Abstract: We introduce the concept of platform annexation, whereby a platform annexes multi-homing tools or other adjacent products in a way that interferes with multi-homing by users, lessening competition. Traditional analysis of mergers often falls back on a simple categorization of conduct into horizontal and vertical. We argue that platform annexation, by changing the nature of multi-homing, directly weakens horizontal competition. In this way it is more similar to direct foreclosure between head to head competitors that harms consumers. In particular, while traditional vertical integration in a supply chain has the potential to reduce conflicts of interest and may favor efficiency, platform annexation creates conflicts of interest and has the potential to reduce efficiency, particularly when undertaken by a market leader who has the incentive to reduce multi-homing. Thus, platform annexation should be viewed with substantial skepticism by regulators and enforcers.
Introduction

We introduce the concept of platform annexation, whereby a platform interferes with multi-homing by users and thereby lessens competition. We argue that this reduction in the strength of head to head competition makes platform annexation analytically similar to direct horizontal conduct that creates foreclosure and harms consumers. In particular, while traditional vertical integration in a supply chain has the potential to reduce conflicts of interest and may favor efficiency, platform annexation creates conflicts of interest and has the potential to reduce efficiency, particularly when undertaken by a market leader who has the incentive to reduce multi-homing. Thus, platform annexation should be viewed with substantial skepticism by regulators and enforcers.

The digital era has ushered in a wide range of innovative products and services that benefit consumers. Digital platforms have played a central role in helping entrepreneurs and service providers access those consumers, reducing barriers to entry by facilitating the process of matching consumers to service providers and suppliers. Yet, we have also seen new competition concerns arise. Given the importance that platforms play as intermediaries in an ever-larger share of our economic activity, it is worthwhile to more carefully study the different tactics, including acquisitions, platforms can use to obtain or maintain market power.

Since platforms are characterized by network effects (often across sides of the market) and scale economies, platform markets are frequently fairly concentrated. Despite this concentration, it is not uncommon for some types of platforms to be characterized by low margins because the parties they serve have other options. If those parties transact with or use more than one platform, they are said to “multi-home.” For example, a marketplace that brings together buyers and sellers of a ride-hailing service may find that both sides of the platform “multi-home,” or transact on multiple platforms. Riders may have accounts and search for a given ride on Uber, Lyft, and Via, for example. Likewise, drivers may have more than one app open, looking for riders. When buyers compare offers from sellers across multiple marketplaces, and likewise sellers seek buyers across multiple marketplaces, network effects often shift to operate at the market level rather than the firm level. For example, more drivers on any platform makes ride-sharing more valuable to a rider who signs up with all platforms. This allows participants to experience the benefits of competing marketplaces without sacrificing the benefits of marketplace liquidity. Further, competitive pressure on both sides of the market (ceterus paribus) keep quality and prices at competitive levels, benefitting market participants. In the platform context, the equilibrium price is known as the “take rate,” the gap between what the buyers pay and what the seller receives. Multi-homing keeps prices low by putting pressure on take rates. Available and vibrant multi-homing is therefore a strong signal that there is competition in the market and that consumers have choices.
In order to avoid strong competition, market leaders in platform markets often search for tactics that help them reduce multi-homing in the short run and thus deprive rivals of scale economies and network effects in the longer run. This paper considers a category of conduct that we refer to as “platform annexation,” designed to achieve this objective. Platform annexation refers to a practice where a platform has, or takes control of, complementary multi-homing tools, and operates those multi-homing tools in a way that restricts or lessens efficient multi-homing by platform users.2 A ‘complementary multi-homing tool’ is any related business that helps a consumer interact with platforms and lowers the cost of multi-homing. In pursuit of market power, the platform may attempt to exclude independently owned adjacent tools that promote multi-homing; for example, the platform may refuse to interoperate with such tools,3 which in turn reduces the value of the multi-homing tool to participants and reduces usage of the independent multi-homing tool in favor of the platform’s tool. The final result is that efficient multi-homing is impeded and competition is harmed.

The tactics we describe are often placed into other conceptual categories in antitrust such as bundling, tying, mergers, and more. These tactics can come in procompetitive versions as well as anticompetitive versions. Applying the traditional categories to platform annexation may be confusing because multiple categories may apply simultaneously, while each category encompasses scenarios beyond platform annexation. In addition, within each category, there can be procompetitive and anticompetitive forces, not all of which are applicable to the specific case of platform annexation. In this paper, we zero in on the economic forces specific to platform annexation, laying out the logic using basic principles from platform economics, and then relating the analysis to the traditional antitrust categories. This approach allows us to distinguish platform annexation from narrow concepts such as ‘Elimination of Double Marginalization,’ ‘duty to deal,’ and ‘no economic sense test’ that do not take into account the platform’s full strategy and the impact of multi-homing in the market.

Our main conclusion is that when a platform ‘annexes’ a service that was aiding multi-homing, and then weakens that service to impede multi-homing, that this conduct lessens competition between platforms. Unlike traditional vertical integration, which can align incentives among suppliers to the benefit of consumers, platform annexation creates a conflict of interest between multi-homing tools providers and their constituents, creates incentives to foreclose through degrading the quality of rivals and their scale, and in that way harms (horizontal) competition between platforms.

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2 Platform annexation can occur on either or both sides of the market, whether or not the other side primarily single-homes or multi-homes.
3 A possible example of this setting is voice assistants, as described here: New Suit Accuses Google Of Stifling Voice Recognition Competitors (competitionpolicyinternational.com)
How does this work? Platform annexation disrupts multi-homing in a way that steers users to its platform and away from platforms of rivals. When a large platform deprives a smaller rival of participants on either side of the market, it reduces the competitiveness of the smaller platform (or deters entry by new, smaller platforms) and thus lessens the competitive pressure on itself. This advantage is often self-reinforcing because it generates further concentration of activity in the larger platform and marginalization or exit of the small platform. This kind of feedback loop often characterizes multi-sided platforms more than ‘old economy’ businesses. And the feedback loop increases the efficacy of the platform’s strategy, enabling it to increase its profits and reduce welfare for platform constituents in the short and long run.

There are different types of multi-homing tools that might be relevant for multi-homing on different types of platforms, and thus might be candidates for platform annexation. Software multi-homing tools are a relatively common feature of digital platform markets. In markets for physical goods, for example, software multi-homing tools exist to help sellers run storefronts, optimize prices, manage inventory, and track shipping, allowing them to sell their products through multiple e-commerce platforms. For operating systems and application stores, development multi-homing tools can be used by software programmers to facilitate the development of applications, and these multi-homing tools may be used to develop for a single platform or to facilitate cross-platform development. For example, platforms like Unity help developers write mobile games for multiple platforms. In payments, companies like Stripe help online merchants accept payments from a variety of sources, while consumer-facing applications like the Apple Wallet help consumers manage debit and credit cards and pay with their mobile phones. One can consider a search engine to be a potentially multi-homing tool to help consumers access services on the internet. Note that these multi-homing tools are both the locus of the exclusionary strategy and provide access to the services that are the ultimate source of consumer surplus and profits.

There are many recent examples of platform annexation of multi-homing tools among the “big tech” platform cases of recent years. In the digital advertising industry, the state of Texas accused Google of using its purchase of DoubleClick’s publisher ad server, a publisher-facing multi-homing tool that helped publishers connect to advertising exchanges, to exclude rival publisher ad servers and benefit its display advertising exchange. The U.K. CMA articulated an annexation theory of harm for Facebook’s purchase of Giphy whereby Facebook would make Giphy less interoperable across social media, and therefore degrade the functionality of rivals of Facebook. The U.S. FTC investigated Google for refusing to

4 Complaint, THE STATE OF TEXAS et al. v. GOOGLE LLC, Defendant., 2020 WL 7382404 (E.D.Tex.).
interoperate with multi-homing tools that helped advertisers multi-home across search advertising platforms, leading Google to agree to modify some of its restrictions.\textsuperscript{5} Another example of platform annexation is the contractual restriction that Google placed on OEMs and carriers (being litigated in both the EU and the US) to prevent them from multi-homing across search engines and in that way, increase their revenue share and reduce Google’s take rate.

Our definition of platform annexation often involves an acquisition of some kind.\textsuperscript{6} But even without an acquisition, a dominant platform may engage in foreclosure of this type by restricting the interoperability of its multi-homing tools or its platform with rival multi-homing tools or platforms. This could involve simply denying access to its interface, degrading the interconnection of rivals, or providing improved interconnection to its own services first. If the platform has enough market power, these tactics may cause users to abandon rivals and use the platform’s own tools or services in order to obtain access to the platform. This strategy is sometimes a form of “open early, closed late,” and can constitute monopolization.\textsuperscript{7} We argue for focusing on horizontal competition in platform annexation settings, even in situation where the conduct may appear to be vertical, or a transaction may be vertical. Annexation strategies lessen horizontal competition by lessening users’ ability to multi-home through manipulation of a related (vertical) business. In other words, annexation is a vertical theory of harm that lessens competition between rival platforms. Similar to other horizontal conduct, it is more likely to be anticompetitive when undertaken by firms in leading market positions or with substantial market power.

We explain that platform annexation is anticompetitive and harmful to consumer welfare. The extent of harm depends on the market position of the platform as well as structural characteristics of the platform market and the tools market, as we detail below. But in a setting with network effects where the leading platform has both the incentive and the ability to take actions to harm competition, annexation is a natural strategy to expect. For this reason, regulators that wish to protect consumers should scrutinize conduct or mergers that give platforms the ability to reduce multi-homing especially carefully. When annexation has already occurred, regulators should consider careful monitoring - or regulation - to ensure that multi-homing tools providing access to services and the services themselves are interoperable and are not used to interfere with the multi-homing that is crucial to the preservation of successful platform competition. In general, competition will be promoted when leading platforms are interoperable with independent multi-homing tools, and platform-owned multi-homing tools are interoperable with other platforms.

\textsuperscript{6} The 2011 paper on platform envelopment, discussed later, by Thomas Eisenmann, Geoffrey Parker, and Marshall Van Alstyne also uses a definition that often involves an acquisition of some kind. Infra note 37.
\textsuperscript{7} Arista Networks, Inc. v. Cisco Sys., Inc., 908 F.3d 792 (Fed. Cir. 2018).
Platform annexation can be pursued under Section 7 of the Clayton Act when the platform purchases a related asset that gives it the ability and incentive to foreclose rivals. When the exclusionary conduct occurs without a merger, Section 2 of the Sherman Act applies. Annexation could create monopoly or it could facilitate monopoly maintenance, or both. In a second dimension to the analysis, both harms are possible in both markets: platform and tool. For example, control of the multi-homing tool can enable the dominant platform to obtain more market power or fend off a rival platform. Likewise, when a dominant platform controls a multi-homing tool, it can favor its own tool with better access to its platform, making the tool’s rivals unattractive to consumers. This conduct increases the market power of the tool, creating or maintaining monopoly in the multi-homing tools market. Under modern U.S. jurisprudence, pursuing either a vertical merger or a monopolization case is an uphill battle for plaintiffs; the analysis here attempts to lay out the problematic conduct and clarify the theory of harm.

The Platform Annexation Narrative

The question we consider in this paper is how regulators and enforcers should analyze a scenario where a platform already owns multi-homing tools, or buys multi-homing tools (or services, or agents), of one side of a platform market and uses those assets to disable or disadvantage multi-homing. We argue that this reduces competition in the services provided by platforms in the industry which in turn harms consumers. We call this type of conduct “platform annexation.” We argue that in contrast to traditional examples of vertical integration, platform annexation creates conflicts of interest rather than resolving them. Thus, it should not be considered a typical example of vertical integration in a supply chain, where the frequent presumption is that integration eliminates conflicts to the benefit of consumers. When undertaken by a dominant firm, platform annexation should instead be presumed anti-competitive.

According to the economic definition of a platform, a platform has more than one “side.” For example, there might be users, publishers, and advertisers, or there might be buyers and sellers of a good or service. In this setting, network effects (often across sides of the market) are usually critical. The buyers want to shop where there are sufficient sellers. The sellers want to post their goods for sale where there are sufficient buyers. A new platform will have a hard time attracting buyers when it does not have sellers and vice versa, which in principle makes for a significant entry barrier. On the other hand, this entry barrier can be substantially reduced if an independent business makes a multi-homing tool that

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8 Platform annexation is more akin to a vertical merger where there is the incentive and ability to engage in foreclosure. See Salop (2020), who argues that vertical mergers can reduce horizontal competition, e.g. by raising rivals costs: Salop, Steven C., The 2020 Vertical Merger Guidelines: A Suggested Revision (March 26, 2020). Available at SSRN: https://ssrn.com/abstract=3550120 or http://dx.doi.org/10.2139/ssrn.3550120.
participants on one side of the market use to interact with multiple platforms. Such a multi-homing tool allows participants to identify and transact with trading partners even on new or small platforms.

A multi-homing tool that enables frictionless multi-homing is a significant threat to a large incumbent platform because it empowers participants to shift their business to other incumbents or entering platforms; a rival platform with a good offer will be able to take share away from the incumbent, and a multi-homing tool will substantially reduce the costs of attracting sellers to a new platform, reducing the barriers to entry and helping smaller platforms compete against larger ones. In particular, in the presence of effective multi-homing tools, a new platform can more easily attract participants since the participants can maintain their habits and their relationships with existing platforms while experiencing incremental value from a new platform. The new platform simply needs to offer an additional value proposition—for example, bringing a new segment of buyers or sellers to the market, charging a lower take rate or offering better quality—and an effective multi-homing tool should surface the value proposition to participants.

When acting independently, a multi-homing tools business succeeds by giving its constituents a good service, for example, by helping sellers multi-home efficiently and maximizing their profits across competing platforms. However, platform annexation, whereby the platform takes control of a popular multi-homing tool, gives the platform the opportunity to avoid these competitive outcomes and reshape platform competition to its own advantage, especially when it comes to multi-homing with platforms that are relatively close substitutes. The platform uses the multi-homing tool to preference its own platform and deprive rival platforms of business on one or both sides of the market, thus interfering with the competitive process.

Often the most powerful change the platform can make, post-annexation, is to reduce interoperability. It can prevent rival multi-homing tools from interfacing as effectively with its own platform as its own tool, and it can make its multi-homing tools interface better with its own platform than the rival platform. The former creates a barrier to entry in the market for multi-homing tools, while the latter deprives rival platforms of transaction volume, eventually reducing the incentives of participants to multi-home to rival platforms. With more volume, the large platform achieves lower cost and higher quality. The small platform is foreclosed by lack of access to customers who single-home on the tool and as a consequence

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10 This point is made repeatedly in the Furman Report as well as the CMA Digital Report. (Furman Review (2019), Unlocking digital competition, paragraphs 1.84-1.88).
of annexation are artificially induced into single-homing on the big platform.11 If these tactics are viewed narrowly, a single instance might fit in a “duty to deal” framework, where the question concerns whether a dominant firm can be held liable for a refusal to interoperate with a rival. Such frameworks tend to come with stringent requirements for legal liability that courts have created over time. The platform annexation analysis we present here is more expansive in its ability to explain the full extent of horizontal competition between platforms and how competition can be harmed. Thus, even a court that was skeptical of a “duty to deal” requirement on its own could find it embedded in a broader course of conduct of platform annexation which satisfies the criteria for liability under Section 2. In the case of an acquisition or merger, the same anticompetitive conduct would be evaluated under the Section 7 standard, where it would clearly lessen competition or tend to create a monopoly.

When Competition and Entry Fail to Constrain Annexation

A natural first question to consider is whether competitive forces will prevent a firm from engaging in platform annexation. Why don’t users abandon the acquired multi-homing tool once it stops prioritizing their needs? If users immediately switch tools when this strategy begins, the dominant platform’s strategy would not work because there would be no demand to steer. Starting from a situation where most platform participants multi-home, and where most participants use the larger platform, steering users to the larger platform more often may impose relatively small harm on them in the short term. Users might not quickly notice small harm. The more significant harm occurs in the long run when the smaller platform loses participation and economies of scale, multi-homing diminishes, smaller platforms no longer exert meaningful competitive pressure, and the larger platform can raise the take rate. Second, in many cases, the multi-homing tools or the platform (or both) have some market power. For example, participants may face a switching cost to changing tools. Third, the platform may hide or obfuscate the decline in quality of the multi-homing tool when used with rival platforms. Or improvements may be rolled out with ‘delays’ to rival platforms. The large platform might also worsen the terms of trade overall, while at the same time providing other financial or non-financial incentives for sellers to use the large platform’s tools. For example, sellers might get less data or poorer insights into transactions with the platform when they use rival tools, whereas they might be advantaged over other sellers in their transactions if they use the platform’s tool.

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11 This dynamic and outcome are described in the antitrust complaint against Google by the Texas AG in the Eastern District of Texas (Case 4:20-cv-00957-SDJ Filed 12/16/20). A theme of the allegations in that complaint is Google’s acquisition of ad tech businesses and subsequent exclusion of rivals through withholding or degrading interoperability.
The tool’s advantage with the large platform helps prevent entry by a competing multi-homing tool provider. The large platform can ensure any such entering multi-homing tool cannot access its platform with the same quality as its own tool, and that disadvantage makes the multi-homing tool unattractive to users. If the large platform anticipates that its own tool will be effective at harming competition and preventing entry by competing platforms, it may be willing to give the tool away “for free,” making it even harder for competing multi-homing tool providers to enter.\textsuperscript{12} In this scenario the “low” price for the tool is part of a very profitable, and anticompetitive, platform annexation strategy.

If the large platform’s control over seller multi-homing tools is successful at reducing multi-homing by the users of its seller multi-homing tool, then the competing platform will in turn attract fewer buyers, and thus the competing platform will provide less value to both sides of the market. This reduces the incentive of sellers to adopt different and better seller multi-homing tools, since the main advantage of a competing multi-homing tool would be its ability to facilitate multi-homing -- but multi-homing is less valuable when the second platform has fewer participants and delivers less value. This in turn reduces the customer base for a new entrant in the tools market, reducing the likelihood that new multi-homing tools will appear to close the gap.

For all of these reasons, we may not expect participants to switch multi-homing tools, and thus new multi-homing tools may not emerge. Fundamentally, the private incentives of market participants are not fully aligned with social welfare because there are externalities from participants switching tools and multi-homing; specifically, these behaviors in aggregate enhance competition among platforms. Those users who respond to quality changes and bear the switching costs to incentivize entry create a positive externality for other users. The incentive for users to free ride (i.e. to not be the users who switch and create market discipline) may mean that too many of them do not respond and an exclusionary annexation strategy succeeds. When a large enough share of participants is willing to switch tools and bear the costs of multi-homing, platform competition is enhanced, take rates fall, and welfare improves. But individual participants have the incentive to free ride on others, and market-wide competition suffers as a result.

Anticompetitive forces are most likely to operate in a situation where either the multi-homing tools provider, the platform, or both, start out with large market share, or where the platform has exclusive access to another asset such as a set of market participants or data. In contrast, multi-homing tools provided by a smaller platform will have a difficult time attracting participants if they do not interoperate fully with a larger platform in the industry. A smaller platform typically benefits when multi-homing

increases, and so has the incentive to promote interoperability. Thus, the market position of the platform is an important factor to consider when evaluating the ability of a platform to use multi-homing tools for anticompetitive purposes. Entrants or smaller competitors may need to create or improve multi-homing tools in order to facilitate multi-homing, and this is generally a pro-competitive activity.

**Platform Annexation Examples**

In this section, we will consider a case study of platform annexation of multi-homing tools for digital advertising, motivated by the recent interest of regulators in this example.\(^\text{13}\) In the advertising industry, a variety of software products exist to help advertisers engage in digital marketing. Publishers also use multi-homing tools called publisher ad servers to help sell space on web pages. Consider a publisher such as the New York Times that wishes to sell digital ads on certain blocks of space on its site, that is, to monetize its “inventory” of space. A company called DoubleClick provided the leading publisher ad server in the mid-2000s, and this tool was used by the New York Times to manage its inventory, compare offers (advertisements and willingness to pay) from different advertising exchanges, and analyze data about the monetization possibilities for different types of content, users, etc. Acting independently, DoubleClick had the incentive to serve the needs of publishers. If DoubleClick’s quality fell because it could not support publisher multi-homing across advertising exchanges and the market for multi-homing tools was competitive, the New York Times would have the incentive to augment DoubleClick with other multi-homing tools, or perhaps even move to a competing multi-homing tool. A competing multi-homing tool could differentiate itself by more efficiently enabling the New York Times to offer inventory and compare monetization across all the platforms (advertising exchanges). For this reason, DoubleClick would have no incentive to degrade its multi-homing capabilities. If a new competing ad exchange were to enter the market and compete with the Google exchange, then DoubleClick would incorporate access to the new option so that sellers, including the Times, could also sell there if they wanted to; it would be natural for sellers to gain from more choice, better prices, or features provided by the entrant. Since sellers value having easy access to these alternatives, a tool designed to provide value to sellers will naturally support multi-homing in that way, creating as many options for the seller as it can. This leads to efficiency in the advertising market, with competitive returns to both advertisers and publishers like the New York Times.

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However, the digital advertising market is not characterized by the competitive conditions described above, and the evolution of the industry reflects the concerns about platform annexation outlined in this article. Prior to its purchase by Google in 2007, DoubleClick offered publisher ad server services as we describe above.14 DoubleClick also launched an advertising exchange, a marketplace that matched publishers (sellers of inventory) to advertisers (buyers of inventory), around the same time the company was acquired by Google.15 At the time of acquisition, DoubleClick’s share in the market for multi-homing tools was large (estimated at least 60% of the market), while its exchange was new.16 It is easy to see that an owner of both the multi-homing tools and the advertising exchange would want to steer volume to its exchange, where it could not only capture a portion of the payments advertisers made to publishers, but further tilt future competition among exchanges in favor of its own exchange. Depriving rivals of traffic causes there to be fewer effective competitors in the future, increasing the future take rate and reducing incentives for future entry and investments by rival exchanges. Post-acquisition, Google altered the seller multi-homing tool so that it incentivized sellers to transact on its own exchange more than rivals’. For example, the multi-homing tool gave Google informational advantages over rival exchanges, and allowed Google’s exchange to view competing bids before placing its own bid.17

Post-acquisition, Google further connected advertiser demand from its search engine to the exchange and did not surface that demand to other exchanges, so that the exchange grew substantially in size and provided access to advertisers who were not available through other exchanges.18 The publisher ad serving multi-homing tool originally operated in service to the sellers and optimized their interactions with platforms for the benefit of the sellers only. After annexation, however, the multi-homing tool was owned by the same company that also owned an exchange, and where that exchange was a gatekeeper for a set of participants on the other side of the market (small advertisers from Google’s search business).

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17 Competition and Markets Authority, Online Platforms and Digital Advertising Market Study, 1 July 2020.
In this example, it is important to consider carefully why the publishers would continue using the multi-homing tool, since competition among multi-homing tools providers could in principle provide a constraint on anticompetitive effects from annexation. If entry into multi-homing tools is easy, there are few switching costs, and all exchanges are willing to interoperate on equal footing with all multi-homing tools, it seems likely that substantial degradation of the quality of the multi-homing tool would induce entry by competing multi-homing tools and switching by publishers. However, in the case of publisher ad servers, switching costs can be substantial. In addition, Google has the power to prevent its exchange from operating with any newly-introduced multi-homing tools. In that case the publisher would lose access to the large set of advertisers who are uniquely accessible through Google’s ad exchange. Further, a lack of transparency about pricing and take rates on Google’s ad exchange made it harder for publishers to understand the costs they were bearing from the lack of interoperability as well as the potential benefits of investing in new multi-homing tools. This uncertainty (anticipated by potential entrants in multi-homing tools as well as potential customers of those tools providers) likely contributes to the lack of entry by competing multi-homing tool providers.

If an ad exchange is advantaged by a multi-homing tool over a period time, it can accumulate more data and attract more advertisers. Subsequently, other exchanges may not provide access to as many advertisers, and the advantaged exchange may be the one most likely to serve a publisher’s need in the short run. The effectiveness of the exclusionary strategy is enhanced by the fact that without prevalent multi-homing, it can be difficult for a smaller platform to effectively compete with a larger one. After the market has tipped, participants do not benefit as much from tools that promote multi-homing. A publisher may not want to take the risk of switching tools if the benefit is fairer comparisons between a large exchange and a smaller exchange, but the cost is a risk of facing restrictions in accessing the largest exchange. Anticipating that consumers will be deterred by these risks, new multi-homing tool providers may be deterred from entry. Ultimately, publishers receive less revenue from advertising, and thus have less incentive to create content or invest in content such as reporting.

A key element of this example, which is common across other applications as well, is that by steering business to its own platform today, the platform reduces the incentives of market participants to invest in multi-homing to other platforms in the future. Platform annexation thus features a harm from lower quality service in the short run, a short run sacrifice that is borne by other market participants, not the platform. But the short run harm leads to a long run, larger harm when rival platforms are marginalized or exit. Thus, both consumers and competitors are harmed somewhat in the short run and substantially in the long run, when competitors no longer constrain the dominant platform, and consumers do not have meaningful choice.
Similarly, parallel issues can arise on the advertising side of the market. Indeed, when Google’s acquisition of DoubleClick was analyzed at the time by the American Antitrust Institute (AAI, 2008), the following considerations were highlighted: 19

…advertisers using [Google-owned] …advertiser tools may be unable to get the same quality of access to data and reporting on their search or other campaigns with non-Google search engines or ad networks as they can with Google search or AdSense. Moreover, advertisers that use … advertiser tools [not owned by Google] may be unable to get the same quality of access to data and reporting on their Google search or AdSense campaigns that is available to advertisers using [Google-owned] …advertiser tools. In these cases, Google’s dominant position in search (and contextual) advertising will be further entrenched, and… [its] leading position in advertiser tools will be cemented. As a result, the lessening of competition in the search market and advertiser tools market may outweigh whatever efficiency benefit may result from integration.

Similarly, it has been suggested that Google might use its control over… [Google-owned publisher tools] to raise the costs of rival advertising networks… those networks may be unable to compete with AdSense, and potentially could wither due to a lack of scale.

Finally, the merger raises the question of whether Google might use competitively sensitive information from publishers about their advertising programs or from advertisers about their advertising campaigns to gain a competitive advantage for Google’s search or AdSense offerings.

Notably, all of the issues previewed in these passages have been raised by regulators investigating competition issues surrounding Google’s advertising business practices in recent years. 20 The framework of platform annexation we present here creates a unifying framework for these concerns.

Our second example is a hypothetical one. Imagine a transport multi-homing tool that users could employ to optimize their travel to a destination across train, subway, and car services Y and X. The multi-homing tool would succeed by making itself attractive to consumers - which would mean including many convenient transportation options and integrating them into its algorithm. Suppose this multi-homing tool was popular and had a large user base. Now imagine that car service X purchased the multi-homing tool and went on to maximize profits of the combined entity by using the tool to foreclose rival car services. The company would want the tool to benefit its car service X relative to rivals by, perhaps, listing it first in the user interface, offering rides to its own drivers before others, not sharing its APIs with public transportation, and so forth. These tactics would benefit car service X, particularly relative to its closest competitor car service Y, and its share would grow. Subsequently, car service X could refuse to fully interoperate with any competing or newly created multi-homing tools, so that the annexed tool provides

19 Supra American Antitrust Institute at 14.
20 Competition and Markets Authority, Online Platforms and Digital Advertising Market Study, 1 July 2020. Additional issues surrounding transparency in pricing have also been noted in regulatory hearings. https://www.wsj.com/articles/google-executive-gets-grilling-on-capitol-hill-11600219717.
better functionality for car service X’s own platform. Foreclosure of car service Y, the smaller platform, occurs too quickly for rival multi-homing tools to enter as complements or for users to learn and switch. Anticipating all of these forces, new entrants may be deterred from attempting to create new multi-homing tools.

Whether these tactics would be successful depends on several other factors. If the multi-homing tool’s bias makes travelers decide to seek alternate tools, then the annexation strategy might not succeed. In general, however, developing software usually has scale economies, through research and development, or perhaps optimization based on user data. If those scale economies are substantial, entry by new multi-homing tools might be deterred entirely, or delayed. Return to the example in the area of ride hailing. A delay might provide the time for the tool to use its existing market power to achieve a new equilibrium with higher share for car service X. Second, if the tool tilts the users towards car service X, drivers seeking those riders may join car service X which creates a benefit to X’s users only. When old and new users of X do not face any costs, they have no incentive to multi-home and try to support Y. (This is a collective action problem: as a group, the consumers lose in the long run when the competing platform disappears, since it leads to high take rates later). Third, if consumers have a hard time observing the low quality - that some drivers were being preferred, or the public transit options were poorly integrated - they might not leave the tool, thereby cementing the market power of the acquiring firm.

Platform annexation would benefit car service X, particularly relative to its closest competitor car service Y, and might even benefit users of X in the short run. If car service X has indirect network effects and scale economies it will benefit but it will not have as much incentive to pass on those benefits to users once it has the market power that comes with excluding Y. Because platform annexation will harm users of Y in the short run, reduce entry, and lead to less competition in car services, it will not be in the interest of consumers.

Then, the foreclosure of car service Y would allow car service X to increase its take rate and reduce innovation. In a hypothetical scenario where the owner of a mobile operating system also owned either car service X or Y, the situation could become even more concerning. Multi-homing tools could be integrated into mapping software, or competing multi-homing tools could be disadvantaged or prohibited from application stores. The platform’s multi-homing tools could be given a data advantage. In general, market power in adjacent markets can be used to enable or reinforce the platform annexation strategy.

Our third example is derived from a general ecommerce setting. Suppose a software business springs up that helps merchants set up a storefront, develop layouts and content, track inventory, set prices, and mail out purchases. This storefront might be tightly integrated with the merchant’s enterprise software and
include a number of multi-homing tools to help the merchant choose prices and marketing campaigns on different marketplaces. If many ecommerce platforms integrate with this storefront multi-homing tool, a merchant user can sell its wares on all of those platforms with one fixed cost, namely by deploying its single storefront software. The storefront multi-homing tool might further help the merchant analyze the fees of each platform relative to sales volumes and types so that the merchant can shift effort to platforms that are low cost or most profitable. This storefront multi-homing tool might obtain a significant market share among small merchants. Suppose next that a large ecommerce site acquires this storefront tool. The combined firm now rolls out an “improvement” to the tool that initially only works on its own marketplace. The improvement renders sales on the home marketplace more lucrative, so merchants prefer to transact there; in addition, the tool’s rankings and choice architecture steer business to its own marketplace. Rival ecommerce marketplaces lose some volume and liquidity, and merchants begin to drop off them, or fewer sign up, as a result. The multi-homing tool’s new capability is eventually made functional on the rival marketplaces, but by that time there is an even newer functionality that, again, is exclusive to the dominant marketplace. The smaller marketplaces continue to shrink. Sophisticated merchants search for a multi-homing tool that will let them sell successfully on all marketplaces. But no developers create new storefront software because they foresee the dominant marketplace will not share its APIs and refuse to interoperate with the entering multi-homing tool. Established merchants must be able to sell on the dominant marketplace; and merchants face significant costs of running two tools, each with its own sales and inventory and so forth.

Inefficiencies from Platform Annexation

Why is platform annexation inefficient? We start by explaining the logic from first principles, and then return to relate this logic to the analysis of efficiency from established antitrust concepts such as those from the literatures on vertical integration, raising rivals’ costs, and tying and bundling. Key themes throughout include the conflict of interest between the platform and its constituents, the externalities created by tools that facilitate multi-homing, and the reinforcing effects of platforms preferencing tools and tools preferencing platforms.

A platform in our setting will typically be an intermediary and will keep the difference between what the buyers pay, and the sellers receive, or the take rate. When independent, seller multi-homing tools focus on getting sellers greater profit, for example, selling at a higher price. The platform, by contrast, cares that the transaction occurs through it rather than a competing platform, and further wants to share less of the buyer’s payment with the seller. Likewise, independent buyer multi-homing tools focus on making sure buyers pay no more than necessary for quantity and quality desired. The platform has an incentive to raise sale prices to increase revenue from buyers, and – in its role as a multi-homing tool - to steer those buyers
to its own platform even if a better price is available elsewhere. When buyers and sellers can switch between platforms, a platform that raises its take rate above competitive levels will lose customers to rivals, as either prices for buyers will be too high, or payments to sellers will be too low.

The sellers and the platform do not share all the same goals, and therefore when a platform annexes adjacent businesses in this way it *creates* conflicts of interest. The seller multi-homing tool stops functioning in the interest of the sellers. The buyer multi-homing tool stops functioning in the interest of the buyers. Rather, after annexation in either case the multi-homing tool is working to maximize platform surplus. The conflict between platform participants and the platform is resolved in favor of the platform when buyers pay more and/or when sellers receive less. These are exactly the opposite of the goals of the dedicated multi-homing tools that existed before the annexation. Another way to look at this is that multi-homing creates positive externalities for platform constituents in both the short and long run, and the benefits to platform constituents come at the expense of the larger platform’s profits.

It is clear that conflicts will be rife if a platform owns the buyers’ services, the sellers’ services, set the rules that determine prices, keeps the difference between the two prices along with other fees, and limits transparency into how the process works -- as Google does when it sells digital ads. The parallel to financial services is instructive. Would investors agree to trade stocks on an exchange set up in this way? Stock exchanges and financial services more generally are regulated to provide a variety of protections and disclosures that prevent conflicts of interest of this type, and to ensure that agents have a fiduciary duty to the constituents they serve (or at least disclose when they do not).

Overall, when a platform buys the multi-homing tools that serve its constituents beyond the platform, that generates a conflict of interest within the platform that was not previously present when the multi-homing tools were independent. Independently-owned tools serve their constituents, and are incentivized to create value for them, including facilitating multi-homing across platforms. Tools owned by a dominant platform have conflicted interests; they are incentivized to prevent multi-homing and to favor their own platform, and will include the profits of the platform in their objective function. Platform annexation increases the market power and profits of the platform, and harms constituents and competition the same way the market power of a simple monopolist harms consumers and competition.

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In a scenario where multi-homing tools are independently owned and facilitate multi-homing on at least one, and preferably both sides of the market, platform markets can be very competitive, characterized by low take rates and robust competition in quality and innovation in the goods and services being provided by or through the platform. When multi-homing is prevalent, network effects are experienced at the market level, rather than at the platform level, and thus do not impede competition between platforms. When multi-homing is cheap and convenient for participants, platforms must differentiate themselves to attract users through low take rates, high quality service, innovation in matching algorithms, protection for buyers and sellers, and other valuable services. However, if multi-homing is stymied, entry can be prevented and competition made less effective, and a dominant platform can extract most of the surplus created by the platform. High take rates in turn lead to reduced output, and lack of competition leads to reduced incentives for quality and innovation.

The Analytical Framework for Platform Annexation

Platform annexation involves a collection of reinforcing activities that together form an effective strategy for excluding rivals. As we have described, the platform’s behavior towards the tools, and the tool’s behavior towards the platform, can be used to reinforce one another. The resulting situation deters new entry that would otherwise be attracted by user demand. Potential multi-homing tools are aware that a platform with this strategy will exclude any multi-homing tool entrants; likewise, a multi-homing tool with this strategy will exclude new platforms. Elements of platform annexation can be placed into various antitrust frameworks. The advantage of considering platform annexation as a distinct strategy is that by incorporating the specific features of the phenomenon, it is possible to be more precise about whether the conditions that lead to inefficiency are satisfied. We consider several relevant frameworks in turn.

Is this Horizontal or Vertical Conduct?

Competition policy typically draws a distinction between horizontal and vertical conduct. When two firms in the same market merge, it is straightforward to see the harm to competition that follows, as the two firms no longer have an incentive to compete with each other in price, quality, or innovation. In contrast, vertical contracting and vertical integration, such as when a manufacturing firm and one of its

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23 Note that in an extreme hypothetical case where all participants on one side of the market multi-home and platforms are not differentiated, participants on the other side are indifferent between platforms and have no reason to multi-home in response. However, under more realistic settings, there is some differentiation as well as some uncertainty about what participants will encounter. Multi-homing has benefits in expectation for many reasons, including the chance of finding a better match (due to some sellers single-homing, different matching algorithms, different policies, different data, or different timing in participation decisions). Tools that make multi-homing frictionless make multi-homing common even when platforms are similar.
suppliers merge, are often considered to be efficient. The problem integration can solve is that a manufacturer can have a conflict of interest with its suppliers over the division of profits: each wishes to receive a higher share of profits, and the supplier recognizes that by charging a high price, it can take a larger share of profits. In the simplest case, the manufacturer passes some of that cost onto end consumers, resulting in higher prices and lower output than if the manufacturer and supplier were vertically integrated. Economists refer to this inefficiency as the “double marginalization” problem. Empirically, however, any individual merger may or may not exhibit these inefficient externalities and the merger may or may not be able to internalize them. Vertical integration has other potential efficiency benefits. For example, it may resolve hold-up problems that might otherwise arise when separate firms need to make investments that are specific to the supplier-manufacturer relationship. Again, in these settings, vertical integration aligns the interests of the merging parties with consumers.

There is an equally large literature explaining how vertical mergers can harm competition by misaligning the interests of the merging parties and consumers. One way this occurs is through the combined entity foreclosing a rival’s access to inputs or customers. Farrell and Weiser (2003) contrasted the Chicago school view, which focused on the efficiency of vertical mergers, with judicial and regulatory decisions (e.g., by the FCC) that developed and promoted open architectures and interoperability, in an attempt to prevent firms that are powerful at one level from leveraging that power into adjacent segments. The paper argues that vertical mergers can be efficient when they internalize complementary efficiencies, but that there are a variety of settings where vertical mergers do not accomplish that goal and are instead anticompetitive, such as when vertical mergers are used to deter entry or nascent competitive threats. Another type of exception concerns incomplete complementarity, as when applications might serve consumers on more than one platform. In this setting, a platform attempting to integrate into applications does not internalize harm to users that access the application through other platforms. The article also argues that the presence of scale economies in adjacent markets contributes to the potential for

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harm. Our analysis is consistent with these themes; as we discussed above, a platform engaging in platform annexation will create negative externalities on users of other platforms in the short and long run. Those users cannot exert effective discipline on the foreclosing platform for the reasons described above: there are often externalities, switching costs, and asymmetric information that prevent users from acting in a timely fashion.

Existing Frameworks for Analysis of Platform Annexation: Raising Rivals’ Costs

Another scenario where vertical mergers can be inefficient was introduced by Salop (1983), who formalized the idea that raising rivals’ costs can be anticompetitive. In a recent paper, Salop (2020) summarized the implications of these and related theories for policy towards vertical mergers, highlighting that upstream firms indirectly support competition between downstream firms, so that “vertical” behavior affects competition and welfare. When a downstream participant in a market is also a supplier with market power to itself and to downstream competitors, it can use its market position to raise downstream competitors’ costs or refuse to supply the input. This is true both in traditional, physical supply markets, as well as in digital markets, where in addition to raising the price (if applicable), the firm can deny or increase the cost of access to competitors.

Platform annexation causes a harm to horizontal competition – between platforms – through a vertical foreclosure strategy, in particular by foreclosing rivals’ access to customers, one of the forms of raising rivals’ costs. When a platform purchases an independent multi-homing tool provider, it uses the vertical relationship to steer volume to itself and raise rivals’ costs by making it more difficult for rivals to attract customers.

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30 Khan (2019) presents arguments regarding current technological platforms, highlighting that third parties that depend on a platform for access to customers face important risks, including manipulation or discrimination to direct consumers to a platform’s own products rather than the ones that best serve consumers, reducing the incentives to provide quality, as well as appropriation. The paper suggests regulatory action, in particular structural separation, to prevent harms arising from platform annexation. Khan, Lina, The Separation of Platforms and Commerce (May 15, 2019). 119 Columbia Law Review 973 (2019), Available at SSRN: https://ssrn.com/abstract=3180174.


customers. If that scale creates liquidity or better matches for users, then raising rivals’ costs takes the form of lowering their quality. If the platform uses the multi-homing tool to deny information to rivals, while promoting information flow between the multi-homing tool and the owning platform, that will lower the quality of rivals and create customer foreclosure. Or such a strategy may even simply prevent usage of rivals through lack of interoperability, which may result in direct exclusion of those rivals, a more dramatic form of customer foreclosure. The vertical foreclosure that arises from platform annexation has a longer run impact also. If a rival platform foresees that it cannot obtain customers because of the foreclosure of the dominant platform it will be less likely to enter. Similarly, a rival multi-homing tool provider that foresees it cannot obtain equitable interoperability with the dominant platform will also be less likely to enter. These outcomes reduce competition in the fundamental services offered by the platform industry. Again, this fits into a class RRC framework by foreclosing customers.

When a dominant platform degrades or ends interoperability with its multi-homing tools (perhaps an organized set of APIs), a rival platform also experiences higher costs. Its users (e.g. developers) now no longer can develop once for both platforms but must expend the resources to develop a product for the rival’s platform. This type of raising rivals’ costs is known as “open early, closed late,” or refusal to deal. In this setting there is no merger, but rather the dominant firm unilaterally decides to change its conduct and cuts off a rival. Economic analysis requires a reason for the dominant firm to change its strategy from open to closed. Perhaps the rival lost ground, the dominant firm gained market power for other reasons, or technology trends moved in favor of the dominant firm. An acquisition is an obvious reason for a change in strategy, as it provides the dominant firm with the ability to engage in foreclosure it didn’t have before.

There are a number of factors that increase the effectiveness of platform annexation in the digital context. One is the ability the platform often has to hide information or create asymmetric information between itself and its constituents. The service provided by multi-homing tools may involve, for example, aggregating and comparing a large number of offers with many dimensions, so it may not be straightforward to audit the multi-homing tool’s performance. Thus, users may not be able to see that quality is being degraded, or see it quickly enough to respond. Some categories of users may have a default bias, or a limited cognitive time and ability to analyze the platform’s conduct and optimize. Unless users respond quickly by switching tools, preferencing behavior on the part of tools can cause the quality of the smaller platform to drop and the market to tip. There may be free riding among users because switching is costly and the costs are borne by the switchers, while all users gain from the smaller platform staying in the market. Lastly, there is the critical role of feedback effects between the multi-homing tool and the platform. These make platform annexation speedy and effective because the very same action that reduces sales on the smaller rival also reduce its quality, and therefore future sales, and
also reduce the incentive for rival multi-homing tools to enter and fix the problem. Notably, users may not understand the mechanisms that lead to the outcomes they experience; they may simply note that one platform has better offers than the other, without recognizing that the lower quality of the smaller platform is a direct consequence of multi-homing tools preferencing the leading platform and creating artificial differences in platform participation.

**Tying, Bundling and the Single Monopoly Profit Theory**

A key component of platform annexation is the way in which the dominant platform interacts with the tool. If a platform refuses to fully interoperate with competing multi-homing tools, or if multi-homing tools interoperate better with the dominant platform, the behavior can be thought of as a form of tying. The literature on tying and bundling highlights that these practices may not create inefficiency in some benchmark scenarios, but may lead to inefficiency in more realistic settings. In the “single monopoly profit” view, a firm with market power in a core market cannot profit through behavior such as bundling its product with a product in an adjacent markets. As the argument goes, if a monopolist charges more for a product in an adjacent market, it would need to charge less in the core market. This argument relies on market power being predetermined in the core market, requires no market power in adjacent markets, and ignores the “tippyness” feature of platforms that creates feedback from quantity to quality to entry (without prevalent multi-homing). In short, it is inapplicable.

In our setting, we can consider the platform as the core market and the multi-homing tools market as a related market. The conflict of interest created by platform annexation explains why the “single monopoly profit” critique does not apply to cases of platform annexation. Market power in both the primary and adjacent markets are influenced by the conduct at issue; using a multi-homing tool to reduce interoperability changes the long-run ability of the platform to extract surplus. Another way to look at it is that the platform does not internalize the negative impact of its behavior on constituents’ utility from other platforms in either the short or the long run (i.e., the benefits of competition accrue to users, not the platform). The manipulation undertaken by the multi-homing tool creates a negative externality, since participants benefit in the short and long run when other participants multi-home to competing platforms.35

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Another perspective about inefficiency in the existing literature about bundling was provided by Whinston (1990), who shows that when there are scale economies for a related product, a monopolist may tie or bundle its own version of the related product, reducing the available market size for competitors and successfully deterring entry. Tools for multi-homing would be expected to have such scale economies. Carlton and Waldman (2002) show that these forces are also present in dynamic settings and with newly emerging adjacent markets, where again the analysis emphasizes the importance of scale economies and entry costs in adjacent markets. More broadly, a literature considers investments by a monopolist in complementary products. Choi and Stefanadis (2001) show that when there is uncertainty about returns to investment, a monopolist’s entry in a complementary market allows it to engage in a “price squeeze” that reduces investment and innovation by rivals. These perspectives are consistent with our analysis: many or all of these forces, or analogous forces, operate in platform annexation. Platforms and tools generally have entry costs and scale economies, while the ease of multi-homing is a key force determining the barriers to entry in platform markets.

**Platform Envelopment and Competition with Complementors**

Moving to models that address platform economics more specifically, Eisenman et al (2011) consider a model of “Platform Envelopment.” Their model considers two adjacent platforms and allows the two platforms to be substitutes or unrelated, as well as complements. Our setting focuses on the case of complements (though multi-homing tools may not be formally considered platforms, in that they provide a service to one side of the market, typically connecting to platforms through APIs). Eisenman et al (2011) describe how when two platforms are serving the same set of users (or have substantial overlap), one can attempt to foreclose the other platform’s access to the users. The winning platform harnesses the network effects that formerly belonged to the now foreclosed rival. The paper articulates a set of tactics

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41 A related literature examines scenarios where a monopolist wishes to commit not to enter into complementors’ markets in order to induce complementary firms to make platform-specific investments, e.g. Gawer and Cusumano (2002); these authors also observe that a firm might enter an adjacent, complementary market if existing complementors are poor quality. See Cusumano, M.A. and Gawer, A., 2002. The elements of platform leadership. *MIT Sloan management review*, 43(3), p.51.
that have been observed in practice that facilitate this foreclosure. Our discussion of platform annexation highlights a subset of this acquisition strategy space; the way the foreclosure is effectuated is through the acquisition of the complement, in this case, the related market for multi-homing tools.

We should be sure to observe that a platform may help consumers by entering the multi-homing tools market, or vice versa, when options for consumers are poor. Because platforms and tools are important complements, insufficient investment in one may lower demand for the other. Observers have argued that Amazon introduced the Kindle reader device because innovation in hardware had the potential to substantially improve consumer experience reading digital books, and Amazon could internalize the complementarity between the products. It is also worth noting that platforms that are trying to induce platform-specific innovation by third parties are often very careful and deliberate about not entering the space themselves. A complementor is unlikely to invest in a firm-specific project if it expects to be expropriated. Davis et al (2002) uses the case study of Microsoft to illustrate the idea that platforms can benefit by creating applications programming interfaces (APIs) to reduce the cost of complementary investments by applications developers; they also show that in addition to cost reduction, the release of APIs facilitates complementary innovation.42 Gawer and Henderson (2007) argue that Intel also made a variety of investments in intellectual property that it shared with complementors in order to increase the incentives of complementors to invest, arguing that a more “open” architecture benefits innovation. They further argue that Intel historically invested when its capabilities were strong relative to complementors, and various organizational constraints were used to commit Intel to a policy of not “squeezing” its complementors. Zhu (2019) surveys the studies that have considered how a platform responds to the possibility of supplying its own complement.43 Many chose not to do that, often for the reasons identified above, but the paper identifies several case studies where the platform offers the complement, then bundles it together with other platform services in some way and is able to exclude rival complements.

**Exclusive Contracts**

Manipulation by multi-homing tools has economic consequences similar to those of exclusive contracts between platforms and platform participants, since exclusive contracts also result in a reduction of multi-homing by platform participants. Platform annexation is an indirect way to achieve an exclusive relationship with users. Exclusive access to an important set of participants can be procompetitive when it enables entry by giving participants on the other side a reason to adopt an entering platform, but

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exclusive contracts can be anticompetitive when they help a dominant firm deter entry. Lee (2013)\textsuperscript{44} empirically studies these effects in the gaming market.

\textit{Competition Policy and Platform Annexation}

When a platform competes against others, it is incentivized to keep all sides of the platform happy by ensuring its multi-homing tools serve their needs and by improving quality and price. Some mergers involving platforms will be designed to this end and will therefore be procompetitive. By contrast, when a dominant platform wishes to lessen competition, it is incentivized to control the tools of its constituents to prevent them from multi-homing or sponsoring entry. This is conduct that is harmful. In addition to blocking entry, annexation of services and multi-homing tools allows the dominant platform to exercise market power. The asset acquisitions that can be characterized as platform annexation thus often feature strategies that prevent multi-homing with competing products as well as adoption of strategies that help the acquirer block or impede entry.

Platform annexation is \textit{not} best thought of as “vertical,” with all the connotations that brings. Combinations between a platform and its multi-homing tools is a vertical strategy that harms horizontal competition and therefore is more easily understood in a horizontal framework. The central platform expands out to annex all the surrounding multi-homing tools and functions, ensuring that multi-homing does not arise and that barriers to entry are maintained. Because platform annexation creates the incentive and the ability to engage in foreclosure and reduce (horizontal) competition in the platform market, these transactions deserve the additional level of scrutiny horizontal mergers receive.

The logic of competition policy towards horizontal competitors can also be used to identify cases where antitrust enforcement is \textit{not} necessarily appropriate. For example, platform markets characterized by strong scale economies and network effects are often fairly concentrated, and it is natural for a second or third place firm to invest in tools in order to promote multi-homing. Just as a horizontal merger between two weaker competitors can promote competition in platform markets, it can be pro-competitive for a smaller firm to develop multi-homing tools. And even a platform that has low market share or faces other types of competitive constraints from adjacent markets may build multi-homing tools in order to promote usage of its platform -- and those multi-homing tools will tend to be neutral since users want access to the large platform as well as the small one.

Both incentives and efficiency depend on the platform’s market position: smaller firms have the incentive to promote multi-homing in order to attract participants from larger platforms, while large platforms have the incentive to inhibit multi-homing. Since multi-homing is a key component of effective competition, smaller firms have incentives more aligned with social welfare in this case. And observing which firms and tactics try to harm multi-homing is a good guide to where the anticompetitive conduct may lie. Other factors to consider include whether a platform and the related tools have sufficient market share to have a meaningful impact on competition and barriers to entry in either the platform market or the multi-homing tools market, or whether competition will discipline the platform to provide constituent-friendly tools that promote multi-homing and interoperability.

Some economists have advised for caution in applying antitrust regulation to multi-sided platform markets, because it is natural in some types of these markets to subsidize one side of the market (e.g. consumers) and then extract surplus from the other side for access (e.g. sellers), perhaps exploiting what has been termed a competitive bottleneck. However, in the case of platform annexation, the platform reduces the quality of the multi-homing tools on one side of the market (e.g. sellers), without passing on the surplus to buyers. Instead, buyers are harmed in the long run, as competing platforms attract fewer sellers, thus reducing their utility to buyers. Competition among platforms helps end consumers in the short run, by constraining the take rate, and also in the long term, by lowering entry barriers. A platform facing competition with multi-homing participants will be forced to innovate in terms of quality and services in order to attract constituents.

Remedy

One obvious remedy for platform annexation is interoperability. One source of interoperability might be a regulator or other institutional environment that mandates a baseline level of interoperability. In this case, the annexation strategy we describe will not be possible. For example, if an internet portal was interoperable across multiple browsers, the largest browser might have an incentive to purchase the portal (to obtain its large group of users) and ensure its content functioned better on the large browser than on rival browsers, and foreclose rivals in that way. But this strategy would not be profitable if there were internet protocols for rendering content that all browsers must use; such protocols would not allow for the degradation of interoperability and platform annexation would not make sense.

Mandatory interoperability is also attractive as an antitrust remedy, particularly in cases where a degradation of initially high quality and popular interoperability was an important part of the challenged

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conduct. When interoperability was withheld from rivals in order to foreclose them and create market power, restoring it should be helpful to both rivals and to consumers, who regain access to more choices. Moreover, if the market was interoperable prior to the anticompetitive conduct, it should not be too risky for consumers, nor technically difficult, to make it interoperable again. In the type of settings we have in mind, interoperability is fairly straightforward. The APIs that are shared between the platform and its own multi-homing tool simply need to be shared externally also. Access to these APIs is often sufficient for tool developers to create tools that multi-home.

If a consumer has a right to realtime portability of their data (as it seems the DMA will require), this might also protect them from degradation of interoperability; the user could itself export its data to a multi-homing tool that served the user’s interests. Of course, other remedies may also be appropriate, such as blocking the transaction or divesting the tool before irreparable harm has occurred in the form of ‘tipping.’

Conclusion

Traditional antitrust often falls back on a simple categorization of conduct into horizontal and vertical, and is substantially less skeptical of mergers between firms that compete in related markets. Platform annexation, whereby a platform annexes multi-homing tools in a related market, directly harms users’ ability to multi-home and therefore the strength of competition. The merging parties may argue that the degradation of interoperability had a business purpose or that they have no requirement to interoperate with rivals. But the combined firm has strong incentives to foreclose and a forward-looking analysis will predict the parties have the incentive and ability to harm consumers’ ability to substitute across platforms. This decline in the intensity of head to head competition renders platform annexation similar to an anticompetitive horizontal merger. In this paper, we zero in on the economic forces specific to platform annexation, laying out the logic using basic principles from platform economics. We conclude that platform annexation should be viewed with substantial skepticism by regulators and enforcers.