/BOOK REVIEWS

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Belleflamme, Paul, Martin Peitz. 2021. *The Economics of Platforms: Concepts and Strategy*. **Cambridge: Cambridge University Press, 256.**

In today's economy, there are only a few industries which digital platforms have not yet penetrated or even become a dominant business model for making and managing markets. Young generations tend to think of platforms as part of the natural order of things, those entering working life often see them as an exciting career opportunity, while older people grudgingly learn how to use them.[1] Their ever-increasing presence in our daily lives coupled with the economic power of some of the most well-known examples (Alibaba, Google, Amazon, Facebook, Uber, etc.) makes them a hot topic of many public policy and political debates in developed countries. It is a widespread opinion that the platforms' economic power translates into a strong political influence, whereas some people even get drawn into conspiracy theories that surround them.

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1 Inspiration was taken from Douglas Adams' explanation of how people react to technologies (Adams 2003, 95).

While in the past two decades academic research has tried to keep up with platforms' rapid development, there is still little coherent knowledge about how they operate and their economic incentives under different market or regulatory constraints.[2] Two very well-known authors in the field, Paul Belleflamme and Martin Peitz endeavor to fill this gap with their latest book. They emphasize the need to reexamine the fundamentals of economics of platforms, which are essential for any further discussions on how to reform competition, tax, or sector-specific regulatory policy. How do we define a platform and what types of platforms exist? How do platforms manage network effects and how do they internalize them in their pricing decisions? What does it take to establish and grow a platform? How do platforms' design choices affect how different groups of users interact? These are some of the questions the authors propose to cover through a combination of economic theory expressed in words, accessible formal models, and real-life cases.

For those readers who are newcomers to the field of economics of platforms, the authors begin the book with an overview of network effects. Network effects essentially means that one user's utility from using a platform depends on the number and identity of other users on that platform. The role of platforms, therefore, consists of enabling user interactions, through their ability to internalize network effects. In other words, platforms step in where coordination and asymmetric information problems would otherwise prevent users from interacting in nonorganized marketplaces.

It is common to distinguish between positive and negative network effects, depending on whether the participation or activity of an additional user increases or decreases the value, i.e., utility for others. To illustrate this, the authors mention social norms, languages, and communication devices as examples of the former, and road congestion and traffic jams as examples of the latter. Positive network effects that exist among the same group of users (within group network effects) lead to an *attraction loop*. Higher activity of some group members, increases the activity of others, feeding back into the group's overall activity level. Most platforms, however, operate a more complex model where two or more distinguishable groups interact – typically sellers and buyers, or users and advertisers (two-sided or multisided platforms). The authors explain how mutually positive cross-group network effects lead to an *attraction spiral*. Nevertheless, it is also common to observe what they denote as an *attraction/repulsion pendulum*, i.e., a situation in which cross-group network effects are positive in one direction but negative in the other. This is typically the case with advertisement-financed content

2 Evans and Schmalensee made one of the first important contributions (Evans, Schmalensee 2016). For a book review, see Begović (2018).

platforms (e.g., Youtube). A bit less common are examples of platforms with an *attraction spillover*, "when one group positively affects, but is unaffected by, the other group" (p. 17). In the authors' view, the existence of network effects among users is a necessary but not a sufficient condition to define a platform. Platforms are entities that actively manage network effects by reducing the transaction costs that arise concerning, for instance, search, matching, screening, contracting, trust, dispute resolution, etc. The authors then proceed to develop a typology of platforms depending on the type of network effects they leverage (value creation) and different means to charge users (value capture).

The second chapter is devoted to common methods of managing network effects – the rating and recommender system and the use of big data, which platforms use to reduce the asymmetric information problem, typically between sellers and buyers. Within-group network effects on the buyer side arise since the more buyers rate and review the product, the better informed other buyers are before making a purchase, self-reinforcing their participation on the platform. Moreover, with more information about product quality, adverse selection on the seller side tends to decline (cross-side network effects). Yet, the authors acknowledge that "separating the wheat from the chaff" can be difficult because of the noise in ratings and reviews, buyers' herding behavior, and strategic distortions by sellers (e.g., fake reviews). It has been shown that platforms have limited capacity to curtail such behavior, either because it is costly for them or because they want to encourage buyers' experimentation with less popular products. The authors further explain how recommendations provided by platforms generate network effects in a similar manner as reviews. The more users join the platform, the more information feeds into the recommender system. Moreover, it is common for platforms to collect and combine data from various sources (Big Data), again self-reinforcing the platform's attractiveness for new users, owing to its ability to provide better matches. This is, in the authors' view, one of the sources of market power.

Building on previous analysis, the authors introduce the concept of network goods. The idea is that users are willing to pay a price for using a platform, which depends on the benefit they derive from other users' presence or activity, and is separate from the intrinsic valuation of goods and services offered. For instance, those who use Dropbox for storage derive benefits from sharing their folder with other users. Similarly, Spotify users are better off if they can access each other's playlists. As the authors explain, user demand for network goods is specific as there may be several demand levels for the same fee charged by a platform. This is because the users' purchasing decisions are interdependent: the same fee may be perceived as too high or too low, depending on users' expectations about the number of other users on the platform. In a dynamic context, it has been shown that both the "null network" and large network" equilibria are stable. While the pricing decision may be key to attracting a critical mass of users, the authors explain that both a monopoly and a perfectly competitive industry fail to achieve an efficient outcome. The network is smaller than socially optimal as users do not internalize the positive consumption externality that they exert on other users. In addition to pricing, another important decision of a platform is whether or not to be compatible with other networks that its potential users can join. The authors explain that, when network effects are strong enough, competition between incompatible networks may lead to market tipping (a single platform attracts all users).

In the next chapters, the authors primarily focus on two-sided platforms, whose value creation process primarily consists of coordinating the presence of two groups of users. In Chapter 4, they explore four interrelated questions on how to grow a platform. Firstly, they consider economic trade-offs between operating a two-sided platform and a vertically integrated firm. In the former case, the platform neither owns its means of production nor hires service providers. It merely enables transactions, as opposed to controlling them as a vertically integrated firm. Building on the Grossman-Hart-Moore property rights approach (Grossman, Hart 1986; Hart, Moore 1990), the authors explain that residual control rights over the provision of the service stay with independent professionals when running a platform. As a consequence, independent professionals have stronger motivation to exert effort and they can more easily adapt, in line with their private information. In contrast, vertical integration fares better when there are high coordination costs that arise because of externalities among different professionals, goods, or services. To reconcile these conflicting incentives, it is not rare for firms to combine the two modes of operation for different goods and services. For instance, Amazon is both a reseller of books and a marketplace for electronics. Next, Belleflamme and Peitz proceed to revisit one of the most well-known questions in the platform economics literature, the so-called chicken-and-egg problem (Caillaud, Jullien 2003). The question is which group of users should be attracted first to generate optimistic expectations of the other group and spur the attraction spiral. Findings in the literature suggest that platforms typically subsidize the group that exerts a larger positive cross-side network effect and monetize the other group. The authors describe this behavior as a divide-and-conquer strategy. In addition to the size of the network effects, platforms also care about the costs that are incurred to attract a particular group. However, it turns out that merely enticing users to join does not amount to a successful platform. Belleflamme and Peitz briefly introduce platform design decisions that increase the level of trust among users and, consequently, increase their activity levels. Interestingly, some of these design decisions have a positive impact on both groups (e.g., matching algorithms, a minimum quality standard, insurance against certain risks, payment systems), while others reduce the risk for one group, typically buyers, at the sellers' expense (e.g., return policies, seller rating systems, liability rules). Lastly, Chapter 4 looks into strategies that platforms may use to expand the range of services offered, which are either substitutes or complements to those offered by third-party providers.

Chapter 5 offers an overview of another set of issues that have spurred much attention in the literature – platform pricing. Belleflamme and Peitz first introduce the reader to some basic findings only to later address several advanced issues. Before even deciding which side of the market to charge and how much, platform operators should decide between two types of fees. Membership fees determine access to the platform, whereas transaction fees determine users' activity levels. Both types feature some disadvantages. While membership fees may discourage participation in the early stage when users are not confident of finding counterparts, transaction fees may prove inefficient if users can bypass the platform when concluding a transaction. As to the price structure, the platform typically sets a low price on one side (the "subsidy side") and a high price on the other (the "money side") (p. 144).

As a general principle, the group of users that is more sensitive to price changes and/or exerts a stronger cross-group network effect pays a lower price, often below cost. The authors elaborate on why cross-group network effects, in addition to market power, may induce a monopoly platform to introduce a socially inefficient fee structure. Moving to more advanced topics, Belleflamme and Peitz first look into platform behavior when pricing is constrained. This is either due to platforms' inability to resort to negative or below-cost pricing on one side, or when a platform is forced to set the same fee on both sides. Next, the authors consider an interesting case where both within-group and cross-group network effects are present, for instance, on ride-hailing platforms such as Uber. To conclude their examination of pricing instruments, the authors explore the question of platforms that can price discriminate among sub-groups of users that have different stand-alone or different network benefits. Readers are likely to appreciate their analysis of the widely used freemium strategy, i.e., when users of the "free" version pay for the platform services with their exposure to advertising.

The last chapter of the book, entitled "Platform Design", looks into various price and non-price strategies that "the platform can use to determine, endogenously, the network benefits that users will get from their interaction" (p. 185). This is perhaps the most interesting part of the book, with several fruitful avenues for future research. The first segment looks into the incentives of platforms to constrain the number of participating sellers with the view of loosening the competition among them. The authors find that a platform's decision to discriminate sellers will critically depend on a platform's ability to charge one or both sides of the market. Next, they look into platforms that specialize as price comparison engines. By their very definition, such platforms should aim to make sellers' pricing transparent and protect buyers from being exploited by hidden fees. Yet, as the authors show, under certain conditions, their incentives to do so may not be strong enough. A related question is when and to what extent platforms may want to degrade the quality of their recommender system or provide biased recommendations, as their profits may first increase and then decrease with the level of accuracy they provide. Finally, the authors examine platforms' incentives to collect and process buyers' data to improve sellers' ability to price discriminate, as this increases the total value of transactions.

Overall, this is a much-needed book. It is rather successful at portraying some of the key questions in the literature, which can be very helpful to researchers in the field and policymakers, but also entrepreneurs considering establishing and growing platform businesses. However, the authors should have, perhaps, made a better balance between long introductory topics, which are probably already familiar to most of its potential readers, and more advanced issues, which are sometimes presented in a rather summary way. The authors should also be praised for introducing a wide array of new terms that define platform-specific phenomena. In addition, they made a considerable effort to link formal economic models with real-life cases, which makes their discussions relevant and engaging for the reader.

Nevertheless, an impressive body of research has developed in response to the development of markets with multi-sided platforms. This has created a challenge for the authors to choose the most appropriate structure. They sometimes examine similar questions under different chapters without offering a linking thread. Moreover, as Belleflamme and Peitz acknowledge in the preface and concluding remarks, they had to make compromises regarding the scope of the book. The most important missing piece, which the authors intend to cover in the new upcoming book, is platform competition. High market concentration in some well-known markets may suggest that, in the long run, only a single platform is viable. Yet, this does not lead to the conclusion that such a platform does not face competitive pressure. On the contrary, as the authors mention, many of the old concepts, such as market contestability or competition *for* as opposed to competition *in* the market, need to be revised in the platform context. Moreover, the idea that there may be substitutes for platform services offered to only one side of the market, or that certain groups of users can multihome, would certainly bring an interesting twist to many of the findings. Another issue that is discussed only briefly in this book, but is also unjustifiably neglected in a broader academic literature to date, is non-price platform design decisions. As the authors mentioned in Chapter 4, platform design decisions can increase trust among users and be key to platform expansion in many markets with pronounced asymmetric information. Sometimes these trust-building mechanisms are beneficial to both sides, sometimes they have a countervailing impact on different groups of users, or they may create considerable costs for the platform. Not only do they affect the size of the network effects, as the authors point out, but they may also interfere with the pricing decisions of platforms on one or both sides, or even subgroups of users. A related question is to what extent platforms compete in non-price design dimensions, which also depends on their salience to the users. Furthermore, one can also question whether design decisions may lead to vertical differentiation among platforms, creating space for more than a single platform to operate despite strong network effects. The analysis may get even more complex once one takes into consideration different government regulations that constrain platforms' choices, for instance, data protection rules.

It is quite likely that another reader would come up with a completely distinctive set of questions that are of particular interest for further research as the platform economy continues to flourish. This book is a reminder that researchers in the field still have a lot on their plate, while every policy intervention is a demanding and delicate undertaking.

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