

Non-Price Strategies of Marketplaces: A Survey¹

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Abstract

Two-sided platforms have a great impact on markets nowadays. Especially, online marketplaces design markets and choose many of the rules that govern how buyers and sellers interact. Researchers studied two-sided platforms very actively over the last two decades. We review the economic literature from two angles: we focus on marketplaces and we concentrate on non-price strategies that marketplaces employ to govern interactions (like user steering, self-preferencing, rating and review systems, data and targeting, privacy, and user protection).

Keywords: Two-Sided Platforms, Marketplaces, Platform Governance, Platform Strategy, Platform Regulation, Platform Self-Regulation

1. Introduction

Over the last decades, researchers actively studied two-sided platforms. Some surveys already exist, albeit with a different focus than ours: Rysman (2009) zooms in on payment systems, media platforms, and operating systems; Correira da Silva et al. (2018) and Jullien and Sand-Zantman (2020) review contributions to competition policy; Jullien, Pavan and Rysman (2021) pay particular attention to the pricing of platforms. To complement these surveys, we review the recent literature from two specific angles. First, we focus on marketplaces, a category of platforms that facilitate the transactions between buyers and sellers of some products or services. Second, we concentrate on

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the non-price strategies of these platforms like user steering, self-preferencing, reputation systems, data and targeting, privacy, and user protection. Since many users can freely access many marketplaces today, these non-price strategies are especially important.

We structure our survey as follows. Section 2 defines two-sided platforms and describes the singularities of marketplaces. Section 3 outlines general regulatory challenges and discusses user protection and privacy issues. Section 4 explores how marketplaces manage competition among sellers and studies hybrid marketplaces, data and targeting. Throughout, we review existing contributions and emphasize gaps in the literature.

2. Two-sided platforms: Definition and singularities

2.1 Definition

A platform can be defined as an *entity that brings together economic agents and actively manages network effects between them* (Belleflamme and Peitz, 2021, p. 29). Think, for instance, of Airbnb, which *brings together* accommodation owners ('hosts') and travellers ('guests'). Airbnb facilitates the interaction between the two groups by operating an infrastructure that allows hosts to rent out their accommodations to guests. Because this infrastructure becomes increasingly valuable the more it is used, users are subject to *network effects*; that is, users enjoy benefits that depend on the decisions of other users. Through the various strategies that it deploys (pricing, reputation system, insurance, etc.), Airbnb *actively manages* these network effects. Network effects are central to the economic analysis of platforms as they allow platforms to *create* value (by bringing users together and making them realize how beneficial it is for them to interact) and *grow* value (by attracting additional users and, thereby, making their services even more valuable).

We focus here on two-sided platforms—called 'marketplaces'—that facilitate the transactions between 'buyers' and 'sellers' of some products or services (like Airbnb does). Marketplaces deserve specific attention because they exhibit three features that other platforms do not combine (e.g., social media, game consoles, payment systems, or dating apps). First, marketplaces must manage the negative network effects that exist within the group of sellers (other things equal, the value for each seller on the platform decreases as more sellers participate). Second, marketplaces can resort to a particularly wide range of strategies to price their services (membership fees, commissions, royalties, ...) and govern transactions (seller selection, administration of seller pricing, rating and recommendation systems, return policies, ...). Third, marketplaces can decide to offer their own (first-party) products or services as complements – or substitutes – for those proposed by the (third-party) sellers on the platform.

2.2 Launch

The launch of any platform is fraught with a major difficulty, known as the *chicken-and-egg problem*. Because of the presence of network effects, users must base their decisions on what they expect other users will do. As a result, a ‘good’ equilibrium, in which users participate because they expect other users to participate as well, always coexists with a ‘bad’ equilibrium, in which users refrain from participating because they expect that other users will not participate either.²

The conundrum for platforms is to avoid being stuck in the ‘bad’ equilibrium. The solution chosen by many marketplaces (e.g., Amazon) is to operate first as resellers of other firms’ goods (or sell their own goods). Buyers are then keener to join as they do not have to speculate about sellers’ participation. The infrastructure can be opened, at a later stage, to third-party sellers, using the existing base of buyers as bait to attract them. Arguably, this two-stage launch process is more adequate for marketplaces than for other types of platforms.³ Marketplaces also differ because of the competition among sellers, which affects the launch phase in conflicting ways: A nascent marketplace is more attractive for sellers if the number of sellers remains relatively small (because competitive pressure is reduced) but if so, it is necessarily less attractive for buyers.

2.3 Strategies

To steer users’ participation, platforms combine price strategies (by charging users for joining and/or using the platform’s infrastructure) and non-price strategies (by setting governance rules, calibrating the infrastructure, offering value-added services, etc.). Network effects weave these strategies together. First, prices for different groups of users are interdependent. The reason is that a price change on side X affects participation not only on side X but also on side Y (because of cross-side network effects), which makes the platform reconsider its pricing on side Y. As a result, it is the structure of prices that matters and not just their levels.⁴ Moreover, this structure is often skewed: Many platforms – and marketplaces are no exception – charge low prices (possibly below cost) on one side while compensating by charging higher prices on the other side.

Second, non-price strategies shape the strength of network effects on the platform and, thereby, condition price strategies. For instance, when a marketplace makes it easier for sellers to display their offerings on the platform, it raises the value that sellers get from each transaction, which is equivalent to saying that buyers now exert a stronger cross-side network effect on sellers. This

² Both equilibria correspond to a self-fulfilling prophecy, insofar as the users’ initial expectations are eventually realized.

³ A dating service, for instance, can hardly substitute itself for one of the sides of the market.

⁴ Rochet and Tirole (2006) take this as the defining characteristic of two-sided platforms.

strategy drives the marketplace to adjust its price structure as follows: The prices for sellers can be raised and it pays to lower the prices for buyers (as attracting buyers has become more profitable). This is a manifestation of the “seesaw” principle of Rochet and Tirole (2006, p. 659).

Again, the negative same-side network effects among sellers make the relationships between price and non-price strategies more complex on marketplaces. Belleflamme and Peitz (2019 and 2021, Chapter 6) address how seller competition affects marketplaces’ decisions regarding pricing and product variety, as well as the number of marketplaces that carry trade.

3. Regulating marketplaces

3.1 Structure of markets with platforms

On two-sided platforms, cross-side network effects generate positive feedback loops: More users in group A attract more users in group B, who attract in turn more users in group A, and so on. As a result, a single platform may end up attracting most of the potential users, leaving little business to competing platforms. Scale economies and data-driven self-reinforcement effects make such ‘tipping’—or ‘winner-takes-all’—situations more likely.⁵

There exist, however, opposing forces that lead users to join different platforms. First, like in any market, competition can be softened through *differentiation*, either horizontally (users have diverging tastes for different platforms) or vertically (users rank different platforms in terms of quality). For instance, small marketplaces can withstand the competition of global giants (e.g., Amazon or Alibaba) by focusing on specific geographies (e.g., Bol in the Netherlands and Belgium), product categories (e.g., Goat for sneakers), or high-end customers (e.g., Matches Fashion for luxury clothing). Second, users do not need to agglomerate on a single platform if they can enjoy network effects coming from different platforms at the same time. This is so if users can visit more than one platform at a time (*multihoming*) or interact in some way with users registered on other platforms (*interoperability*).⁶ Finally, *negative same-side network effects* weaken the power of positive feedback loops. For instance, smaller marketplaces can provide sellers with an environment where they face less intense competition.

Marketplaces can influence the previous forces. For instance, they can sign exclusive agreements with sellers to prevent multihoming; they can also restrict the sellers’ ability to trade with buyers

⁵ See, e.g., Hagiu and Wright (2023) who study the competition between platforms that improve their services through learning from user data.

⁶ Jullien, Pavan, and Rysman (2021), among others, discuss how multihoming affects competition between platforms. In contrast, the issue of interoperability has received scant attention in the literature on two-sided platforms so far.

outside the platform.⁷ By making tipping more likely, platforms choose to compete “*for the market*,” that is, to become the winner that takes all (or most) of the market. In contrast, by facilitating multihoming or interoperability, platforms compete “*in the market*” as they accept to coexist.

3.2 Regulatory issues

Economists often argue that competition is the best form of consumer protection. Following this view, competition policy is key to guaranteeing desirable market outcomes. But recently, some researchers argue competition policy protects users on digital platforms insufficiently. According to Crawford et al (2021), competition policy does not protect consumers against fraudulent firms, may not protect consumers with limited information, a limited ability to process information, or inert consumers who fail to select their preferred option. They further call for stricter consumer-protection regulation to alleviate such shortcomings. Indeed, also the EU’s Digital Markets Act reflects a move towards more regulation of online platforms. We now discuss why platforms might insufficiently protect some of their users.

3.2.i. User protection

As market designers, marketplaces are in an ideal position to intervene for their users. But to what extent do marketplaces want to protect their users? According to the seesaw principle, a marketplace needs to encourage users of all sides to interact, which is why it needs to ensure all users get sufficient value. From this perspective, a marketplace may abstain from and intervene against practices that impose significant losses on some users, so we could trust marketplaces to prevent excessive harm to some users. But marketplaces may not induce an optimal level of intervention. Indeed, already Rochet and Tirole (2006) show that platforms put too much weight on marginal users and may not balance benefits between different sides to maximise total surplus.

Systematic consumer mistakes can also undermine the seesaw principle and require further intervention. Johnen and Somogyi (2022) study drip pricing, the common practice on marketplaces to reveal various fees and features—like shipping fees, complementary insurance, service fees etc.—later in the purchase process. They cite a wide range of evidence showing that drip pricing induces consumers to systematically underestimate the total price they pay for a product and therefore reinforces consumer mistakes. They show that a platform has strong incentives to practice drip pricing to reinforce such mistakes. Platforms even have stronger incentives to hide seller fees than

⁷ One way to do so is to impose a Price Parity Clause (PPC), whereby sellers cannot offer their products or services at more favourable conditions through other sales channels. On the impacts of PPCs on competition on and between platforms, see, e.g., Calzada et al. (2020), Edelman and Wright (2015), Gomes and Mantovani (2022), or Maruyama and Zennyo (2022). On multihoming and competition between platforms, see Belleflamme and Peitz (2019).

sellers themselves. Reinforcing mistakes makes products appear cheaper than they are and generates activity, even though it shifts surplus from consumers to sellers. Thus, if consumers make mistakes we cannot rely on the seesaw principle to restrain platforms and induce reasonable outcomes for all users.

Fakes (that is, counterfeit products) are other key challenges for user protection on digital marketplaces (Crawford et al., 2021; OECD/EUIpo, 2019; US Government Accountability Office, 2018). The EU currently relies on marketplaces to self-regulate fakes to protect brands and consumers (European Commission, 2020). This places marketplaces at the center of the fight against fakes and begs the question of whether they have appropriate incentives to intervene. But the theoretical literature currently pays little attention to the issue. An exception is Jeon, Lefouili and Madio (2022), who study a platform's incentive to delist products that infringe on the intellectual property of sellers. IP-infringing products have lower quality and reduce sellers' incentive to innovate, but they can also induce competition and lower prices. Thus, holding platforms liable for IP infringements only benefits consumers if it encourages sufficient innovation.

Fakes on marketplaces necessitate further research because they markedly differ from the counterfeit products that economists have been considering so far. Existing work has mostly focused on so-called non-deceptive fakes, which consumers purchase knowingly (see Belleflamme and Peitz (2014) for a survey). From this perspective, consumers are fully aware (in equilibrium) that they purchase a fake and they accept lower quality in exchange for a lower price. Thus, fakes harm consumers only indirectly (e.g., by discouraging investment in new products). In contrast, most fakes sold on marketplaces are deceptive, as they closely resemble originals in appearance and price. As a result, consumers purchase fakes unintentionally and suffer significant harm from substandard products (OECD/EUIpo, 2019; US Government Accountability Office, 2018).

3.2.ii Privacy

Privacy is a key issue in the policy debate on digital platforms (e.g., Crawford et al, 2021). The current economic work usually takes two perspectives. First, data gathering imposes a direct privacy cost on consumers (e.g., Dimakopoulos and Sudaric, 2018; Kox, Straathof and Zwart, 2017). Second, privacy issues capture information frictions: Informed firms target products or ads, and consumers may face larger prices or try to stay anonymous (e.g., Bergemann and Bonatti, 2022; Montes, Sand-Zantman, and Valletti, 2019; see also Section 4.3).

But existing theoretical work mostly ignores other important aspects of privacy on marketplaces: According to Acquisti, Taylor and Wagman (2016), many consumers do not know or understand what their data is used for. In line with this perspective, Bian, Ma, and Tang (2022) show that app

users have wrong ideas about how apps use their data. For instance, after Apple's app store started to inform users of how apps use their data, the demand for apps dropped by 14%. Together with the common perspective of many economists and practitioners that users pay with their data to access marketplaces (see, e.g., Crawford et al., 2021), this suggests users do not actually understand what and how much they are paying. As this may have important implications for welfare and optimal privacy policies, it seems crucial to explore this further.

4. Managing competition on platforms

4.1. Choosing the degree of competition among sellers

We first discuss price and non-price strategies that impact competition between third-party sellers.

4.1.i. Number and quality of sellers

Some above-mentioned articles (Belleflamme and Peitz, 2019 and 2021) explore how platform strategies impact the degree of competition between sellers. But competition between sellers also influences the market structure of platforms. Karle, Peitz and Reisinger (2020) show that sellers can avoid fierce competition by joining different platforms with sufficiently many singlehoming buyers. These platforms may maintain high fees even though sellers on their marketplaces sell close substitutes. However, if seller competition is soft, sellers rather agglomerate on a single platform. In this scenario, marketplaces compete *for the market*. In contrast to a common presumption of competition policy, market concentration and fees are negatively correlated.

The previous articles focus on marketplaces' price strategies. But, marketplaces also use non-price tools, like quality controls and information transmission. It is then important to analyse the interplay between the two types of strategies and their joint impact on total surplus. Teh (2022) uses an abstract setting covering various non-price strategies that influence competition. He identifies seller-aligned fee instruments that induce a platform to relax competition too much, such as seller participation fees, or proportional fees when sellers' revenues are similar to their profits. In turn, volume-aligned fee instruments encourage the platform to raise the volume and intensify competition too much. Examples are per-transaction fees or external advertising revenue.

A particularly salient non-price strategy of marketplaces is the implementation of rating-and-review systems. Marketplaces design rating-and-review systems to control and inform about product quality in order to build trust among strangers. A quite large literature on reputation in markets provides insights into how reputation systems may work (see Tadelis (2016) for a survey, and Simon and Shelegia (2021) for a recent contribution). But few articles ask how a two-sided platform optimally designs a rating system. An exception is the recent work by Johnen and Ng (2023). In

their framework, consumers reciprocate a sufficiently large value for money by rating the seller positively. Thus, sellers can use prices to influence their ratings, which undermines how well ratings signal product quality. A marketplace designer, however, can use non-price tools (e.g., quality controls, encouraging raters with reminders or discounts, or the degree of competition) to influence pricing and how informative ratings are. The authors show that consumers prefer more-informative rating systems than the average seller, so a marketplace that favours sellers may induce less-informative ratings.

4.1.ii. Prominence and steering

Online marketplaces help consumers find products. But the literature suggests several reasons why marketplaces may steer consumers towards certain products. Online intermediaries may engage in self-preferencing and favour their own products (Cornière and Taylor, 2019) or deliberately recommend suboptimal products to generate clicks (Hagiu and Jullien, 2011 and 2014). Sellers may compete in commissions to bias an intermediary's recommendations (Inderst and Ottaviani, 2012; Murooka, 2015), and commissions may raise prices (Ronayne, 2021). More recently, Teh and Wright (2022) show that steering leads to higher commissions and seller prices so that intermediation only benefits consumers if search costs without an intermediary are sufficiently high.

In these articles, consumers are rather sophisticated and correctly infer in equilibrium how intermediaries steer them, which limits the harm consumers suffer from steering. Recently, Heidhues, Köster and Kőszegi (2023) provide a new framework in which intermediaries steer “fallible” consumers who make statistical and strategic mistakes. They argue that much of A/B testing that websites do to optimize their web design and generate clicks is actually about this type of steering. Steering fallible consumers is much more harmful than previously studied forms of steering (i.e., steering sophisticated consumers) because it induces consumers to systematically purchase too much or the wrong product. If consumers are indeed fallible, these results call for more-active regulation of such practices. This issue clearly deserves further study.

4.1.iii. Collusion on platforms

Recent results by Calvano et al. (2020), that pricing algorithms can collude, spurred the debate on the extent of collusion between sellers on online marketplaces. As market designers, platforms may influence seller collusion. So, an important first step is to understand which market forces drive a platform to fight or facilitate collusion. The seesaw principle suggests that platforms may fight or facilitate collusion to balance benefits between users. Schlütter (2022) argues that platforms' Most-Favored Nation Clauses—which oblige sellers to not offer better conditions elsewhere—limit

incentives of sellers to deviate from collusion on a different sales channel and thereby align incentives between the platform and sellers to foster collusion.

But even if platforms would want to fight collusion, how could they do so? Johnson, Rhodes and Wildenbeest (2020) explore how a platform can assign prominence to sellers via their search algorithms to fight collusion. Surprisingly, assigning prominence to the cheapest seller leads to more collusion than a dynamic version of prominence that allows sellers to keep prominence for several periods as long as they do not raise prices. Thus, subtle changes to a platform's prominence rules can have a strong impact on collusion on the marketplace.

Finally, given that pricing algorithms may be able to collude, we should better understand whether our existing models of collusion also characterize the way that algorithms collude. We are not aware of much work in this direction.

4.2. Hybrid marketplaces

Hybrid marketplaces host third-party sellers and sell their own products (like Amazon does). The literature identifies the harms and benefits of the hybrid business model. As we mentioned in Section 2, a marketplace may offer substitutes for third-party products to overcome buyers' hesitation to join the marketplace (Hagiu and Spulber, 2013). But hybrid marketplaces may also distort competition. According to Anderson and Bedre-Defolie (2021, 2022), a hybrid marketplace enjoys a double-dividend from raising commissions: Larger commissions raise the marketplace's revenue from third-party sellers, and—because third-party sellers raise prices—steer sales towards the platform's own products.

In contrast, hybrid marketplaces may reduce commissions to reinforce network effects and generate more transactions for their own products (Etro, 2021), or introduce a lower-quality substitute and reduce a third-party seller's per-unit fees to steer sales towards and extract more revenue from its higher-quality product (Shopova, 2023).

Hybrid marketplaces may also engage in self-preferencing or imitate successful products. A common proposal to prevent these practices is to ban the hybrid business model. Hagiu, Teh and Wright (2022) argue that such bans can lower total surplus because fewer transactions take place and consumers may no longer be able to combine a superior product with the convenience of using the platform. Banning the dual mode, however, can prevent imitation and raise incentives for third-party sellers to innovate.

Hervas-Drane and Shelegia (2022) show that a retailer moves to the hybrid business model i) to soften competition, ii) when capacity constraints prevent her from offering more variety, and iii)

to better learn which products are worth imitating. Banning the hybrid model eliminates welfare benefits from a wider product variety. Instead, they argue in favour of regulating platform fees.

4.3. Data and targeting

A common argument among economists and practitioners is that consumers pay for access to online platforms with their data (e.g., Crawford et al., 2021). But data have some important differences to money that we need to investigate. For example, consumers who pay with data also allow platforms to better predict the characteristics of other consumers; so, gathering data on some users induces externalities on other users. Some recent articles study such data externalities (Acemoglu et al., 2022; Bergemann, Bonatti, and Gan, 2022; Bergemann and Bonatti, 2022; Choi, Jeon, and Ki, 2019; Galperti, Levkun, and Perego, 2023; Ishihashi, 2021; Kurpilani and Philippon, 2021).

The vast majority of articles on data and targeting suppose that data help firms learn something about consumer preferences. Platforms or sellers then use this information to target ads (e.g., Dimakopoulos and Sudaric, 2018; Kox, Straathof and Zwart, 2017), imitate successful products (e.g., Hervas-Drane and Shelegia, 2022), or target prices. Already Vives and Thisse (1988) explore how sellers who use information on consumers' preferences to target prices. Such targeted prices i) extract more surplus from consumers with strong brand preferences, but also ii) reinforce competition, because firms can lower prices on some consumer segments without cannibalizing profits on others. Overall, sufficiently precise data on preferences reinforce competition. One might then be tempted to conclude that data and targeted prices benefit consumers. Yet, some articles suggest the opposite. Bounie, Dubus, and Waelbroeck (2021) study an intermediary who sells data to competing firms. The intermediary optimally sells to each firm precise data about consumers with strong brand preferences to improve surplus extraction and rather blurry data about the remaining consumers to relax competition. In this way, a data intermediary can allocate information to maximize industry profits.

Another view is that data may help platforms and sellers to learn not just about consumer preferences, but also whether they are more prone to making suboptimal choices. Heidhues and Kőszegi (2017) show that such naivety-based discrimination harms consumers and lowers total surplus more than preference-based discrimination. Johnen (2020) finds that naivety-based targeting relaxes competition and raises profits more than preference-based targeting. Indeed, Schoar and Ru (2016) provide evidence that such naivety-based targeting is highly relevant in the US credit-card industry. These results suggest that the impact of data and targeting crucially depends on what firms exactly learn about their consumers.

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