## **VERTICAL RESTRAINTS IN A DIGITAL WORLD**

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## I. INTRODUCTION

Most cases and economic analyses involving vertical restraints have focused on the physical world of manufacturers and distributors. Commerce, however, is moving rapidly to a digital world populated by firms where the provision of goods and services depends heavily on Internet connections. For the analysis of vertical restraints, this digital world could involve the same principles just different facts. To a large extent that's the case. Certain features of digital businesses, however, are distinct from the physical world and will play a substantial role in matters before competition authorities and courts.

This paper provides a guide to those features and their implications for the analysis of vertical restraints. Section I describes what's new and different about digital businesses that may matter for antitrust analysis of vertical restraints. Section II provides some general principles for analyzing vertical restraints in the digital world. Section III considers examples of vertical restraints arising from the application of platform rules for participation, exclusive contracts, and MFNs to help illustrate these principles. Section IV concludes briefly.

# II. WHAT'S NEW AND DIFFERENT ABOUT THE DIGITAL WORLD

The digital economy, as defined here, comprises businesses that rely substantially on the Internet to provide products and services to consumers. The products could be digital, and delivered digitally, such as video (YouTube) or search results (Google). They could be physical products that are delivered physically but are found and bought digitally (Amazon). They could be services that are delivered and consumed physically, such as a ride, but facilitated mainly over the Internet (Uber). They also comprise digital products and services that enable other digital businesses, such as mobile app platforms (Apple). By this definition, the digital economy excludes important digital products that are not provided primarily over the Internet such as payment card networks (Visa). This paper also does not consider businesses that provide the critical physical infrastructure for the digital economy, such as fixed and mobile broadband providers.

The digital economy is substantial and is likely to become an even larger portion of the overall economy. In the U.S., online firms account of almost half of the time people spend on media, 39 percent of total advertising spending, and about 10 percent of total retail commerce.<sup>2</sup> Expectations of future growth are partly responsible for driving up the valuations of digital businesses. As of October 1, 2019, seven of the ten most highly valued publicly traded companies made most of their profits from products

2 Data on time spent consuming media is sourced from Nielsen (2019) "The Nielsen Total Audience Report Q1 2019" at p. 4. Estimates of advertising revenue data is sourced from Interactive Advertising Bureau (2019) "IAB internet advertising revenue report 2018 full year results" at pp. 21-22. Data on E-Commerce's share of total retail sales is sourced from Federal Research Bank of St. Louis, "E-Commerce Retail Sales as a Percent of Total Sales," https://fred.stlouisfed.org/series/ECOMPCTSA#0.

and services that depend heavily on the Internet.<sup>3</sup> The growth of online commerce is likely to accelerate with the deployment of 5G technologies that will blanket the physical world with connected devices that can handle vast amounts of data at much greater speeds than today.

Many economically significant digital businesses operate intermediaries. In most cases these intermediaries are multisided platforms that facilitate beneficial interactions, often exchange, between distinct types of participants for which there are usually indirect network effects with other participants. In some cases, these intermediaries follow a traditional reseller model in which buyers interact directly with the intermediary rather than with sellers.<sup>4</sup> The main novelties in the analysis of vertical restraints in the digital world involve these digital intermediaries.

#### A. Significant Digital Businesses Are Usually Multisided Platforms Based on Software

The largest digital businesses earned a substantial part of their revenues from operating multisided platforms. Table 1 lists the seven largest global digital businesses and the intermediaries that drive a large part of their revenues.<sup>5</sup> Many other economically significant digital businesses, such as the various ride-sharing services, operate multisided platforms. And it remains a common model for venture-backed startups.

Digital platforms rely primarily on software to provide core services such as matching, search, discovery, transactions, and communication. They also depend on the Internet to connect participants and to provide those core software-based services. The software for digital platforms typically resides on server farms maintained by "cloud providers" or in proprietary server farms.

Indirect network effects often fuel the growth of multisided platforms. More participants on one side of the platform makes the platform more valuable to participants on the other side of the platform. Rapid growth can occur as more participants join each side and thereby increase the attractiveness of the platform leading to more participants to join.

Company	Platforms
Microsoft	Windows, Bing, Azure,
Apple	iOS including App Development Platform and App Store
Amazon.com	Amazon Marketplace, AWS
Alphabet	Android (including Google Play), Google, YouTube
Facebook	Facebook, Messenger, Instagram, WhatsApp
Alibaba	Taobao, Tmall, AliExpress
Tencent	QQ, WeChat, Tencent Games

#### Table 1: Large Digital Businesses and Their Platforms

The Internet as well as other information technologies reduce physical constraints on expanding users and can thereby accelerate these indirect network effects. As a result, digital platforms can prove a concept locally, and then expand to many locations, using similar software and processes. They can do that more quickly than physical businesses that require more local facilities to provide services through broader physical spaces. Digital platforms and resellers now cover most sectors of the economy.

The following discussion focuses on features of digital platforms that are particularly relevant for analyzing antitrust issues involving vertical restraints. These features are the same for digital platforms as they are for physical platforms but are magnified as a result of Internet connectivity, software, and related information technologies. Although the details differ, digital resellers have similar features even though they do not facilitate direct interactions between the various groups of participants.

3 Market capitalization data sourced from S&P Capital IQ. The top 10 firms include Microsoft, Apple, Amazon, Alphabet, Berkshire Hathaway, Facebook, Alibaba, Tencent, Visa, and JPMorgan Chase.

4 See *Matchmakers* at Ch. 7, and Hagiu, Andrei & Julian Wright (2015) "Marketplace or Reseller," *Management Science* 61(1), pp. 184-203, for a discussion of the difference between platforms and resellers. Roughly speaking a shopping mall is platform while a department store is a reseller. This paper refers to "digital multisided platforms" simply as "digital platforms" and digital intermediaries that follow a reseller model as "digital resellers."

5 Amazon also operates a digital platform (Amazon Marketplace) and a digital reseller (Amazon) side-by-side. Buyers see offers from both on its website and app and some sellers participate in both models. Each business model accounts for about half of its ecommerce revenue.

#### B. Platforms Need to Reach Critical Mass to Ignite and Grow Profitably

Digital platforms face the same chicken-and-egg problem that physical platforms often face. If they don't offer access to enough of the right participants, they don't have much to offer. This situation is different than traditional businesses which sell products rather than access. To get off the ground, a sliced-bread manufacturer needs a factory and ingredients to make bread. To get off the ground, a heterosexual dating platform must have enough men and women to offer an interesting dating product to either group.

Critical mass refers to the minimum set of members of both sides necessary for the platform to provide a sufficiently valuable service that it can keep those members on board, grow by attracting more users than it loses, and become a profitable enterprise.<sup>6</sup> Economists recognized the importance of critical mass for businesses that had indirect network effects in the 1990s.<sup>7</sup> What that literature missed was the pervasiveness of intermediaries that rely on indirect network effects and how common the critical mass obstacle is in the physical world. The critical mass problem is the same for digital platforms as for traditional ones, although the particulars of solving the challenge may differ.

How the critical mass problem gets solved in practice is a bit outside of the traditional toolkit for economists, as it is fundamentally a disequilibrium phenomenon whose details are highly dependent on the circumstances of the platform. Early adopters and expectation management are often key. Platforms need to get early adopters on board and then get enough momentum to keep them there. Participants will invest in using the platform if they expect that it will eventually reach critical mass and become valuable to them. Platforms can adopt a variety of strategies to entice more participants on board and shape expectations.<sup>8</sup>

Platforms may try to get "anchor tenants" — a term taken from shopping malls — to create a mass of demand from one type of participants. They can also try to use subsidies to get one or both types of participants on board subject to liquidity constraints. Contingent contracts provide another potential way to crack the chicken-and-egg problem. Participants on each side enter into contracts to join and use the platform that are triggered by other specified participants on the opposite or same side joining. For platforms in which participants on one side provide specific products or services to the other side, the platform can offer those products or services itself — that is, it can vertically integrate into one side of the platform.

Platforms that cannot achieve critical mass relatively quickly often fail. Initially, the platform gets early adopters, and others who stay with it, in expectation that it will become valuable. Some of them may drop off as they become disappointed. For the platform to reach critical mass it needs to attract more participants, on both sides, than it loses. If that doesn't happen quickly enough, the platform will start losing more participants than it gains and eventually fail. Failure is a common result in practice. The fragility of startups can provide an opportunity for established players to maintain their positions as discussed below.

Critical mass isn't just important for startups. Platforms need to maintain critical mass to remain viable. Indirect network effects can work in reverse. If participants on one side leave the platform it becomes less valuable to participants on the other side. This can lead to a death spiral as more participants desert it and it falls below critical mass. Platforms may adopt business practices to reduce the risk of that happening.

#### C. Consumer Ability to Use Multiple Platforms and Switch Between Them Is Key

Sometimes it is easy for participants to use several similar platforms. They could switch between them depending upon which has more relevant participants for an interaction, has better prices, or for other competitive reasons. That is known as "multihoming." People have several ad-supported media apps on their smartphones and easily switch between them. Advertisers may be able to reach the same people through different media apps.

In other cases, fixed costs, learning costs, and other costs make using several platforms inefficient so that participants standardize on one. That is known as "single-homing." Most people use a single operating system for their personal computers even though in principle they could have several running on the same machine or have desktop and laptops with different operating systems. App developers can reach those users only by writing to that operating system.

<sup>6</sup> See Matchmakers at Ch. 5.

<sup>7</sup> Shapiro, Carl (1999) "Exclusivity in Network Industries," George Mason Law Review 7(3), pp. 673-683.

<sup>8</sup> Microsoft's efforts to launch its X-box video game console, in competition with the dominant PlayStation console, shows the importance of expectation management, driven partly by a commitment to keeping console prices low, and vertical integration, in which Microsoft bought game publishers and produced its own games. See Evans, David & Richard Schmalensee (2007) *Catalyst Code: The Strategies Behind the World's Most Dynamic Companies*, Harvard Business Review Press, at Chapter 6. CPI Antitrust Chronicle December 2020

When participants on one side single-home, the platform is the only way to get access to those participants at that time. The platform is a bottleneck and an economically material one if it has captured many of those participants. Participants may still be able to switch to another platform, such as from Windows to macOS, even if they need to single-home. Thus, the competitive importance of single-homing depends on the number of participants covered and their ability to switch.

In the digital economy, platforms often sit on top of other platforms.<sup>9</sup> Foundational platforms are most susceptible to single-homing because they are often based on operating systems and hardware platforms that involve material switching costs. The iPhone, which relies on the iOS operating system and the App Store, provides a foundational platform for apps such as Uber. Users may be able to multi-home on app-based platforms — for example, iPhone users could have Uber and Lyft on their phones; app developers can also develop apps for both iOS and Android.

When users can easily switch between apps or websites it is possible that "competition is only a click away." Of course, the ability to click on an alternative is only one aspect of the ability to multi-home which would therefore require deeper consideration in an actual case.

#### D. Ease of Entry Influenced by Critical Mass and Multihoming

The opportunities and obstacles for entry are influenced by critical mass and multihoming considerations in the same way they are for physical platforms. For our analysis of vertical restraints in the digital economy, however, these considerations are worth calling out because of the importance of platform intermediaries and the role of technologies in fostering indirect network effects and the possibility of multihoming.

To secure critical mass, to ignite and grow, an entrant may be able to tap into a large pool of unaffiliated participants when the market is nascent. The entrant, like the incumbent, still has the challenge of convincing many prospects that the platform service has value. As the market matures, and more prospects have selected platforms, the entrant may have to persuade participants on incumbent platforms to consider its platform to build to critical mass.

Entry is easier when multi-homing is possible on both sides. The entrant may be able to get participants on other platforms to try the entrant's platform. Meanwhile, the entrant can perfect its platform and try to build critical mass. Participants on incumbent platforms may be willing to do this because they don't incur any significant switching costs. Even if there are some costs of switching over, they can gain some information on whether the move is worth it.

Entry is harder when there is single-homing on one or both sides. The entrant must convince participants on incumbent platforms to switch, which is hard before it has built critical mass and, even if it has built critical mass, may be hard given the indirect network effect scale advantages possessed by incumbents. The entrant could also tap into participants who haven't committed, which is particularly important in nascent markets where most potential participants haven't joined any platform, or ones who have exited failed platforms.

Vertical restraints, as I discuss below, could be used to convert a market that is naturally prone to multi-homing into single-homing, thereby, making it more difficult for entrants to secure critical mass and for smaller incumbent rivals to maintain it.

#### E. Platforms Have to Deter Participants from Behaving Badly

Platforms operate communities, in which participants interact with each other and, as in any community, participants may behave badly towards others.<sup>10</sup> Participants can engage in deception, fraud, bullying, hate speech, post porn or other offensive material, breach contracts, and so on. By doing so, these participants impose negative externalities on participants, on the same or other sides, and thereby reduce the value of the platform to its members. These offenses can limit the amount of activity on the platform, the interest of participants to join it, and the amount participants are willing to pay to participate. Platforms have profit incentives to deter these offenses.

Platforms do so by operating governance systems like those run by governments for communities. They have platform rules that prohibit or require certain behavior. They have detection methods, involving software and staff, to ferret out violations of these rules. They impose penal-

<sup>9</sup> See Matchmakers, Chapter 3.

<sup>10</sup> Boudreau, Kevin & Andrei Hagiu (2009) "Platform Rules: Multi-Sided Platforms As Regulators," in *Platforms, Markets and Innovation*, Gawer, ed., Edward Elgar Publishing Inc; Evans, David (2012) "Governing Bad Behavior by Users of Multi-Sided Platforms," *Berkeley Technology Law Journal* 27(2), pp. 1201-1250.

ties for breaking the rules as well as screening methods for keeping bad actors off the platform. These governance systems are a distinct feature of platforms. Traditional businesses seldom have such elaborate systems. Platforms need them because of the externalities that can arise from the constant interaction of participants.

Governance systems are particularly common and sophisticated for digital platforms.<sup>11</sup> eHarmony, a dating site, prohibits 17 activities including sending annoying communications or providing misleading information. Amazon's marketplace has a seller code of conduct that includes prohibitions against a variety of behaviors such as trying to damage other sellers or improperly influencing consumer ratings. Google's search engine prohibits websites from many efforts to influence ranking unfairly or essentially gaming its algorithms.

Platforms, including digital ones, have more limited options for penalizing bad behavior by their communities than governments do. They typically enforce rules by excluding participants from the platform. The bans could be permanent or temporary. Google, for example, punishes websites that improperly game the system by forcing them far down the search rankings for some period. Amazon permanently bars sellers who engage in fraudulent behavior. The ban could be full or partial. Digital platforms may decide to ban some content, or apps, from a participant, but not all. Facebook may delete some content that a participant has posted but allow the person to continue to use the social network.

These governance systems are controversial now because of allegations that platforms have been too lax, thereby permitting too much bad behavior, or too restrictive, thereby preventing free speech. Most of these complaints lie outside of antitrust.<sup>12</sup> The core antitrust issue concerns situations in which the platform also operates a business on one side of its platform and in which the platform has allegedly used its governance system to raise rivals' costs or exclude competitors on that side.

#### F. Platforms Use Algorithms to Determine What Users See

To facilitate interactions between participants, platforms provide search and discovery tools for finding possible partners, as well as targeting methods to present themselves to possible partners.<sup>13</sup> The platform may also show connections on its own based on its predictions of participants' value from being exposed to those possible trading partners. Digital platforms, more so than others, make heavy use of software-based technologies to perform these functions. These technologies involve algorithms that use data, and statistical methods for learning from that data, to make predictive decisions. Digital platforms also rely on many other techniques. They provide reviews for users and products, tools for participants to display information, and targeted advertising.

Google, for example, uses algorithms to decide which, if any, ads to present on a search-results page following a query. The algorithms predict the likelihood that a consumer who makes that query will find the ad relevant, and useful, and click on the ad. By showing more relevant ads, Google increases the likelihood it will make money from the search engine results page it presents; making the ads more relevant to consumers increases the likelihood they will do more searches.

#### G. Digital Platforms Are Different from Physical Ones Mainly Because of the Technology

Digital platforms are like physical ones. Getting critical mass is a pervasive problem for platforms. The extent of single-homing is an issue for all. Platform governance systems are common. And they all help participants engage in search and discovery and many try to predict what participants want.

The combination of the Internet, software, data, and information technologies, however, dramatically lowers the cost of starting and scaling a platform, expands the capabilities for matching participants and facilitating exchanges, and increases the ability to collect and deploy data. The combination also makes many new features possible, such as posting feedback.

Of course, digital platforms themselves are highly diverse. Analyzing antitrust, as always, requires a fact-intensive analysis concerning the circumstances surrounding the complaint and the businesses implicated by it.

13 Varian, Hal (2019) "Artificial Intelligence, Economics, and Industrial Organization," in *The Economics of Artificial Intelligence: An Agenda*, A. Agrawal, J. Gans & A. Golfarb, eds., University of Chicago Press.

<sup>11</sup> U.S. Congress encouraged platforms to have these systems when it passed Section 230 of the Communications Decency Act. Section 230 essentially immunized platforms from barring participants, or their content, so long as they were doing so as a good-faith application of their rules. For further discussion see Evans, David (2019) "Deterring Bad Behavior on Digital Platforms," available at SSRN: https://ssrn.com/abstract=3455384.

<sup>12</sup> See Evans, "Deterring Bad Behavior on Digital Platforms," supra.

## **III. ECONOMIC ANALYSIS OF VERTICAL RESTRAINTS FOR DIGITAL PLATFORMS**

There is a vast economic literature on vertical restraints as well as a long history of cases. Most of this work was developed for the physical world. There are many situations in which the literature and precedent applies directly to the digital world. There is no obvious difference between a manufacturer entering into resale price maintenance agreements with digital intermediaries versus physical distributors. Some details may differ, but they always do between matters.

There are, however, situations in which differences involving digital technologies are important. Physical retailers, for example, use data to make decisions on where to place their own and other's products. But the sophistication and power of the algorithms and the ability to vary product placements in virtually real time, over Internet connections, can make digital retail much different from physical retail.

The big difference between the digital and physical world, however, concerns the role of intermediaries and multisided platforms. Given the opportunity to develop large digital distribution platforms, cases involving manufacturers imposing vertical restraints on distributors are likely to be less important than cases involving distributors imposing vertical restraints on participants.

The economic literature on vertical restraints for single-sided firms has insights for multisided ones but one cannot assume that the models and results necessarily apply without modification. That is true for the physical platforms too. The issue becomes more important in the digital world where there are more platforms, and these platforms are powered by Internet and related technologies, and likely more cases in which this issue comes up.

This section runs through some of the key considerations regarding vertical restraints involving digital platforms. Similar factors apply to digital resellers, at least to some degree. These are early days, and as we get more experience with cases this list will surely grow longer and more nuanced.

#### A. Claims Could Involve Horizontal or Vertical Foreclosure

Digital platforms compete horizontally with other platforms to get both types of participants to join and use them. Apple's iPhone platform and Google's Android platform compete for users, beginning with buying a smartphone, and developers writing apps. A dominant platform could face claims that it has imposed vertical restraints that limit competition between the platforms. In the smartphone case, a claimant might argue that practices that limit interoperability and portability for users and developers are anticompetitive vertical restraints.

Digital platform owners may also compete with some of their participants. Google, for example, offers services on its search engine results page, such as Google Shopping, that compete with services provided by other comparison-shopping platforms which participate in Google's indexing and ranking service. The European Commission claimed that Google engaged in various practices that disadvantaged some of those websites.

There is another dimension of competition for some e-commerce properties. The property may operate an online marketplace, which is a two-sided platform for buyers and sellers, as well as an online store, which operates under a traditional reseller model. Both, of course, rely on Internet technologies, algorithms, and other innovations involving the digital economy. In addition, e-commerce properties may offer private-label products in competition with sellers on its online store and marketplace. Amazon and Walmart, which operate the first and third largest e-commerce platforms in the U.S., both do so.<sup>14</sup>

<sup>14</sup> eMarketer, "Digital Investments Pay Off for Walmart in Ecommerce Race," February 14, 2019, https://www.emarketer.com/content/digital-investments-pay-off-for-walmart-in-ecommerce-race.

#### B. Antitrust Claims Face Usual Issues of Incentive and Ability to Foreclose Competition

Vertical restraints for digital businesses pose the same basic analytical question as for physical ones. Does the business have the ability and the incentive to engage in the practice to foreclose competition? Addressing this question for digital platforms raises the same issues as for physical platforms. The analysis, however, must account for the relevant facts some of which may be particular to the digital world. Market definition, which is not the subject of this paper, should help inform whether the digital business has the ability and incentive to foreclose competition through a vertical practice.<sup>15</sup>

Whether the digital platform can foreclose competition through vertical restraints will typically depend on whether it can limit access to a substantial group of participants on one or both sides of the platform. It usually wouldn't be able to do so if the platform is small relative to the overall market served or if the market is nascent, and most potential participants on both sides haven't joined, so there is plenty of opportunity for entry.<sup>16</sup> A ride-sharing platform may have a small fraction of the drivers and riders who have joined platforms, or it may be operating during a stage of development where there is large untapped pool of both drivers and riders.

The ability of a platform to limit access would depend on the extent to which participants multi-home and, if they single home, how easily they could switch to another platform. This list isn't exhaustive. There may be other factors, including technological ones, that influence whether the platform can prevent access. A ride-sharing platform, for example, could impose an exclusivity provision on drivers but it might be difficult to monitor and enforce compliance.

Whether the digital platform has the incentive to foreclose requires weighing the benefits of foreclosure, including the likelihood of succeeding and securing profits that it wouldn't in the absence of the vertical practice, against the costs, including forgone earnings from participants subsequent to the restraint. The analysis of these issues requires the consideration of the two-sided features of the platform including feedback between the two sides. If a vertical practice results in the loss of some participants on one side, for example, that may reduce the value to the other side, and thereby may increase the costs of engaging in the practice. As with ability, assessing whether there are incentives generally entails fact intensive inquiry, and the details will vary across platforms and practices.

Several features of a digital platform could enhance its ability and incentive to foreclose competition and therefore warrant close examination in cases. A digital platform may capture a substantial portion of potential participants as a result of indirect network effects facilitated by the Internet and related technologies. The platform does not have to be the first mover — just an early mover that got to critical mass early and grew at an accelerating clip after that. The digital platform has at least some control over access to participants on both sides. It therefore has a set of relationships that it could use to foreclose competition for existing or new platforms.

Anticompetitive strategies wouldn't be necessary if indirect network effects made it hopeless for smaller platforms to challenge dominant incumbents. Like all businesses, however, platforms can compete in the face of scale advantages by differentiating themselves. They can try to appeal to particular types of users, on either side, by catering to their different tastes (horizontal differentiation) or focus on particular degrees of quality and price (vertical differentiation). By specializing in these ways, platforms can create value that mitigates their smaller scale. In addition, when consumers can multi-home, or readily switch between digital platforms, the indirect network effects for the leading platform are not necessarily durable. Rivals could pick off participants from the leading platform. Just as indirect network effects accelerated growth for the leading platform, they can also accelerate decline.

As a result, the leading platform cannot just count on its size to keep the market to itself. It therefore may have incentives to foreclose platform rivals despite the advantages it has secured from indirect network effects. The need for rivals to achieve critical mass to attain sustainable growth may provide the leading platform the ability to act on these incentives and foreclose actual or prospective rivals. It can look for strategies that prevent these rivals from securing enough participants on one or both sides. That could include protecting itself from vulnerability arising from the ability of participants to multi-home across and switch between platforms. It could use the standard set of vertical restraints to do so.

16 Digital platforms serve diverse sets of customers. Depending on the matter the relevant antitrust market, and the focus of the analysis, could be a segment of the platform rather than its entirety. To simplify the discussion this paper refers to the platform generally.

<sup>15</sup> The two-sided platform literature shows that profits, and thus to ability to increase those profits through higher prices, are determined at the platform level as a result of the interdependencies between the two sides and the need to balance their prices. Depending on the jurisdiction and type of platform under consideration the courts may prefer to define markets at the platform or side level. In the U.S. the Supreme Court ruled that the market should be considered at the platform level when indirect network effects are more than minor (the American Express credit card network) for a matter involving vertical restraints (rules that prohibited merchants that accepted the American Express card from then steering consumers who tried to use the card to competing card networks). *Ohio v. American Express Co.*, 138 S.Ct. 2274 (2018).

Digital platforms could enlist their algorithms for exposing participants on one side of the platform to those on the other. A platform, for example, could condition the extent of exposure of participants on one side to trading partners on the other side based on their degree of loyalty to the platform. It could do this as part of negotiations to get participants to enter into agreements that contain vertical restraints. To obscure its strategy, it could also reduce exposure for participants that refuse to enter vertical restraints rather than refusing them to join the platform. A digital platform that offered a service on its platform that competed with a particular participant could use algorithms to reduce the exposure of that participant to the other side of platform.<sup>17</sup> Doing so could obscure its exclusionary strategy and make it harder to establish than simply refusing to allow the rival participant on the platform.

Digital platforms could enlist their governance systems in vertical restraint strategies. Consider the situation in which the platform also competes with a participant. It could use its governance system to exclude that participant or impose costs on that participant that it doesn't incur. These efforts may be less transparent than a direct denial of access. A platform could also enforce its governance system more strictly for participants who do not agree to vertical restraints that are designed to foreclose competition by rival platforms.

#### C. Vertical Practices by Digital Platform May Increase the Value of the Platform for Participants and Therefore be Pro-Competitive

The mere prospect that a digital platform could use vertical restraints to harm competition does not mean that it is necessarily doing so. As with vertical restraints generally, the platforms may have imposed the vertical restraints to enhance efficiency, such as by dealing with principal-agent or free-riding issues. The vertical restraint may foreclose competition in the sense that whenever a business offers a better product, or does so more efficiently, it secures an advantage over its rival. The challenge, as with all vertical restraint cases, involves distinguishing the pro-competitive use of vertical restraints from anti-competitive ones.

Digital platforms have profit incentives, for example, to design their algorithms to increase the value that participants on each side can secure from interactions with participants on the other side. That typically means either exposing a participant to the most suitable possible matches or providing information that enables the participant to assess their likely value. In doing so the algorithms necessarily downgrade participants who are likely to be less desirable. That can result in some participants not being presented, in effect, to other participants. Most people do not, for example, look beyond the first search engine results page and are much more likely to engage with organic search results and paid ads that are higher on the first page.

To take another example, as we saw above, digital platforms have profit incentives to deploy governance systems to weed out bad behavior that can degrade the platform. By doing so, they make the platform more desirable for participants. And a more desirable platform is likely to generate more indirect network effects which increases the value to all participants. Some participants may complain about the rules, because they interfere with their business models, and especially if they are expelled from the platform.

Of course, as with anticompetitive effects, assessing whether practices result in pro-competitive efficiencies, generally requires a fact-intensive analysis tailored to the circumstances of the matter. And any pro-competitive benefits need to be weighed against anti-competitive costs when the businesses engaging in the conduct has significant market power.

<sup>17</sup> That was the main allegation in the Google Shopping matter. See European Commission, Case AT.39740, Brussels, June 27, 2017, C(2017) 4444 final. Available at http://ec.europa.eu/competition/antitrust/cases/dec\_docs/39740/39740\_14996\_3.pdf.

#### D. Digital Platforms Require Two-Sided Analysis to Assess Whether Vertical Restraints Harm Competition

The economic literature on two-sided platforms shows that the analysis of anticompetitive practices should account for a variety of issues that arise from platforms serving interdependent groups of users. Digital platforms raise the same issues as physical platforms, including the assessment of market definition, market power, and anticompetitive effects.<sup>18</sup>

An important insight of the two-sided literature is that practices that cause harm on one side could benefit the other side so that it doesn't cause an overall decrease in welfare. That is consistent with the platform adopting the practice to increase the value of the platform rather than to foreclose competition. It is also possible that the anticompetitive effects of a practice come from the interdependence between the two sides, which might not be detected from looking at each side in isolation. A platform, for example, might be able to impose exclusive contracts that fall below common thresholds used by the courts to assess anticompetitive foreclosure but by imposing these on both sides it makes it hard for an entrant to secure critical mass.

## **IV. EXCLUSIVE CONTRACTS, GOVERNANCE SYSTEMS, AND MFNS**

This section considers three types of matters involving vertical restraints and illustrates them with public information concerning recent cases. Part A considers the use of exclusive contracts by a dominant platform to harm competition with a rival platform. It emphasizes two aspects that are particular to digital platforms: the use of exclusives to prevent rivals from securing or maintaining critical mass or the benefit of indirect network effects; and the role of algorithms in securing loyalty (single-homing) by some participants. Alibaba's use of exclusive contracts for sellers on its Tmall property in China provides an example.

Part B examines the use of governance systems by a dominant platform. It considers the sham use of rules to raise rivals' costs, or exclude, a participant on the side that competes with the platform's own service on that side. Apple's alleged use of its app developer rules to impose limitations on Spotify, which competes with Apple Music, provides an example.

Part C considers the use of MFNs by e-commerce marketplaces and resellers. It focuses on a common situation for e-commerce businesses in which they charge sellers a commission and may have MFNs that apply separately to price and commission. The UK's Competition and Markets Authority investigation of the use of price MFNs by price comparison platforms for insurance provides an example.

Throughout this section we assume that the digital platform engaging in the practice has substantial market power in a relevant antitrust market. In practice, of course, that analysis would need to assess the relevant antitrust market, accounting for two-sided considerations, and determine whether the platform has substantial market power (or is dominant) in that market.

#### A. Exclusive Contracts and the "Cat-and-Dog War" in China

The dominant platform could require some participants on one side, or possibly both, to enter into exclusive contracts for some period. These contracts would deter these participants from multi-homing during that period. That matters in practice mainly in the case in which participants would not find it in their self-interest to single home in the absence of the restraint. The contracts could also deter these participants from switching to a rival platform during that period. The contracts could target all participants on both sides, all participants on one side, or they might target large participants — anchor tenants — on one side. The exclusives could also affect a category of participants, or the platforms that service those participants, that might constitute a relevant antitrust market.

The dominant platform could insist that participants enter into these contracts to operate on the platform. It could provide rewards or penalties for divided loyalties to achieve the same results as an exclusive. The dominant platform could use its algorithms to impose penalties on participants that do not agree to formal exclusives. It could reduce the extent to which non-loyal participants on one side are exposed to participants on the other side or provide loyal participants greater levels of exposure and marketing assistance.

<sup>18</sup> Recently, high courts have considered the application of the two-sided analysis to cases. High-court decisions in the United States (*American Express*), the European Union (*Cartes Bancaires*) and China (*Tencent*) have emphasized the importance of accounting for the interdependencies between the two sides, at least in the matters before them. *Ohio v. American Express Co.*, 138 S.Ct. 2274 (2018); *Groupement des Cartes Bancaires (CB) v Commission*, C-67/13 P, EU:C:2014:2204; *Qihoo 360 v. Tencent*, Supreme People's Court of People's Republic of China, Civil Judgment No. Minsanzhongzi 4/2013, October 2014. For a detailed discussion of *American Express* see Evans, David & Richard Schmalensee, *Antitrust Analysis of Platform Markets: Why the Supreme Court Got It Right in American Express* (Boston: CPI, 2019).

Key considerations for evaluating whether these exclusivity provisions could harm competition include, as is usual, the explicit or *de facto* coverage of the provisions in the relevant antitrust market, the duration of the provisions, and therefore how much of the market is contestable for rivals. This analysis, however, needs to be conducted considering the two-sided features of these platforms. In particular, the analysis should consider the extent to which the exclusivity provisions could prevent: entrants from securing critical mass; smaller incumbents from losing critical mass so that they are no longer viable; and smaller incumbents from capturing indirect network effects that could drive future growth.<sup>19</sup> A further issue is the extent to which participants, forced to single-home, can switch platforms.

Exclusivity agreements could also enhance efficiency. That could be the case for traditional reasons such as preventing free riding on platform efforts, preventing the loss of valuable competitive information to a rival, and aligning platform and participant incentives for mutual gain to name a few. Digital platforms could also raise specific issues that could provide pro-competitive explanations for the practices. The exclusives may help secure and maintain critical mass and thereby provide value to platform participants. Getting key participants on one side to agree to an exclusive could help persuade participants on the other side to join. There could be other reasons why preferential treatment of some participants, in return for loyalty, could increase indirect network effects or reduce negative externalities on the platform. Whether any of these efficiency explanations applies, and the magnitude of the benefits if any, would need to be evaluated.

The Great "Cat-and-Dog War" in China illustrates the potential anticompetitive use of exclusive contracts.<sup>20</sup> Alibaba operates Tmall, whose logo is a cat. Tmall is a B2C marketplace of buyers and sellers for consumer products. It competes with JD.com, whose logo is a dog. JD operates both a reseller model and a marketplace model that enable sellers to distribute products to consumers. Tmall is the leading B2C e-commerce platform in China and twice as large as JD.com: as of 2017 Tmall had a 57 percent share of online retail commerce and JD.com a 28 percent share. Several smaller e-commerce sites accounted for the remainder. Tmall had about an 80 percent share of apparel sales in China compared to about 8 percent for JD.com in the first half of 2017.<sup>21</sup>

Tmall adopted a policy known as "Choose One of Two." It asks sellers to make a choice between Tmall or other platforms. Tmall acknowledges that it has secured a growing number of exclusives but defends its policy: "Like many e-commerce platforms, we have exclusive partnerships. The merchant decides to choose such an arrangement because of the attractive services and value Tmall brings to them."<sup>22</sup> It didn't explain the nexus between the exclusive partnerships and the attractive services or whether additional services were provided in exchanged for the exclusives.

Tmall apparently does not make signing an exclusive contract a condition of operating on its platform. Instead, according to numerous merchant interviews reported in the press, and lawsuits filed against the company, Tmall retaliates against sellers that refuse to enter exclusive deals in ways that reduce their visibility and sales. Five large American consumer brands claim that they experienced a sharp drop in traffic to their storefronts on Tmall. According to one article, "Executives said that after they rebuffed Alibaba, their brand's banners vanished from prominent spots in Tmall sales showrooms and products stopped appearing in top search results."<sup>23</sup>

In June 2017, many apparel merchants complained that Tmall requested them to withdraw from other e-commerce platforms including JD, VIP.com and Dangdang. Some claimed they would lose 30 percent of their sales if they complied. If they refused, however, they would jeopardize the much larger volume of sales on Tmall.<sup>24</sup> Semir, a famous apparel brand in China, shut down its flagship store on JD in September 2017 despite having realized substantial growth on this competing platform.<sup>25</sup> JD.com claimed that as of early 2018 that more than 100 Chinese brands had defected in 2017.

19 A practice that might seem innocuous in a single-sided context could be problematic in a two-sided one because of the role of critical mass in securing ignition.

20 Fox News, "At war with Alibaba: Top brands fight China e-commerce giant," April 22, 2018," https://www.foxnews.com/world/at-war-with-alibaba-top-brands-fight-chinae-commerce-giant.

21 Analysys, "Quarterly Reports of China's B2C Online Market from 2016 Q1 to 2017 Q2, https://www.analysys.cn/article/analysis/detail/1000869.

22 Fox News, "At war with Alibaba: Top brands fight China e-commerce giant," April 22, 2018," https://www.foxnews.com/world/at-war-with-alibaba-top-brands-fight-chinae-commerce-giant.

23 Fox News, "At war with Alibaba: Top brands fight China e-commerce giant," April 22, 2018," https://www.foxnews.com/world/at-war-with-alibaba-top-brands-fight-chinae-commerce-giant.

24 "Choose One of Two on '6.18': Exclusive Dealing Requested by Tmall Led Big Damage to Online Merchants," Southern Metropolis Daily, July 12, 2017, https://tech. qq.com/a/20170712/020103.htm.

25 Xie Yunzi, "Overall Increase of Semir Encumbered by its E-Commerce Business, or Due to the Closure of JD Channel," China Entrepreneur, November 7, 2017, http://www. sohu.com/a/202831895\_115280.

Galanz, which sells home appliances, asserted that during the "6.18" promotional festival in 2019 Tmall attacked six of its core stores through the manipulation of algorithmic results, in retaliation for refusing Tmall's request that Galanz withdraw from the competing Pinduoduo platform. According to Galanz, Tmall excluded its stores from search results and did not display rankings that buyers relied on.<sup>26</sup> As a result, Galanz claims its store sales declined by between 40 to 90 percent compared to the previous year.<sup>27</sup>

Tmall's efforts to secure exclusives have attracted antitrust lawsuits by competing e-commerce intermediaries. JD, joined by Pinduoduo and VIPshop, have sued Tmall for abuse of dominance in Beijing High People's Court. Galanz, as a platform participant, has also sued Tmall for abuse of dominance in Guangzhou Intellectual Property Court.<sup>28</sup> These cases are interesting because they involve one of the largest e-commerce properties in the world, Alibaba, and concern the use of algorithmic methods to, according to the complaints, secure explicit or de facto exclusives.

While there may be pro-competitive explanations for exclusive contracts, they pose some risks for competition when they are used by dominant digital platforms. Consider the situation in which the dominant platform accounts for the preponderance of buyers in a relevant antitrust market. Sellers could lose access to most customers if they refused to agree to an exclusive. As more sellers enter exclusives, buyers will tend to see the dominant platform even more. As the smaller platform loses sellers it will lose buyers which will make it even less attractive to seller. That could further entrench the dominant platform. The smaller platform may remain viable but limited in its ability to grow and compete. Platforms that haven't reached a critical mass, and are not yet viable, may not be able to do so and, considering that, entrepreneurs and investors may decide not to enter.<sup>29</sup> Of course, whether the exclusives are extensive enough to cause these effects is an empirical matter.

A successful anticompetitive strategy can harm both buyers and sellers. To begin with, both lose the opportunity to multi-home on several platforms — options they would presumably have in the absence of exclusive contracts. Multi-homing intensifies competition along non-price dimensions such as service and discovery mechanisms. The exclusivity agreements can also raise prices. By limiting competition, the dominant platform can increase the commissions it charges sellers for distribution on its platform. Those sellers may pass some, or possibly all, of those increased commissions back to consumers in the form of higher prices. Depending on the jurisdiction, the competition authorities and courts may require evidence that these effects have occurred, or just that there is material risk they would occur.

#### B. Governance Systems and the Music Wars

The previous example concerned the possible use of exclusive contracts to harm competition by a rival platform. A governance system provides a way for a platform that provides a service on one side of the platform to harm rivals that depend on its platform to provide their services to the other side of the platform. Participants may expend resources complying with these rules. The platform could make those costs higher for a rival — that is, engage in a raising rival's cost strategy — by applying the rules more strictly with rivals or demanding costly modifications in a discriminatory way. The platform probably has rules in place that enable it to block participants from joining the platform or to kick participants off. It could therefore simply deny rivals access to its platform. Of course, the platform could simply deny rivals access without invoking its rules, but it could cloak its motives by the sham use of governance. Rivals may not know, or be able to prove, that the platform has discriminated in applying the rules to harm them.

These cases raise the usual issues involving the use of vertical restraints to harm upstream or downstream competition. The platform benefits from the participation of firms who increase the value of the platform, including driving indirect network effects, and may provide a source of revenue. It must therefore weigh the increased profits from harming competition by the rival on one side against profits lost to the platform. That calculus depends on factors such as the extent to which customers of the rival would move to other platforms, rather than switching to the platform's competing offering.

<sup>26</sup> Qian Lina, Shi Dan, "Galanz Fight against Tmall, Why the E-Commerce Law Failed to Regulate the Either-Or Policy," Commercial College, June 20, 2019, available at https://t. cj.sina.com.cn/articles/view/1678512213/640c105500100gww?from=tech&subch=internet.

<sup>27</sup> Yang Qian, "Galanz Fight against Tmall," China Enterpreneur, June 20, 2019, http://www.iceo.com.cn/com2013/2019/0621/306237.shtml.

<sup>28 &</sup>quot;Galanz Sues Tmall for 'Pick 1 of 2', Lawsuit Accepted by Court," NetEase Technology, November 5, 2019, https://tech.163.com/19/1105/12/ET7GGLF0000999LD.html.

<sup>29</sup> Successful anticompetitive exclusionary conduct various categories for a platform could harm overall platform competition, to the extent for example that consumers prefer platforms that give them access to multiple categories, and thereby harm competition in categories not subject to the exclusives.

There may be situations in which it is possible to establish that a platform has the financial incentives to harm a rival. The platform could be essential for providing access to a large base of customers for the rival and the rival could lack practical alternatives to bypass the platform. A specific category might constitute a relevant market and destroying rivals in that category might enable the platform to secure monopoly profits that more than offset its losses from these rivals.

Aside from the standard pro-competitive explanations for vertical restraints on rivals, however, it is possible that the platform is simply applying its governance rules neutrally to mitigate negative indirect network externalities. That is apparent in the case of egregious violations of rules. Even if the platform had financial incentives to harm a rival it would appear unexceptionable if it expelled a rival that engaged in fraud or facilitated sex trafficking. The difficult cases are where there is more room for judgment on whether the rival violated the rules, the seriousness of those violations, and whether the application was indeed neutral.

That brings us to the music wars. Apple has provided an app development platform for the iOS operating system for its iPhones since 2008. Developers can use that platform, including various tools, to write apps that make use of the operating systems and hardware features of the phone. Apple has also provided an exclusive distribution vehicle for those apps. Developers can make their apps available in the App Store and iPhone users can download apps from there. There is no other practical way for developers to distribute apps to iPhone users or for users to obtain iPhone apps. Developers also write apps for the Android operating system but that doesn't give them access to iPhone users unless those users switch platforms.

Apple has extensive guidelines for developers amounting to about 12,000 words that lay out what they must and must not do. There is a vetting process for accepting apps, or modifications of apps, for distribution through the App Store, which is based on these guidelines and Apple's judgment concerning the quality of the apps. There is also a set of rules for apps distributed in the App Store. Apple can remove apps from the App Store for violating these rules and expel their developers from the Apple Developer Program. There isn't much controversy that Apple's rules have enabled it to create a high-quality app ecosystem for the iPhone.

That doesn't mean, however, that Apple couldn't abuse these rules. Spotify claims that Apple has. Apple became the leading provider of downloadable music following its introduction of the iPod and the iTunes store in the early 2000s. Over the 2000s many people switched listening from CDs to downloads. When Apple launched the iPhone in 2007 it emphasized that the device combined an iPod, a phone, and a computer. It included an iPod app on the home screen.

Over the next decade, however, music streaming services such as Pandora, Spotify, Deezer, and others entered. Music consumption shifted to streaming and downloads declined sharply. Recognizing this, Apple launched Apple Music in 2015, which was a direct competitor to Spotify's premium service. It included Apple Music on the iPhone home screen and promoted it heavily to iPhone users.

Spotify filed a complaint with the European Commission in March 2019.<sup>30</sup> The following discussion is based on public statements it has made about this that relate, in particular to the application of Apple's App Developer rules. Spotify says that Apple "introduced rules to the App Store that purposely limit choice and stifle innovation at the expense of the user experience — essentially acting as both a player and referee to deliberately disadvantage other app developers."<sup>31</sup> It claims that Apple "frequently decides to interpret (and reinterpret) [its rules] in ways to disadvantage rivals like us."<sup>32</sup> The problems worsened after Apple launched Apple Music: "Now that Apple has Apple Music, rejections of the Spotify app start becoming more and more common and they even go far as threatening to remove us from the App Store. Those rejections seem to coincide with our promotional campaign seasons."<sup>33</sup> Spotify says the rules apply differently to Apple which it claims sends out the same type of promotional push notifications that rivals are barred from doing.

31 *Id*.

32 Time to Play Fair, "A Timeline: How we got here," https://www.timetoplayfair.com/timeline/.

33 *Id*.

<sup>30</sup> Spotify, "Consumers and Innovators Win on a Level Playing Field," March 13, 2019, https://newsroom.spotify.com/2019-03-13/consumers-and-innovators-win-on-a-level-playing-field/.

Apple charges a commission fee for all paid apps and for digital content purchased within apps that are distributed through its App Store. Some of Spotify's complaints concern alleged efforts to avoid the commissions for its premium service.<sup>34</sup> For its part, Apple accuses Spotify of seeking a free ride: "After using the App Store for years to dramatically grow their business, Spotify seeks to keep all the benefits of the App Store ecosystem ... without making any contributions to that ecosystem."<sup>35</sup> That argument, however, cuts both ways. Spotify has benefited from distribution of its free app, on which it does not pay commissions, to iPhone users. Spotify and other apps, however, have also contributed to the iPhone ecosystem, and Apple's profits, by encouraging users to get and use iPhones. In addition to the free-riding argument, Apple denies that it blocks access for Spotify's apps and updates.

At the end of 2019, 11 years after its launch, Spotify had 100 million subscribers globally while Apple Music had 60 million, 4 years after its launch.<sup>36</sup> In the U.S., Apple has nudged ahead of Spotify in terms of paid subscribers. Both compete for listeners with their streaming music providers using various models. The case is particularly interesting because of the increased use of smartphones for consuming content and the battle over music listening which is a large and important category.

A successful strategy to harm competition could injure consumers who would have less choice and pay higher subscription fees and possibly music labels who would face an intermediary with greater bargaining power. An intervention into the neutral application of a governance system, that promotes platform quality and value, could also harm consumers and music labels. As a general matter, permitting the anticompetitive or prohibiting the procompetitive use of governance systems could both impose substantial harm to the platform ecosystem — the former by weaponizing the governance system to harm competition by rivals and the latter by weakening the ability of the governance system to deter bad behavior by platform participants.

#### C. MFNs and Price Comparison Sites

There is an extensive literature and body of caselaw involving Most Favored Nation ("MFN") clauses in contracts. Some new issues arise for digital platforms and resellers because of their widespread use of commission models. The digital intermediary charges a commission rate as a percent of the sales price, keeps the commission rate times the sales price, and pays the remainder to the seller. The commission rate is the price for distribution through the intermediary.

The contract between the digital intermediary and the seller may specify the commission rate and the price that the seller offers the product to consumers. The contract may also impose MFNs on the commission rate, to make sure it gets the highest offered fee for distribution, and the lowest price, to make sure it isn't undercut by competing intermediaries. As a general matter this does not necessarily cause any concerns.

It can, however, when the contract is with a dominant intermediary for a category. The problem arises when the MFNs apply to the price and commission rate separately. Suppose a smaller intermediary offers the seller a lower commission rate but in return for a lower price that, on net, provide the seller with a higher net margin on sales. The smaller intermediary does this to secure a competitive advantage over the dominant intermediary. It takes a lower margin but makes more sales. The seller and the smaller intermediary both find this deal profitable as it now stands.

Given the MFN, the dominant intermediary, however, can demand the lower price without having to agree to the lower commission. Unlike a regular MFN, it isn't getting equality with the seller — it is securing a position of superiority — resulting in an "MFN-plus." This MFN can lead to a problem for the rival intermediary as well as the seller who made the offer. The seller provides the lower price to the larger platform but without getting the lower commission rate in return and thereby incurs a financial penalty for entering into the deal with the smaller intermediary. Meanwhile, since the dominant intermediary matches the smaller intermediary's price and secures a higher margin, the smaller intermediary loses the competitive advantage it sought. The dominant intermediary, however, does earn a lower margin than it did before, when it exercises the MFN, because it earns the same commission rate but on a lower price.

<sup>34</sup> Digital apps can avoid paying commissions by having users subscribe outside of the App Store such as on a website and then using their credentials to use the app on the iPhone. Amazon, for example, does not make it possible for its app users to buy digital content, such a e-books or video, on which it would have to pay commissions, but does make it possible for its app users to buy physical goods, for which it does not have to pay commissions.

<sup>35</sup> Apple, "Addressing Spotify's claims," March 14, 2019, https://www.apple.com/newsroom/2019/03/addressing-spotifys-claims/.

<sup>36</sup> Digital Trends, "Apple Music vs. Spotify: Which service is the streaming king?" November 11, 2019, https://www.digitaltrends.com/music/apple-music-vs-spotify/.

The MFNs by the dominant intermediary, however, could prevent the smaller intermediary from making the offer to the seller or the seller from agreeing to take it. The MFN-Plus could deter the smaller intermediary from making the offer since it could end up taking a smaller commission rate but not getting additional sales since it would not have secured a competitive advantage. And it could deter the seller from taking the offer because it could lose substantial revenue by having to extend the low price to the dominant intermediary. Of course, the extent to which these incentives not to offer the low-priced deal depend on the facts of the matter including the size of the dominant intermediary.

The UK's Competition and Markets Authority ("CMA") encountered this situation.<sup>37</sup> Price comparison sites provide a marketplace in which automobile insurers can sell and automobile owners can buy car insurance. Between 55 and 65 percent of new policies are sold through these sites. The insurers set a premium and the sites collect a commission rate on the premium. The large comparison sites entered into contracts with insurers that had a price MFN but not on the commission rate.

The CMA found evidence that some price comparison sites could not get insurers to agree to lower prices in exchange for lower commissions and that the inability to adopt the lower commission/low price strategy deterred entry by price comparison sites. It also found that the MFNs reduced commission competition as well as incentives to offer valuable features, such as fraud detection, in return for lower premiums. Ultimately consumers lost from the MFNs because they didn't get the benefit of lower insurance prices. Of course, these conclusions were reached following a thorough investigation into the facts.

## **V. CONCLUSION**

Vertical restraints in the digital world are an active area for competition authorities and private complainants and litigants. That is because of the rapid growth in the digital economy, the proliferation of digital platforms and resellers as intermediaries, the fact that some of these intermediaries also participate as sellers, and the tendency of large intermediaries to enter across many areas. If anything, this growth is likely to accelerate in the coming years as a result of the continued integration of the digital and physical economies, which will be further spurred by widespread deployment of 5G technologies.

Analyzing vertical restraints is seldom simple. It is no easier, and arguably more complex, in the digital world. There are opportunities for engaging in anticompetitive behavior especially in ways that, given the use of algorithms and governance systems, may be less transparent, and harder to prove, than in the physical world. But at the same time there are many compelling sources of efficiency which courts and competition authorities would not want to disturb. As noted above for governance systems, the costs of false positives and false negatives may both be high.

The digital world does not appear to be one in which presumptions are very powerful, aside from the usual one that anticompetitive behavior generally requires substantial market power in a relevant antitrust market. Determining whether vertical practices are anticompetitive, innocuous, or procompetitive on balance requires a fact-based analysis informed by sound economics, particularly the modern economic analysis of multisided platforms. Given possibly large and symmetric error costs the payoffs to methodical economic and empirical analysis are substantial.







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