solely an antitrust concern, but a consumer deception concern as well. In turn, this question evaluates self-preferencing as a dark pattern, a digital technique that influences users to act contrary to their preferences[51]. In turn, we wish to determine whether self-preferencing is misleading consumers through dark patterns and how to address this behavior.

2. What are the dollar costs to consumers by self-preferencing on Amazon private label products on Amazon Marketplace? This question is foundational to establishing whether the success of these brands came at the expense of consumers and small businesses. Furthermore, in pursuing regulatory action, this step is necessary in establishing that self-preferencing was "not outweighed by countervailing benefits to consumers or to competition"[52].

3. Are Amazon's current practices (labels) enough to alert consumers that products are self-preferenced? This question builds on question 2 in its attempt to understand the implications of this practice and what action, if any, needs to be done. Here, we ask specifically if there is enough change in behavior, if alerting consumers reverts or impacts such behavior, and if alerting consumers is the optimal choice to ensure fairness.

4. Methods and Experiment

The initial plan for this project was to run an experiment evaluating the purchasing and selection behavior of subjects on a webpage similar to Amazon.com. However, the Institutional Review Board approved the study design on December 20, 2022, too late in the process for the experiment to run.

Overview of Experiment Design

To test our research questions, we propose employing a randomized controlled trial (RCT) design to examine the causal effects of Amazon's self-preferencing practices. Using the survey recruitment platform Prolific, we would recruit a convenience sample of 600 subjects, of which 200 were assigned to a control group, 200 were assigned to treatment group 1, and 200 were assigned to treatment group 2. Demographic traits on subjects were collected via Prolific, and survey participants were compensated for their time. Research design was approved by the Princeton Institutional Review Board.

Summary of Tasks for Participants

Each of the survey groups would be assigned the same simulated shopping task of purchasing an electric kettle through a platform that mimics Amazon. Following is a breakdown of the experiment design by group of participants:

- Control Group - simulate purchase of electric kettle on regular Amazon page
- Treatment Group 1 - simulate purchase of electric kettle on Amazon page with Amazon products ranked lower in search algorithm
- Treatment Group 2 - simulate purchase of electric kettle on Amazon page with explicit label and ability to click in for more 'information' to guide decision

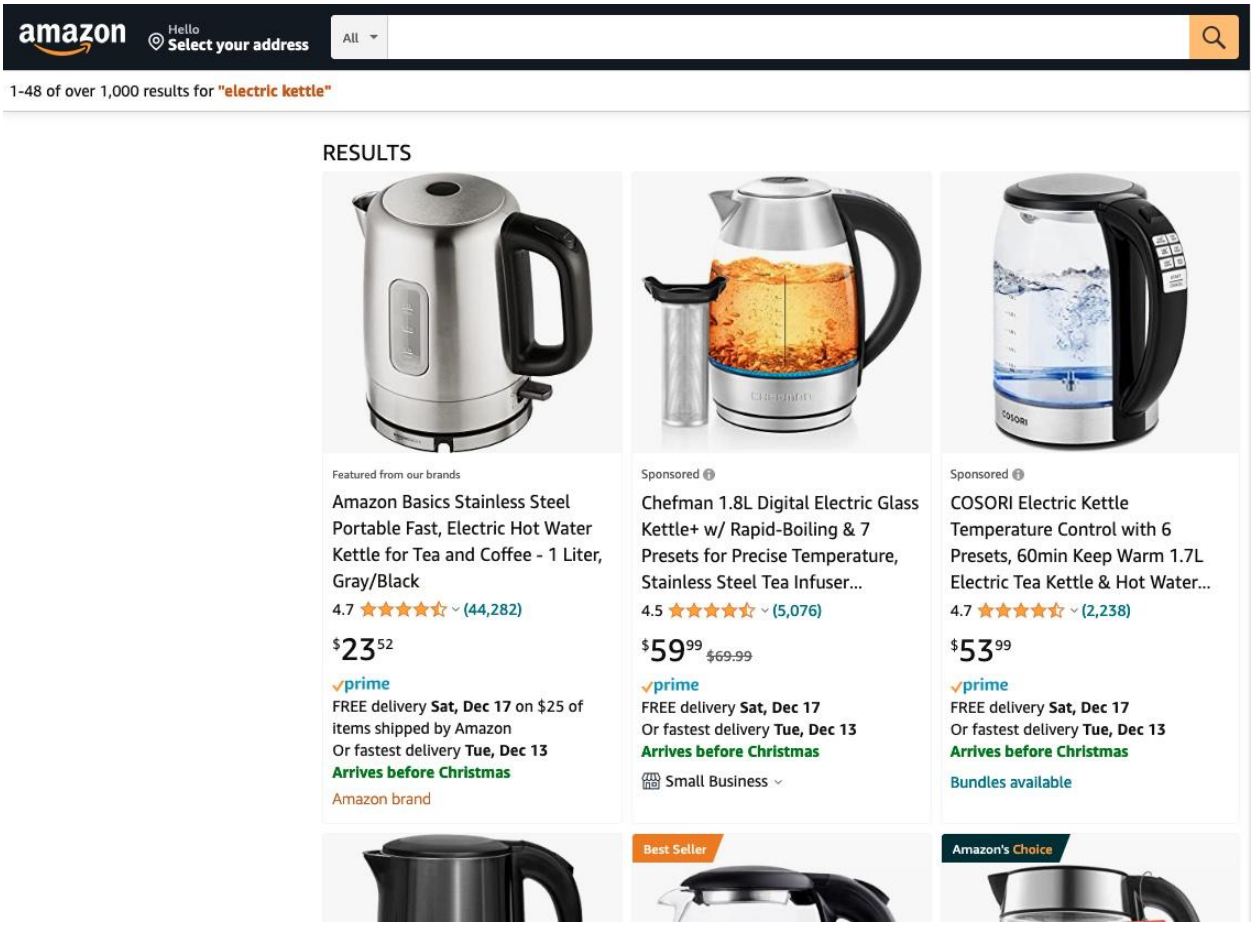
The task was framed similarly to research conducted by Fagerstrom et al. (2011), which attempts to replicate actual buyer behavior in an experimental setting. In particular, by constructing online environments similar to real-world online stores and directing tasks to buy individual products (ie. "buy an electric kettle"), the authors argue these "microworlds" minimize discernment between an experimental task and the real world[53]. Electric kettles were selected as the product of interest due to its widespread use, distinctive levels of pricing, mid-level pricing, well-known features, fairly undifferentiated product lines, and most importantly, the availability of several clearly Amazon-branded electric kettles on Marketplace.

For the purpose of this experiment, a barebones version of the Amazon Marketplace results page for electric kettles was served to survey participants. Examples of features that were removed include scrolling past the first page of results, filtering by certain measures, sorting results by a metric other than the Amazon default, logging in to view Amazon Prime deals, and more. Likewise, when clicking into individual results pages on Marketplace search results, participants are also served a screenshot of the individual page, rather than the page itself. These steps were taken to ensure that participants were served a seemingly-accurate and recognizable representation of Amazon results, while also disallowing participants to leave the experimental setting. The actual order of the individual results and their contents differed based on which experimental group the subject was assigned to.

Control Group

The control group would be shown the order of results for "electric kettle" as searched on the data collection date, December 11, 2022, on a cookie-less browser (see Figure 4). All labels were left as is (ie, Amazon products were labeled "Featured by our brands"), and Amazon products were left in their self-preferenced state (ie. one AmazonBasics product was featured as the very first result, and another was left fairly high-up in its ranking). This provides a baseline to compare against, where Amazon products receive both a self-preferential results ranking "boost" as well as a fairly limited description of why Amazon products are placed where they are.

Fig 4. Barebones Amazon results page served to participants assigned to control group



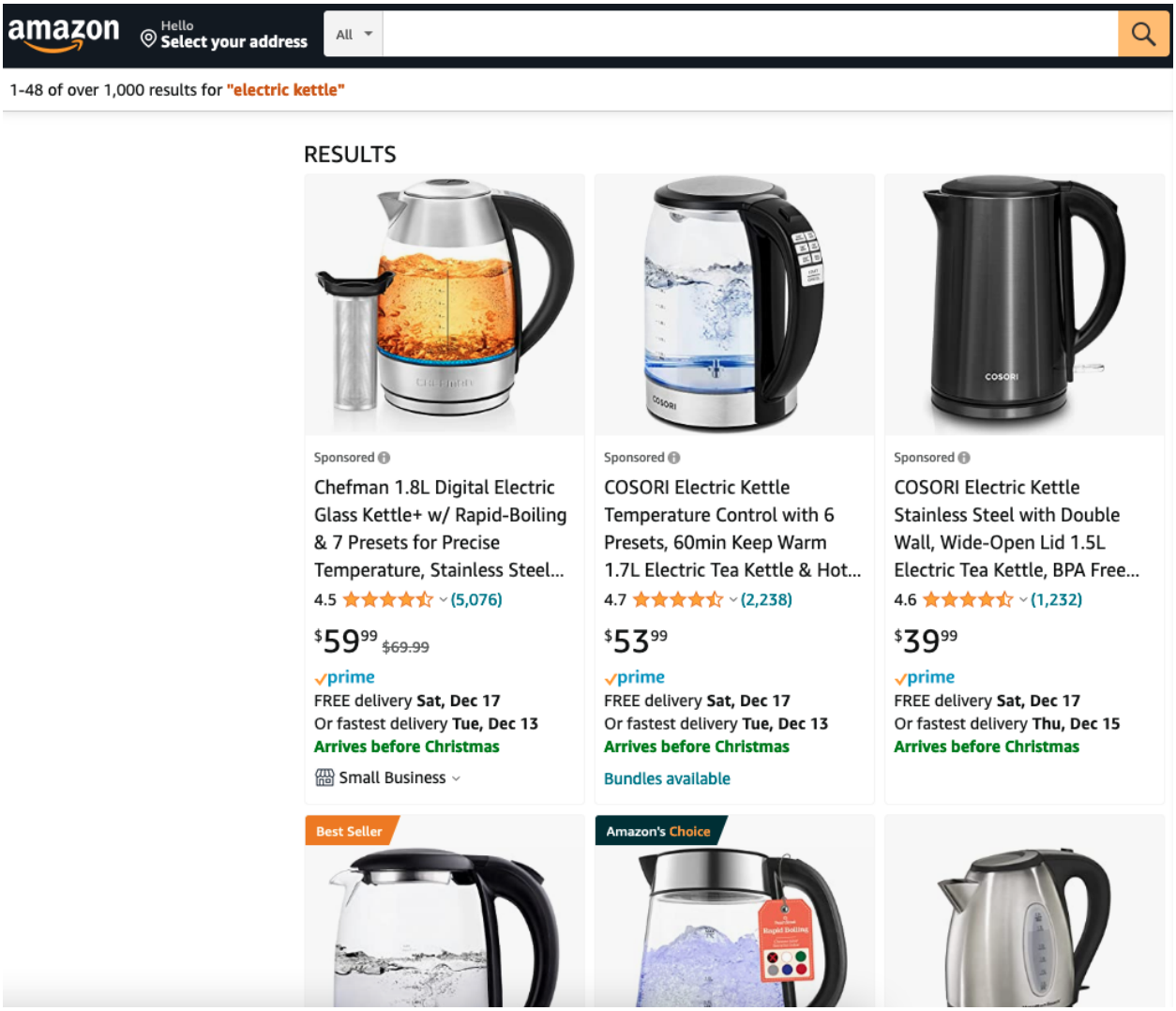
(page source: benidjones.github.io/output1.html)

Treatment Group 1

Treatment group 1 would be shown the same results page, except with Amazon products moved to the very last results on the page (see Figure 5). Notably, when placing sponsored/self-preferenced results, Amazon still leaves a product's organic result (ie, the ranking it receives naturally by Amazon's default algorithm) in its original place; hence, a sponsored/self-preferenced result can appear twice in the results page, once for its sponsored/self-preferenced placement, and once for its organic placement. Because of this, we can determine where Amazon's products would have been placed without the influence of self-preferencing, and as of

data collection date, December 11, 2022, these products appeared on the second page of results. Thus, while we do not perfectly replicate organic results by moving Amazon products to the end, we do so to give participants the option to still pick Amazon products. In any case, moving products to the end is still a higher placement than Amazon would have attained organically (on a separate page entirely), so our treatment effects for this group relative to the control reflect a lower bound of the advantage Amazon gains through self-preferencing.

Fig 5. Barebones Amazon results page with self-preferenced results moved to end, served to Treatment Group 1



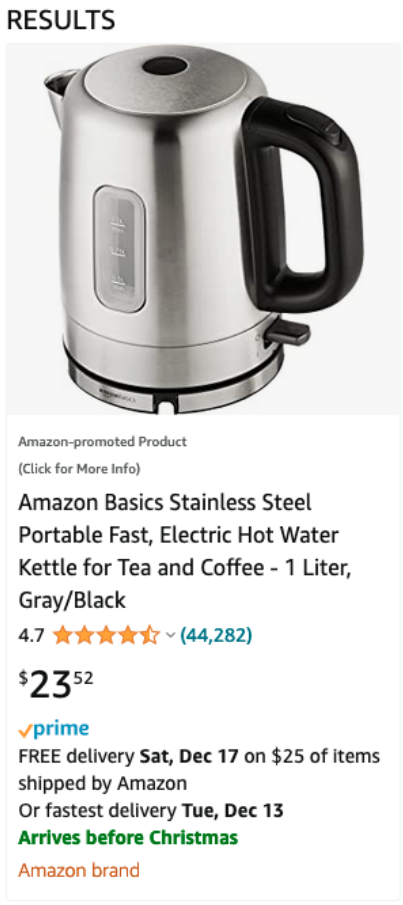
(page source: benidjones.github.io/output2.html)

Treatment Group 2

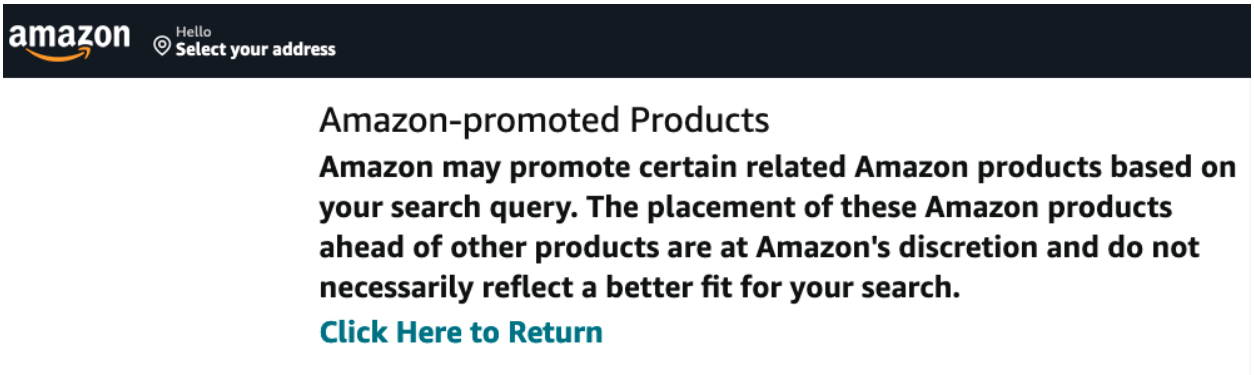
Treatment group 2 would be shown the results page with products in the same order as the control group, except labels on Amazon products were modified to reflect self-preferencing practices in more detail. The results page itself had the message changed from “Featured from our brands” to “Amazon-promoted Product (Click for More Info)” (see Figure 6a). When

clicked, participants would be taken to a brief explainer page explaining the nature of Amazon self-preferencing (see Figure 6b). These are intended to reflect our advocacy for a less-invasive policy response that reduces consumer deception, simply by mandating easily-accessible information on self-preferencing practices and what they actually mean.

Fig 6. Modified label on self-preferenced Amazon product (a) and the explainer page it leads to (b)



(a)

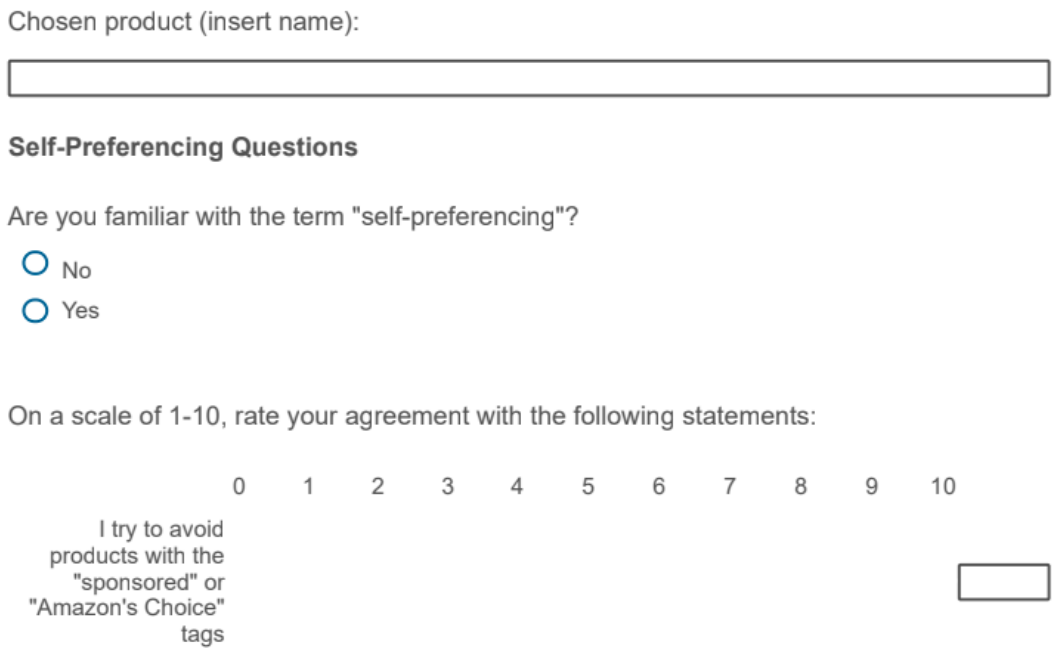


(b)

(page sources: (a) benidjones.github.io/output3.html,
(b) benidjones.github.io/promo_explainer.html)

Post-treatment, all experiment groups would be then taken to a survey to ask about their final product choice. We also ask additional questions pertaining to knowledge of self-preferencing, serving both as a control for prior knowledge of self-preferencing practices and whether the policy treatment was effective in informing survey-takers about this approach. The survey would be delivered via Qualtrics (see Figure 7).

Fig 7. Sample of Qualtrics survey questions



Statistical Analysis

To analyze our data, we take two different approaches. In our first approach, we run standard regression models with robust standard errors and standard demographic controls to test our research questions. To test our research question on whether consumers face higher average costs through self-preferencing, we fit a linear regression model of prices paid by consumer (Price) based on whether they were assigned to the treatment group 1 (NoSelfPref) or group 2 (PolicyImp), alongside a vector of standard demographic controls (X) (see Equation 1). This allows us to see whether current self-preferencing practices by Amazon causes an increase in price paid by consumers as well as whether the policy proposal we outline is effective in reducing these increased costs to consumers. Importantly, we also include a control variable for previous knowledge of self preferencing (SelfPrefKnowl), to see whether prior knowledge of self-preferencing also drives our results. Ultimately, we interpret decreased prices faced by consumers in treatment group 1 as an increase in consumer welfare caused by elimination of self-preferencing.

$$Price_i = \beta_0 + \beta_1(NoSelfPref_i) + \beta_2(PolicyImp_i) + \beta_3(SelfPrefKnowl_i) + \mu(X_i) + \epsilon \quad (1)$$

To test our research question on whether self-preferencing practices change consumer choice, we fit a logistic regression model with robust standard errors on log-likelihood of consumer purchasing an Amazon product (AmazonPurchase) based on whether they were assigned to treatment group 1 (NoSelfPref) or group 2 (PolicyImp), alongside a vector of standard demographic controls (X) (see Equation 2). This allows us to evaluate the role of self-preferencing as a dark pattern, as well as whether our policy intervention mitigates this effect. The control variable on prior knowledge of self-preferencing (SelfPrefKnowl) serves a similar role to the regression specified in Equation 1, indicating whether this prior knowledge also influences Amazon purchasing behaviors.

$$\ell(AmazonPurchase_i) = \beta_0 + \beta_1(NoSelfPref_i) + \beta_2(PolicyImp_i) + \beta_3(SelfPrefKnowl_i) + \mu(X_i) + \epsilon \quad (2)$$

For our second approach, to remedy non-representation in our online convenience sample, we conduct survey post-stratification upon our convenience sample before fitting the same regression models above. Post-stratification allows us to adjust our treatment effect estimates based on our knowledge of the demographics of a target population (Amazon shoppers)[54]. Thus, using data on the actual makeup of Amazon shoppers[55], we can likely produce an improved estimate of the causal effects of self-preferencing on our target population, Amazon shoppers, possibly reducing the bias incurred by using an online convenience sample. Further errors in estimation and representation are discussed in the Study Limitations section.

5. Anticipated Results and Discussion

It is expected that removal of self-preferencing will, on average, decrease the price paid by consumers and decrease likelihood of purchasing an Amazon product.

From the experiment and analysis above, we expect to find that removal of self-preferencing (*NoSelfPref*) causes both a decrease in average price paid by consumers (*Price*) and a decrease in log-likelihood of purchasing an Amazon product (*AmazonProduct*).

Because there are highly-rated, lower-priced alternatives to the Amazon products that are more accessible to consumers, we anticipate that consumers in general will gravitate towards purchasing one of these products, and pay a lower price as a result. This would suggest that self-preferencing used by Amazon has an associated negative relationship with consumer choice for a lower priced item.

Likewise, with Amazon sellers constantly highlighting the effects of higher search rankings on increased sales, it stands to reason that the algorithm appropriately downranking Amazon results would reasonably reduce the likelihood of purchasing Amazon products. In turn, the difference-in-means between the price paid by the control group and the *NoSelfPref* treatment group would allow us to quantify the average per-unit cost to consumers by Amazon's self-preferencing practices. As mentioned in our Discussion on Antitrust Law, a result proving increased prices faced by consumers would indeed indicate Amazon practices are deserving of scrutiny by enforcers like the FTC.

If the removal of self-preferencing had no significant effecs, substantial conclusions could still be drawn.

Still, the presence of null/insignificant effects (or effects in the opposite direction) for the *NoSelfPref* treatment would also be telling. In the case where *NoSelfPref* had no significant effects on either *Price* or *AmazonProduct*, it stands to reason that lack of self-preferencing had no causal effect on consumers' purchasing behaviors with respect to Amazon products. Nevertheless, we find this result unlikely because it is contrary to conventional wisdom; that is, if there was indeed no significant effect of self-preferencing, why would companies engage in it in the first place?

Another case would be where *NoSelfPref* had no significant effect, or an effect in the opposite direction, on *Price*, coupled with a decreased log-likelihood of purchasing an Amazon product. In this case, we can infer that consumers are paying the same (or a higher) price due to the lower pricing of Amazon products. This case could be anticipated in the sense that it replicates prior research; in particular, the Kwok & Lee perspective that Amazon's self-preferencing practices do not harm consumers by virtue of the fact that Amazon often provides an optimally-priced or -rated product. In turn, while Amazon could effectively be conducting anticompetitive practices by unfairly competing against other brands, as mentioned in our Discussion on Antitrust Law, this alone is unlikely to produce a valid antitrust claim.

We expect our policy intervention around transparency will decrease likelihood of purchasing an Amazon product.

We also expect that our other intervention, altering the message displayed on self-preferenced Amazon products (*PolicyImp*), will cause a significant decrease in likelihood of purchasing an Amazon product (*AmazonProduct*). This is due to our hypothesis that consumers are unaware of self-preferencing both as a practice and as a matter of Amazon's unclear representation to consumers ("Featured by our brands"). In turn, the *PolicyImp* treatment is a direct test of our policy proposal to promote transparency on self-preferencing practices.

The effectiveness of *PolicyImp* is predicated on the same possibilities posed in the *NoSelfPref* treatment. That is, if *PolicyImp* decreases *Price* and *AmazonProduct* at a statistically significant level, we may assume that our policy implementation was successful in increasing consumer surplus due to increased awareness of self-preferencing practices. If *PolicyImp* had no effect on *Price* but decreased *AmazonProduct*, the null effect on *Price* is reflective of optimally-priced Amazon products. But, in this case, our policy implementation likely succeeded in informing consumers about unfair self-preferencing behaviors, giving evidence to our claims about deception in Amazon self-preferencing behaviors to the benefit of competing suppliers.

However, if this did not lead to a significant decrease as compared to the treatment that removes self-preferencing as a whole, then it would indicate that this policy proposal of providing information and transparency to consumers– here in smaller text and through a pop-out text box as they scan product line– may not do enough to help consumers. That would show the market-shaping power of positioning products by firms in e-commerce and how piecemeal policy proposals to provide more transparency to consumers may not be enough to combat the antitrust nature of these Big Tech practices.

6. Study Limitations

In our study design and model estimation procedure, many limitations that harm the external validity of our results come to mind.

Posing a simulated shopping task to any experimental group is difficult.

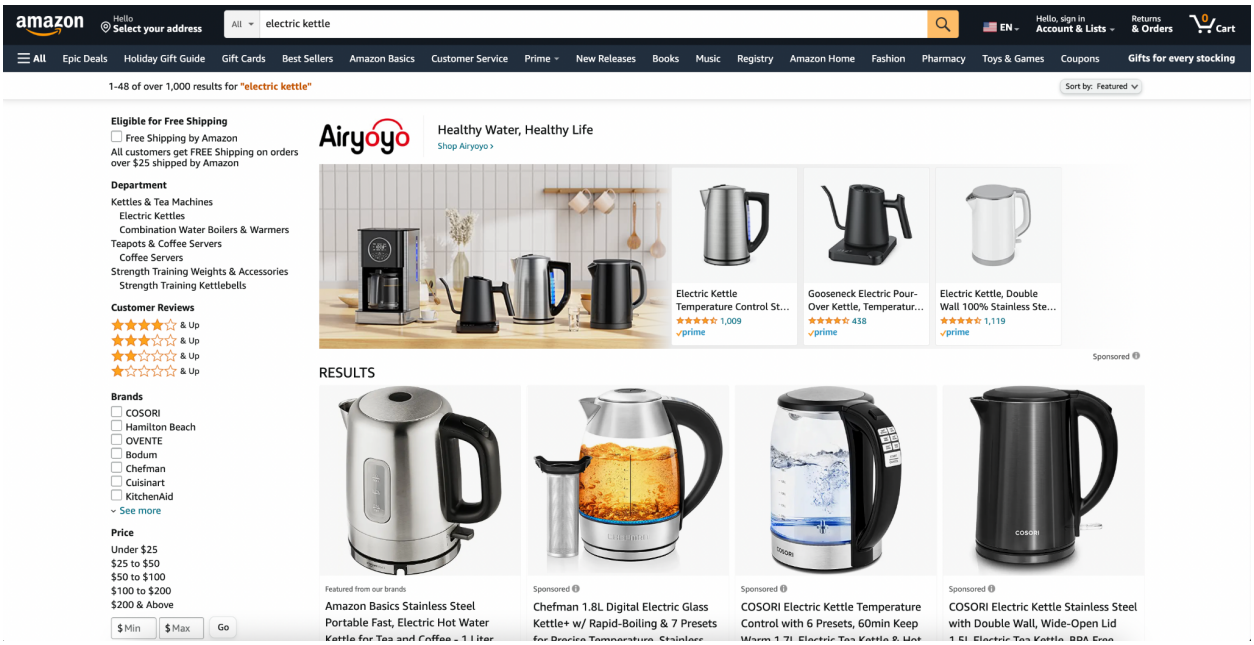
Naturally, the difference in incentives between a simulated shopping task and an actual shopping task leads to a multitude of unrepresentative behaviors: survey-takers may take the task less seriously if they perceive they have no personal stake in it, or put more effort than they otherwise would have if they perceive that their choice of product will be scrutinized in an experimental setting. In any case, our reliance on survey design by Fagerstrom et al. (2011) keeps our study in-line with expected biases that result from studies of this nature.

Designing a purchasing experiment is unrepresentative of natural conditions behind someone purchasing a product without an initial prompting and with limited product interface.

Other elements of the experimental setting are similarly unrepresentative. In particular, to "box in" survey participants in the experimental setting, individual product description pages were served via screenshots, not HTML, thus disallowing survey-takers to scroll through product pages and scrutinize certain details that may have guided their decision-making (ex. Product images/videos, individual reviews, shipping options, etc). Similarly, to narrow the scope of products considered in the experiment, survey-takers were only allowed to observe a single page

of results, notwithstanding the additional results that emerge when participants are served Amazon Marketplace ads (see Figure 8).

Fig 8. Unaltered source HTML for experiment webpages



Another weakness is our inherent difficulty in measuring consumer surplus. That is, our only measure of consumer welfare is the price of the product selected by survey-takers, when other factors such as product rating, delivery time, individual features, brand, and more undoubtedly factor into consumer choice and satisfaction. Nevertheless, product price is still considered one of the most important factors to consumers[56], indicating that our use of only price as a measure of consumer welfare is unlikely to bias our results substantially.

Resource limitations and experiment design prevent a truly representative study.

Limitations of experimental resources also forced us to focus our research solely on electric kettles. While we justify our use of electric kettles in our Overview of Experimental Design section, our results are nonetheless conditional on this product. In particular, we might imagine the effect heterogeneity of self-preferencing for different product lines based on price (consumers may scrutinize purchases more for expensive products) or differentiation (consumers may be more likely to discern different types of, for example, laptops). Likewise, the causal effects of our treatments on Price and AmazonProduct are likely to vary conditioning on products; for example, for products where Amazon is priced less-competitively, the loss in consumer surplus from self preferencing could increase; for products where Amazon enters a markets with few competitors, the effects of self-preferencing overall may be limited.

Finally, as addressed in our Statistical Analysis section, we encounter significant non-representation error through the use of an online convenience sample on Prolific. While we attempt to address this issue through the use of post-stratification in our second approach, this relies on the homogenous-response-propensities-within-groups assumption; that is, the

probability of survey response is the same across individual groups[57]. Both this assumption and a robust sample of participants per-group is unlikely to be met under our survey conditions (n = 200 per survey group); in any case, post-stratification is likely to produce a better causal estimate than using the convenience sample alone, and results for both approaches are presented regardless.

7. Policy Recommendations

Following the results of the experiment and the research evaluated on self-preferencing, we recommend the following:

1. Researchers should further investigate the impact of self-preferencing on consumer behaviors. This experiment is limited due to resource and time constraints. It was meant to show that more work needs to be conducted in this space. More researchers need to investigate the use of self-preferencing in Amazon Prime and other Big Tech platforms than were initially covered in our experiment design. This is particularly important because many claims have been made about the benefits and harms from self-preferencing practices through rhetorical argumentation, anecdotal examples, and economic theories, yet very little empirical evidence has been developed to support or ground these claims. We identify consumer behavior as a key research area that can better inform the validity of claims on deception and consumer welfare.

2. Compel transparency on impact of self-preferencing behavior. We hope that the anticipated results of this experiment among other research can provide motivation for legislators and regulators to compel platforms to be more transparent on the apparent advantage (or lack thereof) resulting from self-preferencing practices. We recognize that the data to prove (or disprove) claims that self-preferencing harms consumers are held *en masse* by technology companies themselves, and thus independent research to address these claims are limited in their scope. To that end, we recommend the Department of Justice issue civil investigative demands to compel Amazon to release data on increased sales from their self-preferenced private label products, as well as detailed information on the pricing of their various products relative to competitors[58].

3. Create and enforce FTC rules requiring search platforms make explicit how and why results that would not have ranked at a certain position in listings have otherwise ranked there. Self-preferencing policy on search platforms must target anticompetitive and misleading practices but also remain consistent with the FTC's limited scope in rulemaking. In the case of search platforms like Amazon Marketplace, expanding on current FTC requirements regarding sponsored listings[59], companies should be required to explicitly indicate how and why listings appear contrary to the position they would otherwise occupy in a fashion easily accessible to consumers. For example, rather than indicate "From our brands", Amazon should explicitly indicate in an easily accessible short message or pop-up, "These products may not be consistent with your search terms, and do not necessarily reflect the best price or product available to you. As an Amazon product, this product was listed higher than it otherwise may have." This is consistent with FTC rulemaking abilities as well as prior policy recommendations on dark patterns and takes a small but significant step towards addressing our concerns over increased costs faced by consumers from misrepresenting top search results[60]. Indeed, Google and Amazon search platforms have long promoted paid listings as a vital part of their businesses, but this and self-preferencing of listings should not be misrepresented as the "best" result of organic search. Since Amazon currently skirts FTC rules by disclosing self-preferenced products only as "From our brands", this proposed rule presents a conservative and attainable policy by the FTC in addressing misrepresentation. Notably, we do not recommend banning these self-preferenced listings outright. This is because

the distinction between these and longstanding practices of sponsored listings becomes harder to draw, and the FTC's capabilities against these antitrust concerns are likely more limited. In any case, the FTC should look to legislators as new attempts are made to reform antitrust policy to address self-preferencing practices.

4. Draft a framework for legally assessing dark patterns: If the results of this experiment demonstrate that dark patterns are more powerful in purchasing behavior, then FTC and others would need to provide clearer and stricter legislation or white papers to properly enforce, regulate and restrict the use and abuse of dark patterns in furthering corporations' own gains at the expense of the consumers.

8. Conclusion

This project was motivated by the worrying sentiment of "tech monopolies" abusing their market dominance, among other concerns. It is clear that the advent of the tech economy, landmarked by the online shopping revolution, has significantly altered the nature and methods of commerce. This experiment evaluates the impact of self-preferencing and if the current antitrust legislation and enforcement is inadequate to measure the anticompetitive nature of this practice, as has been recognized in the EU. Likewise, we recognize that self-preferencing is not solely an antitrust issue; rather, self-preferencing must also be recognized as a harm to consumers through deception and misrepresentation of algorithmic recommenders.

The American Innovation and Choice Act, which recently died before it went for a floor vote, indicates that there is a growing momentum in support of more extensive regulation and expanded authorities for enforcement bodies.

The results from our experiment would have indicated that the impact of self-preferencing does significantly influence and shape consumer choice and behavior, even away from quality and lower cost products. Though this would not have been definitive, this experiment would show that current antitrust legislation needs further review. It should also prompt further reflection and study by researchers and legislators into self-preferencing, dark patterns, and other industry practices that means to prioritize a company's own products on large platforms in implicit and hard to decipher ways, whether that be through algorithms or the manipulation of labels.

This experiment does have significant limitations. The best and most accurate information on how these practices influence behavior and potentially impede fair competition is held by the Big Tech companies themselves. Furthermore, there needs to be an evaluation of the complicated and multifaceted nature of self-preferencing regulation beyond search platforms, such as in default-setting for mobile devices by Android and Apple.

The policy recommendations listed in this paper are ambitious. Some, like future legislation, is not in the hands of any single regulatory body or legislator group. However, steps towards a clearer understanding of the impact of self-preferencing can help provide motivation for regulators and legislators to become more ambitious as well.

This review needs to happen rapidly as the legal system is prone to partisanship in Congress. Policy makers need to tackle the challenge of the online market head on. Research, legislation, and related enforcement need to adapt to the e-commerce market, even in the face of heightened partisanship and advocacy from Big Tech companies. It is the best way to ensure an open market for Americans.

End Notes

[1] Christophe Carugati. "How to Implement the Self-Preferencing Ban in the European Union's Digital Markets Act." Bruegel, December 2, 2022. https://www.bruegel.org/policy-brief/how-implement-self-preferencing-ban-european-unions-digital-markets-act#:~:text=Platforms%20can%20therefore%20have%20the,Cabral%20et%20al%2C%202021).

[2] Cat Zakrzewski & Gerrit De Vynck, "Senate advances antitrust legislation, despite reservation from California Democrats", *The Washington Post* (2022).

[3] American Innovation and Choice Act, S. 2992, 177th Cong. (2022).

[4] Herbert Hovenkamp, "Antitrust in 2018: The Meaning of Consumer Welfare Now," *Wharton Public Policy Initiative* (2018).

[5] Andrew I. Gavil, William E. Kovacic, Jonathan B. Baker & Joshua D. Wright, *Antitrust Law in Perspective: Cases, Concepts and Problems in Competition Policy* (Fourth Edition, West Academic Publishing, 2022), 96-97.

[6] FTC, "The Antitrust Laws," https://www.ftc.gov/advice-guidance/competition-guidance/guide-antitrust-laws/antitrust-laws.

[7] Gavil et al., *Antitrust Law*, 117.

[8] Gavil et al., *Antitrust Law*, 442.

[9] Gavil et al., *Antitrust Law*, 126 & 210.

[10] Gavil et al., *Antitrust Law*, 1027 & 1029.

[11] Gavil et al., *Antitrust Law*, 444.

[12] Gavil et al., *Antitrust Law*, 444.

[13] Gavil et al., *Antitrust Law*, 545.

[14] Gavil et al., *Antitrust Law*, 545.

[15] Gavil et al., *Antitrust Law*, 556.

[16] FTC, "Competition Counts," https://www.ftc.gov/advice-guidance/competition-guidance/competition-counts.

[17] Jasmine McNealy "It's not you; many e-commerce websites are difficult to use by design." *NextGov.com* (2021)

[18] Kwok Hao Lee & Leon Musolff, "Entry Into Two-Sided Markets Shaped By Platform-Guided Search", *Princeton University* (2021).

[19] FTC, "Bringing Dark Patterns to Light" (2022), https://www.ftc.gov/reports/bringing-dark-patterns-light.

[20] Lee & Musolff, "Entry Into."

[21] Ibid.

[22] Helena Fernandez Morano, "In-Depth Study of All 88 Amazon Private Label Brands," *Ecomcrew* (2022).

[23] Adrianne Jeffries & Leon Yin, "Amazon Puts Its Own "Brands" First Above Better-Rated Products" (2021), *The Markup*.

[24] Jeffries & Yin, "Amazon Puts."

[25] Ibid.

[26] Zakrzewski & Vynck, "Senate advances."

[27] Ryan Bourne & Brad Subramaniam, "The 'Big Tech' Self-Preferencing Delusion", *Cato Institute* (2022).

[28] Adrianne Jeffries & Leon Yin, "Google's Top Search Result? Surprise! It's Google," The Markup (2020).

[29] Matt Hunt, Safter Burak Darbaz and Robert Scherf, "Self-Preferencing in Digital Markets," *Global Competition Review* (2022)

[30] Xuan Teng, "Self-Preferencing, Quality Provision, and Welfare in Mobile Application Markets," *CESifo Working Paper No. 10042* (2022).

[31] Juliette Caminade, Juan Carvajal, and Christopher R. Knittel, "An economic analysis of the self-preferencing group," *Competition* 32 no. 2 (2022), 30-43.

[32] Trelysa Long, "History Shows How Private Labels and Self-Preferencing Help Consumers," *Information Technology and Innovation Foundation* (2022).

[33] Ibid

[34] Amazon, "Antitrust legislation and the unintended negative consequences for American consumers and small businesses", https://www.aboutamazon.com/news/policy-news-views/antitrust-legislation-and-the-unintended-negative-consequences-for-american-consumers-and-small-businesses.

[35] Bill Baer, "Why Amazon is wrong about the American Innovation and Online Choice Act," *The Brookings Institution* (2022), https://www.brookings.edu/blog/techtank/2022/06/14/why-amazon-is-wrong-about-the-american-innovation-and-online-choice-act/.

[36] Peter Coy, "The Battle Royale Over Apple's App Store," *The New York Times* (2022), https://www.nytimes.com/2022/12/05/opinion/epic-games-apple-app-store.html.

[37] Adi Robertson, "A comprehensive breakdown of the Epic v. Apple ruling," *The Verge* (2021), https://www.theverge.com/2021/9/12/22667694/epic-v-apple-trial-fortnite-judge-yvonne-gonzalez-rogers-final-ruling-injunction-breakdown.

[38] Robertson, "A comprehensive breakdown."

[39] Ibid.

[40] Bill C-34, *Competition Act*, RSC 1985. https://laws.justice.gc.ca/eng/acts/C-34/page-1.html

[41] Ibid.

[42] Competition Bureau of Canada, *Guide to the 2022 amendments to the Competition* Act, June 24 2022, https://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04671.html.

[43] Divya Rajagopal, "Canada's Move to Bulk up Antitrust Muscle May Miss Root of Problem." Reuters. Thomson Reuters, June 6, 2022. https://www.reuters.com/markets/deals/canadas-move-bulk-up-antitrust-muscle-may-miss-root-problem-2022-06-06/.

[44] "8 In 10 Say Companies like Facebook or Google Should Ensure Information on Their Sites Is Accurate." The Forum Poll™ . Accessed September 26, 2022. http://poll.forumresearch.com/post/3047?key=E01C5C7B0C4D479F8CBAA577678158D3.

[45] Competition Bureau of Canada, *Guide to the 2022 amendments to the Competition* Act, June 24 2022, https://www.competitionbureau.gc.ca/eic/site/cb-bc.nsf/eng/04671.html.

[46] Patriquin, Martin, "Caught on Tape: Amazon Exec Threatened Marketplace Shutdown in Canada If Competition Reforms Go Ahead," *The Logic* (2022), https://thelogic.co/news/exclusive/caught-on-tape-amazon-exec-threatened-marketplace-shutdown-in-canada-if-competition-reforms-go-ahead/.

[47] "The General Court Largely Dismisses Google's Action against the Decision of the Commission Finding That Google Abused Its Dominant Position by Favouring Its Own Comparison Shopping Service over Competing Comparison Shopping Services." *Court of the European Union*, November 10, 2021. General Court of the European Union. https://curia.europa.eu/jcms/upload/docs/application/pdf/2021-11/cp210197en.pdf.

[48] Hunt, Matt, Safter Burak Darbaz, and Robert Scherf, "Self-Preferencing in Digital Markets," *Digital Markets Guide - Global Competition Review* (2022), https://globalcompetitionreview.com/guide/digital-markets-guide/second-edition/article/self-preferencing-in-digital-markets#footnote-089.

[49] "The Digital Markets Act: Ensuring Fair and Open Digital Markets," *European Commission* (2022), https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-markets-act-ensuring-fair-and-open-digital-markets_en.

[50] Komninos, Assimakis, and Mario Barka, "The Digital Markets Act (DMA) Goes Live," *White & Case LLP* (2022), https://www.whitecase.com/insight-alert/digital-markets-act-dma-goes-live.

[51] Sara Morrison, "Dark patterns, the tricks websites use to make you say yes, explained", *Vox* (2021).

[52] 15 U.S.C. § 45.

[53] Asle Fagerstrom, Erik Arntzen, & Gordon Foxall, "A study of preferences in a simulated online shopping experiment," *The Service Industries Journal* (2011).

[54] Matthew Salganik, *Bit by Bit: Social Research in the Digital Age* (Open Review Edition, Ongoing), https://www.bitbybitbook.com/en/asking-questions/who/nonprobability-estimation/.

[55] Numerator, "Demographic & Shopper Insights: Amazon Retailer Snapshot," https://www.numerator.com/snapshots/retailers/amazon.

[56] Simon-Kucher & Partners, "The Rating Economy - Consumer Survey," https://www.simon-kucher.com/en-us/TheRatingEconomy-Overview.

[57] Salganik, *Bit by Bit*.

[58] 15 U.S.C. § 1312.

[59] FTC, "The FTC's Endorsement Guides: What People Are Asking," https://www.ftc.gov/business-guidance/resources/ftcs-endorsement-guides-what-people-are-asking. .

[60] 15 U.S.C. § 57a.