

Platform Economics and Tech Giants: Competition *in* the Market Versus *for* the Market and the Implications for Regulation and Merger Policy*[†]

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Abstract

We draw upon research in *platform economics* to inform the debate surrounding the governance of powerful tech companies. Focusing on the distinction between competition *in* and *for* the market, which figures prominently in three recent, high-profile reports, we emphasize the following points. First, in platform markets, high concentration may be healthy. Second, even so, the *lock-in* effect may allow inefficient platforms to remain entrenched in their dominant position. Policies such as “data openness” that have been proposed may reduce this, but their effectiveness is unproven. Third, there is a case to be made for tightening large tech platform’s ability to acquire startups, but this case depends, in a surprising way, on lock-in not being too strong. Consequently, lock-in mitigation and merger-restrictions may potentially be seen as complementary policy tools.

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1 Introduction

Over the past three decades, as the Internet has revolutionized society or, at the very least, disrupted many aspects of it, the field of microeconomics has seen the emergence of a subfield called *platform economics*. Most of the work in this area is done by “industrial organization economists,” specialized in analyzing how competition policy affects markets and how it can be designed to make them function better. A pervasive theme in platform economics has been that many aspects of conventional wisdom that apply in more traditional markets may not apply in the online world and thus need to be carefully reexamined.

Despite this overall attitude of novelty regarding the characteristics of platform market, the *methodology* used in platform economics involves making incremental adjustments to the way markets are typically studied, rather than taking radically new approaches. Platform economics uses the traditional paradigm in which agents (users and firms) maximize their well-being and outcomes are measured and ranked in terms of consumer surplus and profits. To be sure, there are some minor exceptions to this rule, particularly with regard the consideration of “behavioral” economics as part of the mix. However, for the most part, platform economics asks: how does, as Gary Becker called it, “the economic way of looking at life” guide us to think about markets in which the key firms are online intermediaries such as search engines or social networks, rather than auto manufacturers or breakfast cereal producers?

The purpose of this piece is to articulate, in straightforward, non-technical terms, how some of the broad contours of platform economics might inform current debates regarding competition policy towards tech platforms. To help organize the discussion, we focus on particular components of three recent, high-profile reports (Crémer, de Montjoye, and Schweitzer, 2019; Furman, Coyle, Fletcher, McAuley, and Marsden, 2019; Scott Morton, Bouvier, Ezechia, Jullien, Katz, Kimmelman, Melamed, and Morgenstern, 2019),¹ which, together, have created a great deal of buzz in the antitrust community. Although we make use of these reports and their recommendations as sources of material for discussion, it should be made clear that we in no way seek to review them in a comprehensive way.

¹The first of these was commissioned by the European Commission, the second was commissioned by the UK government, and the third was commissioned by the George J. Stigler Center at the University of Chicago.

We center our analysis around an interesting distinction, which each of the reports makes prominently. This is the one between “competition *in* the market” and “competition *for* the market.” In intuitive terms, this distinction can be understood as follows. On the one hand, a set of active, similarly-sized firms selling, say, shoes, could be said to compete *in* the shoe market. On the other hand, a hypothetical new tech startup with a state-of-the-art search algorithm might, according to this terminology, hope to compete *for* the search market and take over Google’s dominant position. We begin, in Section 2, by observing that platform industries are often highly concentrated, and we discuss the role of “network effects” – the phenomenon whereby users of a given type of service (e.g., social networking, video sharing, ride-hailing) tend to like to cluster together on a particular platform (e.g., Facebook, YouTube, Uber) – in driving this pattern.

Section 3, first notes that, as the three reports point out, platform industries often seem destined to lack competition *in* the market. It then addresses the question of whether this is necessarily a bad thing. Drawing from the classic model of [Mankiw and Whinston \(1986\)](#) and the more recent one of [Tan and Zhou \(2021\)](#), it reviews key aspects of the mechanics behind platform competition. In doing so, it concludes that, in a given platform industry, the economic benefits associated with high concentration (fewer overall expenditures on fixed costs and more intense network effects) may outweigh the costs. At the same time, it points out some caveats that must be taken into account when considering this possibility, as the models do not incorporate dynamic processes or interdependencies between platforms’ primary markets and others that are, say, complementary or downstream.

Section 4 turns to competition *for* the market. It first points out that recent discussion regarding whether dominant platforms have the ability to become “entrenched,” traces back to an older debate in economics over how much credence to give to the phenomenon of “lock-in.” On one side of this debate, proponents of lock-in argue that certain initial conditions can lead economic systems to persistently glide down an inefficient path. On the other side, lock-in skeptics argue that countervailing forces make such outcomes rare.

We then address the issue of whether dominant platforms are, themselves, likely to be entrenched and thus protected from competition *for* the market. Here, we emphasize the point that, up until quite recently, both empirical observations and theoretical arguments seemed to provide strong

backing for the claim that, in this context, lock-in was not a major issue. In particular, on the empirical side, we point to cases such as the quick demise of the previously dominant MySpace coinciding with the rise of Facebook. On the theoretical side, we discuss the potentially powerful effect that various tools at the disposal of upstart rivals could have in helping to unseat an incumbent platform that is resting on its laurels.

This section concludes by considering the role of dominant platforms' collection of and access to user data. It argues that there is a clear incentive for such firms to try to create conditions that make themselves as well-protected from rivals as possible. Thus, initiatives such as a "code of conduct" of the sort proposed by [Furman et al.](#) appear well-motivated as means to mitigate lock-in. Nevertheless, some reservations are warranted, for two reasons. First, as it discusses, recent studies cast doubt on the value of data to these firms for such purposes, raising the question of how large of an impact such policies could potentially have. Second, it notes that, since, fundamentally speaking, platforms often create by innovating in a *permissionless* way to reduce the transactions costs of economic actors ([Munger, 2018](#)), such regimes must be careful not to create an environment that stifles the emergence of rivals by cementing incumbents' existing practices as industry standards.

Section 5 focuses on dominant platforms' acquisitions of startups. It takes as its motivation the current debate over whether merger policies should be adjusted to demand a higher level of scrutiny before such transactions are allowed to go forward. While reviewing recent theoretical literature on this topic, in this section, we argue that the appropriate level of strictness for such merger policies is closely linked to the strength of lock-in. When lock-in is weak, there is a better case for a tight merger policy than when lock-in is strong.

Specifically, in situations where lock-in is not so strong, a lax merger policy is likely to be particularly harmful, because a dominant incumbent has a strong incentive to acquire a potential rival in order to preserve its position. Moreover, as [Kamepalli, Rajan, and Zingales \(2021\)](#) point out, the prospect of such acquisitions may discourage users from switching to a new platform. This, in effect, artificially increases lock-in and reduces the startup's market value in the merger. This, in turn, reduces new startups' incentives to invest in innovation. In contrast, when lock-in is strong to begin with, startups already have little hope of displacing dominant incumbents. Thus, the prospect for a startup to be acquired by a giant might play an important role in encouraging innovation.

Finally, we argue that, because of this configuration, policies that mitigate lock-in and those that increase the scrutiny of mergers are likely complementary to one another, a point which, to the best of our understanding, the aforementioned reports do not consider. In other words, in a situation where there is already a nearly invincible incumbent platform, adopting a tighter merger policy alone may do more harm than good. Therefore, it would be especially important to pair such an adjustment with policies that are effective in ensuring robust competition *for* the market.

2 Concentration and Forms of Competition

A common observation made regarding platform markets is that such industries have a tendency to become highly concentrated. That is, when the markets for, say, search, social networking, or app stores are left to evolve according to their own devices, a small number (perhaps just one in each category) usually become dominant. As [Scott Morton et al. \(2019\)](#) point out, “Many of the most innovative internet-derived digital markets, such as search engines, social networks, network operating systems, e-commerce, and ride-sharing, are highly concentrated and have been dominated by one or a few firms for a number of years” (p. 11). They add, “In summary, unlike last-century’s businesses, digital businesses will often lack competition in the market” (p. 57).

Such claims are uncontroversial and easy to verify. For example, as of July 2020, Google’s market share in search, worldwide, was 87%, with Microsoft’s Bing in second place, with 7% ([Clement, 2020b](#)). In social networking, Facebook’s market share in the US was 56%, followed by Pinterest with 30%, Twitter with 9%, and the largest remaining players around 1% each ([Clement, 2020a](#)).

Given this tendency towards market concentration, what is the proper way to think about the role of competition? Typically, in economic theory, competition is seen as a force that disciplines markets from being oriented too strongly in favor of firms; instead, it orients them to work, in an emergent manner, for the benefit of consumers. In platform markets, are the aforementioned high levels of concentration “anticompetitive” in the traditional way that, say, a textbook monopolist is? Or, might certain features of platform industries make high concentration either less harmful than in conventional ones, or even desirable? Moreover, might it be the case that the tendency for such markets to exhibit high concentration at given points in time is *not* a reliable signal that there

is a lack of competition in a broader, for instance, more long-term sense?

Over the past several decades, a large body of economic literature has tried to address such questions. Although this topic is very complex and has many nuances, **a striking feature common to all three of the recent, high-profile reports on competition in the digital age (Crémer et al., 2019; Furman et al., 2019; Scott Morton et al., 2019) is a distinction repeatedly made between “competition *in* the market” and “competition *for* the market.”** The idea behind the former form of competition is rather self-explanatory – firms sell similar products or services to consumers who can choose their preferred options depending on prices and features.

The idea behind the latter has ties to the old concept of a “natural monopoly,” commonly used to apply to industries with large fixed costs, such as electricity generation. However, in the context of platforms, the “winner-take-all” (or most) pattern is crucially associated with user-driven economies of scale and scope. These arise thanks to network effects – the phenomenon whereby users of one platform (say, Facebook) have a preference to use the same platform as one another, because a main reason they use the platform in the first place is to connect with one another. This preference among platform users to have, in essence, a common meeting place is thought to lead platform industries to “tip” towards a state in which one platform in a given industry is dominant. Such economies of scale and scope also arise from the ability of an initially dominant platform to accumulate more and more user data. Doing so then, in principle, allows it to continually widen the gap between the quality of services it offers compared to that of any rival, be it real or potential.

The distinction between competition *in* and *for* the market may, in reality, be somewhat more blurred than an abstract discussion of the two of them suggests. Nevertheless, it is a helpful distinction for the sake of discussion. In the next two sections, respectively, we consider key aspects of each of these two forms of competition among platforms.

3 Competition *In* The Market

An interesting feature of the three aforementioned reports (Crémer et al., 2019; Furman et al., 2019; Scott Morton et al., 2019) is that, although they claim that there is a low degree of competition *in* high-profile platform markets, they all avoid making explicit statements to the effect that these observed levels are “too low.” In other words, whereas one might expect that high concentration

in platform markets is, according to economic analysis, “less efficient” than some benchmark that involves more decentralization, as far as we can tell, the reports make no such concrete comparisons. This is an important point that is worth exploring further.

What is the “Right” Level of Concentration?

As a matter of personal opinion, and/or taking into account criteria outside the scope of standard economic models, one may find no shortage of reasons to be very concerned about the effects on society of powerful platforms. Nevertheless, the job of an analyst of research in economic theory is to ask what the field’s findings are on the topic. To be sure, economic theory suggests that, in certain types of industries, a high level of concentration is desirable. Moreover, platform industries, as they are modeled in standard economic research, are particularly likely to fall into this category. Indeed, compared to a “socially optimal” benchmark, they may actually exhibit *too little* concentration.

This stems from two factors. The first factor is that a typical tech platform’s cost structure involves high levels of fixed investment and negligible variable costs, with respect to the number of users. In other words, whereas Google and Facebook spend a great deal, for instance, on servers and engineers’ research, when a new user starts searching or posting, this is almost costless for the platform to accommodate. The second factor is that, by their very nature, network effects lead users to prefer to use the same platforms as one another. In other words, all else equal, a user would prefer to be able to find all of her friends on a given social network rather than, say, half of them on one and half of them on another.

Two articles that spell out these arguments using elegant formal models are [Mankiw and Whinston \(1986\)](#) and [Tan and Zhou \(2021\)](#). The former, older article deals with the aspect related to fixed investment without considering network effects. The latter extends the analysis to take into account the role of network effects. The remainder of this section explains the mechanics behind these two papers’ arguments, focusing first on the former and then on the latter.

Imagine a market in which each firm must incur a one-time setup cost in order to begin operating. At the moment in history when [Mankiw and Whinston](#) wrote their paper, a reader might have had in mind a “low tech” story of a firm that seeks to produce widgets and must build a production factory. The basic idea can apply as well, however, to a contemporary tech platform that must invest

in server farms and algorithms in order to provide services that are, at least partially, intermediated online.

Assume that, in this industry, when a given number of firms have entered, the market features some form of imperfect competition. That is, firms sell their good or service at a profit, not taking into account the setup cost. The intensity of this competition, however, varies as a function of the number of firms that have entered. So, for instance, at one extreme, if just one firm chooses to incur the setup cost, it acts as a monopolist and sets a price with a large markup above its variable production cost. As the number of firms increases, the market price decreases, gradually approaching a state in which firms sell their goods at the variable production cost.

Mankiw and Whinston ask the following question: if the market is left to “decide for itself” on the number of firms that enter, will this number be less than or greater than the number that would be maximally efficient from the standpoint of total economic surplus? Their result is surprising. They show that, under fairly weak assumptions, the market outcome involves too many firms. In other words, there is *excessive entry*.

The logic behind this result is as follows. The number of firms upon which the market, left to its own devices, settles must approximately satisfy a particular “zero total profit condition.” This condition says that, taking into account the variable profits earned from the sale of the good, plus the setup costs, the total profits that the firms earn must be near zero. To see why this is true, note that, on the one hand, if these profits were much more than zero, then some other firm would find it optimal to enter and compete in the market. On the other hand, if these profits were less than zero, then at least one of the firms that entered the market would choose to exit.

The fact that this zero total profit condition must be satisfied has a particularly interesting implication. It says that, given the ability of firms to freely enter or exit, the market will arrive at a point where, for any given firm, the setup costs must be equal to anticipated variable profits from entering. Note, however, that when a firm enters the market, only a portion of the variable profits it accrues represents newly created value to society. Another portion of these profits arise, instead, from the so-called “business-stealing effect.” That is, the entering firm acquires them by diverting them away from other firms that would already have been in the market. Thus the value of this latter portion of profits cannot be attributed to the existence of the particular firm in question. In

effect, all of the firms that choose to enter impose a negative externality on one another, and they lack the incentive to take this into account. Consequently, this business stealing effect pushes the market towards excessive entry.

Of course, each firm that enters also has a positive externality on consumers, because its entry lowers the price of the good. Under the conditions of [Mankiw and Whinston](#), however, the former, negative effect of firms on each other is larger than the latter, positive effect that an additional entering firm has on consumers. As a result, compared to the outcome that would maximize overall efficiency, too many firms enter. To be clear, the excessive entry discussed by these authors is viewed from the standpoint of total economic surplus, not short-run consumer prices. Within the model, consumers would indeed see their welfare increase with the number of firms. However, the broader economy suffers from the fact that each of the entering firms incurs the setup costs, and this is unnecessarily duplicative. If somewhat fewer firms entered, prices would go up, causing a decrease in consumption of the good, but the harm from this would be outweighed by the decrease in expenditure on fixed costs.

How does this analysis extend to a setting with network effects? Note, first, the following point, already made by [Mankiw and Whinston](#) regarding consumers' "taste for variety." They show that the propensity for markets to have excessive versus insufficient entry depends crucially on the extent to which consumers value mixing up their consumption among a large number of different goods. Such a preference may be interpreted either at an individual level, meaning that each consumer prefers to divide up her purchases among as many providers as possible. It may also be interpreted at an aggregate level, meaning that different consumers each have different "niche" preferences, and with more firms, the chances of a good match improve. Either way, when consumers lack a strong taste for variety, the excessive entry result is more robust, whereas, when the taste for variety is strong enough, the market is more likely to settle upon an inefficiently small number of firms.

[Tan and Zhou](#)'s model makes the point that, from the standpoint of consumers' welfare, network effects push in the opposite direction as the taste for variety. In other words, as mentioned above, all else equal, a user of a social network would prefer that the posts of a larger rather than smaller fraction of her friends can be seen on a particular network that she has chosen to join. Thus, holding fixed all of the factors discussed in the [Mankiw and Whinston](#) model, if one adds positive network

effects to the story, they make industry concentration more desirable.

To see this concretely, consider a simplified depiction of videoconferencing. In it, one user, Alice, prefers the features of Skype, another user, Bob, prefers the features of Zoom, and a third user, Charlie, prefers the features of Google Meet. Moreover, if (as was the case in the model of [Mankiw and Whinston](#)) the offerings in question were things that consumers merely made use of in a solitary fashion, it's conceivable that, despite some duplicative investments, it would be economically efficient for each of these services to separately exist. However, taking into account the fact that many Alices, Bobs, and Charlies need to have conferences with one another, it becomes relatively more likely that if, say, Google Meet had never existed, the outcome would be more efficient. This possibility arises due to both the reduction in setup costs and the reduction in "fragmentation" of different users across different services. Although Charlie's videoconferencing software might not quite match his ideal specifications, this would be a relatively low inconvenience compared to the benefit of having easy access to a large pool of friends and colleagues.

Putting the Results in Context

Stepping back from the specific view of the world imposed by these models, what are the main takeaways they offer for interpreting the real world? One question worth asking is: to what extent is the emergence of highly dominant platforms like Google and Facebook the rule, and to what extent do such firms represent highly visible exceptions? In other words, whereas in certain industries, such as search and social networking, markets clearly tipped towards leading platforms, this pattern does not prevail in all platform industries. For example, in areas such as online restaurant delivery, online grocery delivery, bike-sharing, and mobile payments, in many countries, one can find a wide range of active services and the notion of excessive fragmentation seems potentially quite salient.

As such, it would be helpful to have a better understanding of the way such industries evolve over time. A reasonable hypothesis might be that, as ideas for platform industries come to light, a host of different firms tend to enter and compete with one another for a period of time, during which there is severe fragmentation. During this phase, consumer welfare may be much lower than it could feasibly be, because none of the platforms is particularly useful. Then, over time, for

various reasons, such as consumer word of mouth, industry consolidation, or even just luck, one or two dominant players may tend to finally emerge, and a second phase of high concentration begins. The [Mankiw and Whinston \(1986\)](#) and [Tan and Zhou \(2021\)](#) models discussed above make a reasonable case that the second phase in the process has the potential to be, on balance, better than the first. Although the literature contains work studying dynamic platform competition (e.g., [Chen, Draszelski, and Harrington, Jr., 2009](#); [Cabral, 2011, 2019](#)), to the best of our knowledge, existing models do not include the features that would be necessary to directly address this issue.

A second point stemming from the above discussion is the following. A reason why concentration in platform markets may be desirable is that platforms sometimes, in essence, act as marketplaces. In other words, whereas the concept of “network effects,” as discussed in the context of [Tan and Zhou’s](#) model captures the idea that different users prefer to have a common meeting place, it glosses over the issue of what they do when they meet with each other. In some cases, they merely do things like chat and share videos, but often this interaction consists of some kind of economic transaction. For example, after a search engine ad or an e-commerce platform connects a buyer and a seller, these two parties potentially go on to trade with one another. Consequently, it is reasonable to think about a platform as a kind of organizer and regulator of its own marketplace. For example, in designing its search results, Google can decide which ads to show, how many of them, and on which part of the page ([White, 2013](#)). Similarly, in operating its App Store, Apple sets the rules for which applications can appear and what fraction of sales revenue it keeps ([Anderson and Bedre-Defolie, 2022](#)).

On the other hand, a separate issue that the main discussion in this section sidesteps is the effect of user “multi-homing,” i.e., users concurrently participating on multiple platforms. If such behavior is sufficiently convenient and common in a given category of platform, then the presence of multiple platforms does not necessarily lead to harmful fragmentation that undermines potential network effects, because it will be relatively easy for any two people who wish to interact with one another to find one platform that they both use ([Liu, Teh, Wright, and Zhou, 2021](#)). In such a scenario, the arguments in favor of concentration could potentially be overstated.

These observations raise the question of whether platforms have the “right” incentives when acting as market regulators. For example, is it a problem for a dominant search engine to favor its

own services in its search results, as the European Commission found in the 2017 Google Shopping decision? A common position among the three reports is that there is an important role for government intervention to prevent dominant platforms from engaging in abusive or anticompetitive behavior. Such views seem conceptually well-motivated, and they follow from a recent, quickly growing body of economic literature on the subject that articulate very legitimate worries.² Nevertheless, a particular challenge will be to actually put into practice some form of “code of conduct” governing such behavior, as advocated for by [Furman et al.](#), given the complex and fluid nature of platforms’ business models, which have spawned quite an intricate theoretical literature.

For the purposes of this section, the main question arising from this point is: to what extent are these issues orthogonal to the level of competition *in* a given platform’s market. Could competition *in* a platform’s market have enough of a positive effect in eliminating, for example, distortions including suboptimal investment in quality, harmful exertion of market power in downstream markets, or excessive “self-preferencing” that it could outweigh the benefits of concentration discussed above? Can such competition be organized in a way that preserves network effects as much as possible? Although current theoretical work is emerging that studies this sort of question,³ the current state of understanding of these difficult questions is far from complete. Such questions thus seem especially important for both researchers and policymakers to try to understand more deeply.

4 Competition For The Market

Taking as given a high level of concentration in platform markets, another common concern is that dominant incumbents may become “entrenched.” For example, [Furman et al. \(2019\)](#) state that “An important question is whether the largest incumbents of digital markets are constrained by competition ‘for the market’, and could be unseated by innovative entrants in the future. Although the dominant players continue to innovate and compete, there is reason to be skeptical of the notion that they face serious threats to their dominant positions in the future, unless there are changes to the

²Studies addressing these issues include [Eliaz and Spiegler \(2011\)](#); [Hagiú and Jullien \(2011\)](#); [Gans \(2012\)](#); [de Cornière and Taylor \(2014\)](#); [Gomes \(2014\)](#); [Edelman and Wright \(2015\)](#); [Burguet, Caminal, and Ellman \(2015\)](#); [White and Weyl \(2016\)](#); [Wang and Wright \(2017\)](#); [Johnson \(2017\)](#); [Hagiú, Teh, and Wright \(Forthcoming\)](#); [Bourguignon, Gomes, and Tirole \(2019\)](#); [Gaudin and White \(2021\)](#); [Benzell and Collis \(2022\)](#), among many others. For a more comprehensive textbook treatment, see [Belleflamme and Peitz \(2021\)](#).

³This includes [Taylor \(2013\)](#); [Karle, Peitz, and Reisinger \(2020\)](#); [Gilbert \(2021\)](#); [Ekmekci, White, and Wu \(2022\)](#).

current policy framework” (p. 38). A particular source of worry is that the user-driven economies of scale (i.e., network effects, leveraging of data) make too easy for incumbents to retain their dominant positions. When a startup or other innovative rival comes into the picture, in possession, for instance, of a clearly superior technology for intermediating interactions among users, how significant is the risk that it, along with its innovative approach, will never get off the ground, even though users would, in a collective sense, unambiguously prefer for it to overtake the incumbent?

The Debate Over Lock-In

Such concerns fit into a longstanding debate in economics regarding the importance, or lack thereof, of “lock-in.” [David \(1985\)](#) and [Arthur \(1989\)](#) are two particularly prominent works arguing that seemingly small choices often lead to long-lasting inefficiencies due to the “path-dependent” aspect of economic development. Other works, such as [Liebowitz and Margolis \(1995\)](#) dispute this view. The choice between the videotape standards VHS and Betamax served as one concrete example for such discussion. Here, both sides agreed that VHS had won out over Betamax to become the commonly used format for videotapes and cassette players. However, they, disagreed about whether this was an instance of inefficient lock-in, because advocates for this position asserted that Betamax was in fact the technically superior of the two formats, whereas lock-in skeptics cast doubt on this claim by touting, for instance, VHS’s longer playback times.

While it is beyond our scope to try and do justice to this debate as a whole, focusing on the specific context of competing platforms, some observers formed the view that entrenchment by technologically inferior platforms may not be a major concern.⁴ For example, in a prominent business book on the economics of multi-sided platforms, [Evans and Schmalensee \(2016\)](#) devote a chapter to what they call “The ‘Grab All The Eyeballs’ Fallacy.” In this chapter, they describe what they claim to be a previously popular and since discredited view, namely that platforms should try to beat out potential rivals by accumulating as many users as possible, as quickly as possible. The broad argument these authors make is that, in order to achieve sustained success, a platform must be as effective as possible in facilitating users’ interactions with one another, and that this is much more important than growing quickly merely in order to get users locked in.

⁴For a recent, detailed survey of the theoretical literature covering the advantages of platform incumbency, see [Biglaiser, Calvano, and Crémer \(2019\)](#).

Certain empirical observations and theoretical arguments appear to strongly support such skepticism towards the idea of entrenchment by large but inefficient platforms. Regarding the former, one does not need to study ancient history in order to find the time when today's tech behemoths were, themselves, in the early stages of overtaking what were then larger rivals. For example, in 2006, MySpace was the leading social network and the most visited website overall in the US, with 100 million users. By 2009, Facebook, which was started in Mark Zuckerberg's dorm in 2004, had surpassed it. MySpace, itself, rose quickly to its leading position, overtaking Friendster, the prior leader in social networking, a couple of years earlier (Press, 2008). Similarly, in 2007, Nokia held around 50% of the global market for smartphones. In that same year, Apple introduced the first version of the iPhone. Subsequently, Nokia's share of the smartphone market precipitously collapsed, falling below 5% by the end of 2012 (Statistica, 2013), as iPhone sales skyrocketed.⁵

Next consider the theoretical argument for skepticism towards platform entrenchment.⁶ Here, the abstract scenario we have in mind is a situation in which there are two platforms. One is the potentially entrenched incumbent, and the other is an entrant in possession of an alternative technology that is unambiguously better than that of the incumbent. The question is, will the incumbent's advantage in terms of existing network effects allow it to maintain its dominance, despite the entrant's technological advantage? Alternatively, this question might be restated as, how much better does the entrant's technology need to be in order to precipitate a collective switch on the part of many/most users away from the platform to which they're accustomed?

The main thrust of various theories is that entrants have ways to take a seemingly insurmountable problem (i.e., convincing millions of users to simultaneously change their behavior) and, in effect, divide it up into a set of manageable problems. Once it does this, the theory goes, it then becomes feasible for the entrant to "break through." Three distinct factors contribute to this optimistic view for the entrant. The first is the fact that, in practice, platforms tend to be "multi-sided" – that is, they serving multiple, identifiably distinct sets of users (e.g., users and advertisers, viewers and content providers, drivers and riders, buyers and sellers, etc.). The second point is that they can leverage "contingent pricing" strategies in a way that minimizes their dependence on fortuitous coordination

⁵The rise of Google, famously founded in a garage by Stanford graduate students Sergey Brin and Larry Page, past the likes of AltaVista may also fit as an example of this phenomenon. However, whether or not it does is more debatable. This is in part because, during the late 1990's and early 2000's, the idea of the search engine as a core business was not widely recognized.

⁶Weyl and White (2014) surveys some of the literature that puts forth this type of argument.

among users. Third, they can do targeted marketing that takes advantage of the heterogeneity in users' attractiveness to or influence over other users.

First, how can multi-sidedness help? In practice, network effects often flow mainly from one group to another, more so than they do back and forth among users within a given group. Many examples reflect this point, including smartphones and their associated operating systems, payment intermediaries, ride hailing apps, and travel accommodation service, to name a few. That is, to the users of a smartphone, the most important network effect comes from the availability of a wide range of software applications made by developers; meanwhile, to the developers, the most important network effect comes from the presence of a large user base. *Holding fixed the available set of apps*, a particular user is likely to regard the number of other users of a particular type of smartphone as relatively unimportant. Similarly, holding fixed the user base, a particularly app developer is likely to regard the number of other apps available on a smartphone platform to be of second-order importance. Analogously, an American Express cardholder is likely more interested in whether restaurants accept the card than in the preferred payment method of other diners. Uber riders want readily available cars; prospective Airbnb customers want plentiful options of places to stay. Such configurations where users in one group care mainly about the presence of another group are said to exhibit *indirect* network effects.

A substantial body of research in economic theory suggests that, when network effects are largely indirect, entrants can use so-called "divide-and-conquer" pricing strategies in order to attract users away from less efficient incumbents. Here divide-and-conquer refers to a pricing arrangement where a platform offers users on one side of the market very attractive prices, perhaps even paying them to join. This offer will, in principle, be sufficient to entice users of this group to switch to the entrant. Then, because users of this subsidized group have switched platforms, it becomes feasible for the entrant to attract users of the other side while still charging them enough money to operate profitably. An oft-cited example of such a scheme is the proverbial nightclub that lets women enter and consume alcohol for free, while levying a cover charge on men.

Why can divide-and-conquer pricing strategies' serve as an antidote to entrenchment? In effect, they make it possible for the technologically superior entrant, via a limited investment, to harness the influence of a fraction of its users. By making this investment, the entrant can initiate a feedback

loop whereby the incumbent's current users perceive that the time has come to switch to the entrant, not due to a special low price offered by the latter, but because they expect the entrant to offer a better ecosystem in the future. In contrast, if the industry in question featured just a single set of users all of whom must be offered the same price, the entrant's ability to execute such a takeover may be more limited. This is because, in an environment with a single price for all users, any price that the entrant might charge that is low enough to initiate significant migration away from the incumbent may also be so low that leads the entrant to simply bleed money. The presence of multiple sides mitigates this problem.⁷

Using contingent pricing schemes can also help the entrant to minimize the incumbent's advantage from being the "default" platform. Such schemes may, in principle, be used in either a single-sided or multi-sided setting. They are used in various forms by, for instance, app stores, digital media publishers, videogame console manufacturers, and ride-hailing platforms, to name a few.

To see the potential effect of contingent pricing, consider the example of online advertisement, where it is the standard arrangement.⁸ In this context, the key feature of contingent pricing is that the fee an advertiser pays to the ad platform increases with the amount of user engagement it receives. Thus, if a superior ad intermediary comes along, and it offers such a pricing arrangement, there is little downside for the advertiser to try it. On the one hand, the new ad platform may attract few users, in which case the advertiser will pay very little. On the other hand, the new ad platform may attract many users, in which case the the high fees will be worth it. Compared to a scenario in which the ad platform requires advertisers to pay a significant subscription fee merely to have their ads appear to an uncertain number of users, contingent pricing provides a form of insurance that can encourage switching or experimentation by advertisers.

Targeted marketing schemes can, in theory, help in a similar fashion, using tools other than prices. Under such schemes, rather than indiscriminately trying to convince all users to switch, the entrant first targets certain subsets of users, who are more willing to switch themselves and/or who generate more appeal to other users once they have made the switch. Doing this potentially

⁷One factor that can limit the effectiveness of divide-and-conquer strategies in breaking lock-in is the difficulty of subsidizing any given group of users without, at least partially, giving away "free money" to people who lack legitimate interest in the platform's service and who thus do not actually contribute network effects.

⁸Such contingent pricing arrangements include ones where advertisers pays the ad intermediary as a function of the number of view an ad receives, the number of clicks it garners, or the number of purchases it generates.

constitutes a feasible way for the entrant to initiate the desired feedback loop whereby more and more users switch.

Facebook's rise and overtaking of MySpace is often cited as an example where such a strategy was successfully executed. Incumbent MySpace and entrant Facebook both offered their social networking service at no charge to users, and so prices were not a relevant variable. Facebook, instead, gained traction by first targeting students at Harvard University, offering them exclusive eligibility. Then, it expanded access to affiliates of other prestigious universities, before gradually expanding until it was finally made available to everyone.

In sum, both a set of empirical observations and certain theoretical arguments call into question the ability of dominant incumbent platforms to lock their users in. However, this debate regarding the strength of lock-in is by no means settled. Moreover, it seems likely that, over time, dominant incumbents discover and employ increasingly effective techniques that serve to strengthen lock-in, and thus policymakers should take this issue seriously and not assume that competition *for* the market will, on its own, lead to uniformly efficient outcomes in platform markets. In Section 5, below, we discuss how the perceived strength of lock-in should influence policy towards large platforms acquiring smaller ones.

Mitigating Entrenchment and Policy Towards Data

Regardless of one's position in the above debate about the likelihood of lock-in occurring, the following two assumptions seem reasonable. First, once a given platform has established a position as a dominant incumbent, it often has an incentive to take actions that maximize the extent to which users are locked in. Second, in the dynamic process that platform markets follow over time, the particular platforms that do become dominant may be the ones that are particularly effective at, one way or another, locking users in. For reasons such as these, given the situation that has arisen in which a set of platforms seem to enjoy persistent dominance in their respective areas, it is very important for authorities to seek out the best ways to make sure that competition *for* the market is robust. Indeed, the reports by [Crémer et al.](#), [Furman et al.](#), and [Scott Morton et al. \(2019\)](#) are all firmly in agreement on this point.

Tech giants' vast collections of user data draw particular attention as purported drivers of

lock-in, and the three reports each encourage authorities to consider policies geared towards data openness or portability of some form. As [Ennis and Fletcher \(2020\)](#) summarize, “there is substantial congruence between the three reports in the respect of data” (p. 8), even if they vary on some of the details. To see the potential benefits of such policies is not hard, as one needs to think only about phone number portability regulation and the ease that such a policy lends to the process of switching from one phone carrier to another. [Furman et al. \(2019\)](#) also place particular emphasis on the recent establishment of an Open Banking standard in the UK, which, among other things, provides a standardized way for customers to move personal details associated with their bank accounts from one participating institution to another. It is tempting to believe that further initiatives of this sort could successfully emerge in the industries occupied by tech giants.⁹

However, for at least two reasons, a healthy skepticism is warranted regarding the efficacy of such data openness policies in reducing lock-in. First, as an article by [Tucker \(2019\)](#) argues, in the context of tech platforms, a user doesn’t necessarily care about whether the platform has access to her profile. As Tucker remarks, “For example, I don’t find the fact that Amazon has records of all my orders over the past 10 years a particularly compelling reason to not buy from another online platform in the future” (p. 688). In a similar vein, she refers to several recent empirical studies, focused on search ([Chiou and Tucker, 2017](#)), e-commerce ([Bajari et al., 2019](#)), and online advertising ([Neumann, Tucker, and Whitfield, 2019](#)), respectively, that suggest a platform’s ability to access to the information in a user’s profile is surprisingly unhelpful for the purpose of providing core services. Nevertheless, [Tucker](#) acknowledges certain exceptions, such as health data. Surely, it would be a poor idea to switch from one health tracking app to another if doing so meant throwing out all of one’s data accumulated over previous years. Indeed, for reasons similar to those applying to health data, one can question the generalizability of her attitude towards past Amazon purchases. In particular, if one has purchased many different items in the past whose names and features are hard to keep track of, it may be quite convenient to know where to find a record of the transactions.¹⁰

Anticipation of this form of convenience could then make users inclined to do most of their shopping

⁹In a rather prophetic article, [Pollock \(2010\)](#) contemplates a version of such an arrangement in the area of search.

¹⁰Imagine that, several years ago, you used Amazon to purchase a replacement part for your refrigerator that, at the time, required significant research to identify as the right one. If the need arises to replace it again, it is easier to identify the correct item by searching in one’s Amazon purchase history than to repeat the same research. Of course, a rejoinder to this point is that, having checked one’s email for the original purchase record, one can locate the relevant model number and shop for it on any platform.

on a platform like Amazon. At any rate, the key suspicion arising from the above discussion is not that the sorts of data openness policies envisaged by the reports would be harmful, but that they might not make much difference to the likelihood of lock-in.

A second, deeper criticism of such data openness proposals might be the following. In the view of [Munger \(2018\)](#), the fundamental value-creating activity of a tech platform is “permissionless innovation” done with the aim of reducing transactions costs. Prime examples of such activities are ride-hailing services such as Uber and Lyft and apartment-sharing sites such as AirBnB. An undisputed aspect of their history is that they took various actions that “broke the rules” that had been put in place to regulate taxi and lodging businesses, respectively. To some extent, it may have been their willingness to break or at least bend certain rules that allowed them to bring into existence new business models that have contributed significantly to consumer welfare. Such examples thus raise the question of whether data openness standards could promote a more rigid environment in which desirable forms of permissionless innovation are discouraged. If so, such standards could have the unintended consequence of exacerbating lock-in rather than reducing it. This risk should be carefully guarded against during the design of such policies. To limit this risk, it is especially important not to allow current, dominant, incumbent platforms to play a powerful role in influencing this form of regulation; these platforms’ incentives are not aligned with encouraging competition either *in* or *for* the market.

5 Acquisitions by Dominant Incumbents

In recent years, large tech platforms have acquired many smaller firms, including both startups as well as more mature firms that could potentially become rivals. For example, according to Wikipedia, Google and its parent company, Alphabet, engaged in 238 mergers between 2001 to 2020, acquiring small tech firms that were integrated into its various services. Meanwhile, between 2005 and 2020, Facebook (now Meta) acquired 87 tech firms, including Instagram and Whatsapp ([Wikipedia Contributors, 2020a,b](#)).

Many observers believe that current merger policy is poorly designed to handle these types of cases. A commonly raised concern is that such acquisitions eliminate potential competitors for the incumbent platform, thereby helping the incumbent platform’s influence become both more

persistent and broader in scope. For instance, [Crémer et al.](#) state that “One concern that is gaining in importance in the digital era is whether and when the acquisition of targets with specific data resources can significantly impede competition, through horizontal, vertical or conglomerate effects” (p. 110). Motivated by such concerns, [Crémer et al.](#), [Furman et al.](#), and [Scott Morton et al.](#) all urge adjustments that allow for heightened scrutiny of acquisitions by tech giants that, among other things, exhibit an *uncertain* potential to cause harm in the future.

In this section, we shed light on the following questions. What are the key factors that should guide merger policy in situations where tech giants seek to acquire nascent, potential rivals? Do these differ from the principles behind merger policy in more “traditional” situations? Our main message is that the presence or absence of “lock-in,” defined in Section 4, is a key factor in determining the answers to these questions. Specifically, and perhaps counterintuitively, we argue that, in circumstances where lock-in really is a powerful force, tighter restrictions against such acquisitions may be harmful. In contrast, in circumstances where lock-in is a minor issue, tighter restrictions against acquisitions are more promising. As a result of this pattern, we argue that, if the policy towards tech acquisitions is to be tightened, it may be crucial to combine such a change with policies that help to mitigate lock-in.

Tech Acquisitions and Lock-In

As discussed above, a key feature of platform industries is that markets may be “winner-take-all,” with competition *for* the market that is more robust than the competition *in* it. Conventional merger analysis, however, typically imagines the latter situation. Thus, under such analysis, the primary variables of focus are the intensity of competition among firms in setting prices, and the efficiency of production. In a typical case, the decision whether to allow a merger involves a trade-off between these factors. So, for instance, an authority might be inclined to allow a particular merger if it believes that the cost savings from consolidation will outweigh the negative effects of increased market power.

Under competition *for* the market, although these factors may still be relevant, the crux of the issue shifts. The following are more salient questions regarding an authority’s decision on whether to allow a potential merger. Which platform will be dominant and for how long? Would allowing

the transaction to proceed help the dominant platform to provide users with a better service? To be more concrete, consider the framework discussed in Section 4. Recall that, there, an incumbent platform faced a challenge from an entrant that possessed a superior technology. In that setting, the incumbent lacked the capability to perform as well as the entrant potentially could, but the former might remain dominant if users remained locked in. A possible way to think about merger analysis among platforms under competition for the market is to build on the framework of Section 4 by adding to the mix the opportunity for the incumbent to acquire the entrant.

Such a framework for merger analysis in winner-take-all markets may entail varying levels of depth. In particular, a more “short-term” version of it takes as given the technologies of the incumbent and the entrant and then examines how merger policy affects whether the entrant’s better technology is widely adopted. A more “long-term” analysis takes into account not only this issue, but also it studies the effects of merger policy on the platforms’ incentives to generate innovative new technologies in the first place.

First, consider the short-term version of the question. On the one hand, if under given circumstances, one is skeptical that an inferior technology will become entrenched, then she would be inclined towards a stricter merger policy. This is because, if the incumbent is blocked from acquiring the entrant, she expects the latter to win the market and, therefore, that its better technology will become widely adopted. On the other hand, if one sees lock-in as a significant issue, then she would be inclined towards a more lax merger policy. This is because, under such an assumption, mergers can be a potentially useful tool for facilitating technology transfer.

Comparing two recent articles by prominent economists in this area, [Katz \(2020\)](#) and [Cabral \(2021\)](#), helps to illustrate this point. Both of these articles effectively consider models of winner-take-all competition in order to evaluate merger policy towards tech platforms. Moreover, in both, entrants arrive on the scene in possession of better technologies than the dominant incumbents, and a question under study is whether it is likely to be socially beneficial to allow the incumbent to acquire the entrant. On the one hand, however, in [Katz’s](#) model, if the acquisition is not allowed, it is assumed that the entrant will eventually out-compete the incumbent and take over the market. On the other hand, [Cabral’s](#) framework involves the opposite assumption: if the merger is blocked, then the incumbent remains entrenched and the entrant’s better technology fails to catch on. Given

these differing underlying assumptions, it is thus not surprising that, on the one hand, [Katz](#) argues that “acquisitions of emerging or potential competitors should be subject to heightened antitrust scrutiny when competition is for the market” (p. 3). On the other hand, [Cabral](#) laments that “merger policy, in particular, seems to be motivated primarily by market dominance considerations, with relatively less weight given to implications for innovation” (p. 6).¹¹

Second, consider the longer-term question. What effect does policy towards such acquisitions have on the various firms’ incentives to innovate and develop new technologies? This question is particularly challenging in view of the fact that, even in traditional industries, the relationship between competition and innovation is rather murky.¹² Nevertheless, a flurry of recent literature addresses this issue as it relates to tech platforms as well as to other industries focused on innovation, such as pharmaceuticals. Within such analysis, some focuses more on the “level” of innovation, whereas some focuses more on the “direction.” That is, the former asks how a stricter acquisition policy might affect the overall speed at which innovation takes place, whereas the latter asks how such a stricter policy might influence the type of innovation that occurs.

Regarding the effect of merger policy on innovation level, the same pattern emerges as discussed above. The appropriate approach depends on how strong of an effect one believes lock-in is. On the one hand, if one starts from the assumption that lock-in is not a serious concern, then a strict merger policy seems appropriate. On the other hand, if lock-in is a significant factor, then a policy that blocks the acquisition of small innovators seems particularly worrisome.

A recent article that helps to illustrate this point is [Kamepalli, Rajan, and Zingales \(2021\)](#). This paper builds a model that pays special attention to the process by which an innovative entrant attracts users away from a dominant incumbent, and, within the framework of this model it considers merger policy. It makes the following rather subtle point.

First, suppose acquisitions were never allowed and consider the typical process through which an entrant might unseat an incumbent. In the model, this involves the entrant convincing users to switch sequentially. First, it attracts a particular set of “early adopters.” These are individuals who are willing to incur some cost in order try out the new platform’s technology in an experimental fashion. Only later, once enough experimentation has occurred and enough kinks have been worked

¹¹To be clear, both of these articles consider more than the short-run-oriented part on which we focus here.

¹²See, e.g., Section II of [Kokkoris and Valletti \(2020\)](#) for a recent, brief overview.

out in the entrant's technology, do typical users make the switch.

Now, allow for the possibility that the incumbent can acquire the entrant. A direct effect of this *prospect* of acquisition is that potential early adopters perceive reduced value in giving the entrant a try, because they anticipate that it will likely be swallowed up by the incumbent, and so they see little value in making the switch, which would likely only be temporary. Consequently, it is more difficult (than it would be in a no-merger world) for the entrant to attract a viable user base.

How does this matter for innovation incentives? Having a non-viable user base greatly hampers the bargaining position of the entrant in any negotiations regarding an acquisition. Effectively, the entrant is left with two options: compete unsuccessfully against the incumbent or sell its technology to the incumbent for a low price. Because neither of these options is particularly appealing, the *ex ante* incentives are very low for innovations in technologies that are substitutes to that of the incumbent. Thus, a lax merger policy in this area gives rise to what they authors call a "kill zone."

Note the crucial role that one's view of lock-in plays in deciding whether or not to give credence to the above argument. Specifically, an essential part of the argument is that the baseline, no-merger version of the story takes a skeptical view of lock-in. That is, it assumes that, if acquisitions were not allowed, then the entrant would have a reasonable chance to compete for the market and overtake the incumbent's position as the leader. As such, under this no-merger scenario, the entrant, by extension, has substantial incentives to invest in innovation. This contrasts with the alternative situation, in which mergers are allowed, and their prospect itself creates a form of lock-in, which causes the potential rewards from innovation to diminish.

However, what if one were to suppose, alternatively, in the spirit of [David \(1985\)](#) and [Arthur \(1989\)](#), as characterized in [Section 4](#), that lock-in already plays a significant role, even without acquisitions? Then, one's view of the effect of allowing mergers would be quite different. In particular, the default assumption in the no-merger version of the model would be that the entrant has very little chance to unseat the incumbent. As a result, there would be little incentive for an entrant to invest in innovation in the absence of mergers. By contrast, if mergers are allowed, then, even if the chance to overtake the incumbent were very small, the possibility of being acquired represents a form of option value that increases innovation incentives, an effect noted by [Letina, Schmutzler, and Seibel \(2021\)](#), among others.¹³ Moreover, it is worth noting that, from the standpoint

¹³Although we focus on the model of [Kamepalli, Rajan, and Zingales \(2021\)](#) in order to make this point, the underlying

of overall social welfare, when there is severe lock-in and a prohibition on mergers, any innovations that the entrant does come up with may largely go to waste, because users, who primarily stick with the incumbent, do not get to experience them.

Cabral (2018) offers a related model examining innovation incentives that reinforces the above-stated view regarding the pivotal role of lock-in. It also sheds light on the effect that merger policy can have on the direction of innovation, not just the level. This model distinguishes between two types of innovation that an entrant (or “fringe” firm, using Cabral’s terminology) might endeavor to come up with: one type is an incremental innovation and the other type is a radical innovation. Generating the former type does not allow the entrant to unseat the incumbent, whereas generating the latter does. In the baseline version of Cabral’s model, only incremental innovations are possible, which can effectively be interpreted as an assumption that the lock-in effect is very strong. Here, Cabral’s analysis shows that allowing for mergers (or “technology transfer,” more generally) boosts incentives by introducing an “innovation for buyout” effect that would be eliminated if mergers weren’t allowed.

In the extended version of the model, however, in which radical innovations are also on the table, allowing mergers has a more ambiguous effect, because of the presence of different forms of innovation. Specifically, here, the entrant can separately decide how many resources to devote to incrementally innovative activities and how many to devote to radically innovative ones. Note that, in this context, a shift in the assumptions towards a view that radical innovations are more feasible amounts to a more skeptical attitude towards lock-in. Here, as in the baseline setting, allowing mergers induces the entrant to pour more resources into incremental innovation, but it does so at the expense of radical innovation. A strict merger or technology transfer policy, on the one hand, hampers the aforementioned innovation for buyout effect. Nevertheless, it is possible that this could be a socially desirable outcome, provided that such a reduction boosts the chances of radical innovation.

assumption regarding lock-in also seems to play a comparably crucial role in other similar models, such as Motta and Peitz (2021) and in the extension of Katz (2020)’s model that includes endogenous innovation incentives.

Complementary Policies: Merger Scrutiny and Lock-in Mitigation?

There is some irony in the pattern that this section identifies: typically one would identify both (a) belief in lock-in and (b) advocacy of stricter merger policies with a more interventionist perspective. Meanwhile lock-in skepticism and more lax merger policies would likely be associated with a more *laissez-faire* perspective. In this context, however, these typically-paired positions do not fit well together. Indeed, this configuration seems not to be widely noticed, as we are not aware of any prior work that discusses this pattern explicitly. For example, [Crémer et al.](#), [Furman et al.](#), and [Scott Morton et al.](#) all discuss, at length, both impediments to robust competition *for* the market (i.e., lock-in) and tech acquisitions. However, to the best of our understanding, none of these reports highlight an important degree of interdependency between the appropriate policies in these two areas.

If our reading of the theoretical literature is right, and this connection between lock-in and mergers is robust, then it would also appear that policies to mitigate lock-in and tighter restrictions on tech acquisitions are complementary to one another. Thus, suppose, for instance, that open data policies of the sort discussed in Section 4 could be designed and implemented in a way that effectively heightened the level of competition *for* the market in, say, social networking. Then, it would likely not make sense to say that, because this reform is “enough,” a lax merger policy should be allowed to continue. On the contrary, following such a reform, assuming it were implemented in an effective way, we would expect there to be an increased incentive for the dominant social networking platform to pursue acquisitions whose main purpose is to help it preserve its dominant position. If, on the other hand, no such policy were implemented (or such a policy was implemented but done in a way that had the opposite of the intended effect on lock-in), then a lax policy towards acquisitions would, at least, allow technologies developed by fringe firms to flow through to dominant incumbents and be enjoyed by the masses.

6 Conclusion

In this article, we draw upon research in *platform economics* to help inform the debate surrounding the ways competition policy and governance, more generally, might be adjusted to deal with today’s

powerful tech companies. A lynchpin of our analysis is the distinction, made prominently in three recent, high-profile reports (Crémer et al., 2019; Furman et al., 2019; Scott Morton et al., 2019) between competition *in* the market and competition *for* the market. We highlight a set of particularly relevant economic forces that are at play in both of these contexts and discuss their implications for policy.

In particular, on the subject of competition *in* the market, we emphasize that, although platform markets tend to be highly concentrated and, potentially, “winner-take-all,” such outcomes are not necessarily economically inefficient in the same way that a conventional monopoly is. Nevertheless, even in an industry for which high concentration is not a problem, tepid competition *for* the market can be harmful. The extent to which this tepidness is a risk depends on how strong the “lock-in” effect is. We discuss factors that influence this effect in the context of tech firms, and we consider how proposed “data openness” policies might help but could also backfire.

Finally, we consider dominant tech platforms’ acquisitions of startups. We argue that the extent to which the lock-in effect is strong has an important influence on appropriate policies towards such mergers. Mergers that may be harmful when competition *for* the market is robust may, instead, be beneficial when lock-in is sufficiently strong. Consequently, we encourage policymakers to consider policies of (a) lock-in mitigation and (b) startup acquisition tightening to be complementary to one another.

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