

# The effect of platform integration on competition and innovation

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June 2021

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### Umpires and players

Digital companies have profoundly reshaped the economy. They have opened new distribution channels, reorganized supply chains, transformed how businesses reach their customers, and affected people not only as consumers but also as citizens. Not surprisingly, as the reach of these companies grows, so does the level of public scrutiny over their business practices. Recently, several policymakers and commentators have expressed concerns about the dual role that digital companies play as marketplaces used by third-party sellers and sellers in the marketplace.<sup>2</sup> For example, platforms have both the ability to steer customers towards their own products and to appropriate, through imitation, the profits associated with the most successful products on the platform. Both practices could harm consumers. In light of these concerns, some have proposed a structural separation, a prohibition for the most prominent digital platforms to play both the role of the player and umpire.<sup>3</sup>

While these are not new concerns, there is a burgeoning economic literature which studies the incentives of platforms to move up or down the supply chain and the effect of such entry on prices, innovation, and ultimately consumer welfare. Below we discuss some of the most recent studies and what they teach us about the effects of an outright ban on platform integration. The economic literature suggests that the effects of platform integration depend on the characteristics of the platforms and the industry, and that platforms acting in their own self-interest might be aligned with and ultimately benefit consumers, competition, and innovation. These findings suggest that a fact-based, case-specific approach to the analysis of platform integration is better than a broad-based policy that may not fit all circumstances. Hence, legislation or regulation imposing a general ban on platform integration could end up doing more harm than good.

### The basic antitrust framework

Firms operating at one level of the supply chain can expand their operations to incorporate economic activities located “upstream,” for example a manufacturer which purchases the supplier of one of its inputs, or “downstream,” for example a manufacturer which purchases a distributor/retailer. Economists refer to these operations as “vertical integration.” The antitrust issues related to vertical integration have been studied in the past, but the prevailing views on the benefits and costs of vertical integration have shifted over time.

Prevailing antitrust enforcement was typically hostile to vertical mergers (as well as horizontal mergers) for the first part of the twentieth century, well into the 1960s. With the 1970s and the growing influence of the “Chicago School” of antitrust, vertical mergers came to be viewed more favorably, typically leading to benefits for consumers. More recently, however, several prominent scholars have argued for a more aggressive enforcement against vertical mergers. The US antitrust

agencies have been more willing to pursue action against vertical mergers and have revisited for the first time since 1984, their Vertical Merger Guidelines.<sup>4</sup>

Vertical integration generates two competing incentives. On the one hand, a vertically integrated firm is typically able to lower prices to the final consumers because it can purchase its inputs at cost, rather than having to pay a markup. This is true as long as input suppliers have market power. Economists refer to this as “elimination of double marginalization.”<sup>5</sup> On the other hand, a vertically integrated firm has an incentive to raise the price of inputs to its downstream rivals. For ease of exposition consider a monopolistic input supplier and two downstream competitors who rely on the input provided by the upstream monopoly. Once the upstream monopolist integrates downstream it has an incentive to raise the input prices to its downstream rivals or foreclose them entirely, causing them to raise their prices or exit the market. The rivals will then lose sales which will be partially recaptured by the vertically integrated firm.<sup>6</sup>

Intuitively, it might seem that vertical mergers create a trade-off between a price reduction to some customers and a price increase to other customers. However, this intuition turns out to be incorrect. The incentive to raise rivals’ cost depends on certain conditions on the market demand which are not always met and are often difficult to measure.<sup>7</sup> This uncertainty poses significant challenges for enforcement agencies, and perhaps explains why, historically, the agencies have rarely pursued vertical mergers. It necessarily poses challenges for policymakers who want to establish firm rules against vertical integration.

The basic trade-off described above is only limited to short-term decisions on how to set prices. However, the digital economy is characterized by high levels of innovation and dynamism. How does vertical integration by a (dominant) platform affect innovation? A primary concern is that entry by a dominant platform in adjacent markets reduces the incentive to innovate in those markets because of the possibility that the platform might use its intermediary role to appropriate the value of the innovation. If so, perhaps highly innovative industries are better organized in a modular fashion, i.e. with complementary products that interoperate through public and non-discriminatory interfaces.

Nevertheless, platform entry is not necessarily detrimental to innovation. First, vertically integrated firms fully internalize the benefits of innovation between complementary products, which in turn spurs innovation. For example, an improvement in microprocessor technology benefits software manufacturers. In the absence of a close vertical relationship with the software company, the microprocessor manufacturer does not internalize this additional benefit and innovates less. Second, in industries where companies need to make significant investments an arm’s length relationship might cause hold-up problems which in turn are detrimental to innovation.<sup>8</sup> Third, vertically integrated firms can speed up innovation when it requires changing the platform or application interface.

More importantly, platform owners/operators can internalize the benefits of innovation on its platform by third parties and have an incentive to ensure that third-party products are offered cheaply and

innovatively. Under certain circumstances a platform owner/operator will act efficiently in deciding whether to integrate into adjacent markets: as long as the platform owner can appropriate the value created by the innovations on its platform (for example, by charging a higher price for its platform), it will not have an incentive to inefficiently hamper innovation. Perhaps less obviously, this principle suggests that when a platform enters a complementary market, it might do so to increase the overall value of the ecosystem and ultimately benefit the consumer. In other words, the platform will provide access to its platform *when it is efficient to do so* and will not when it is inefficient. In this sense, the interests of the consumers and the platform may be aligned.<sup>9</sup>

In the next section we discuss several additional insights provided by a nascent and growing economic literature which builds upon the intuitions described above and studies competition on the digital platforms.

### Burgeoning literature on platform integration

A burgeoning but still developing economic literature on the effects of platform integration suggests that the characteristics of the platform and the industry matter, and no universally applicable conclusions can be found.<sup>10</sup> Not surprisingly, empirical studies on the effect of platform entry have provided conflicting results. These two facts caution against far-reaching and broad-based policies such as an outright ban of vertical integration by platforms, and instead support a fact-based, case-specific approach.

#### Theoretical contributions

Two recent papers, Dryden et al. (2020)<sup>11</sup> and Etro (2020),<sup>12</sup> study the effect of e-commerce platform entry on consumer welfare and innovation. Dryden et al. argue that marketplaces have an incentive to maximize the volume that is sold through their stores over a long time period to effectively compete with other distribution channels (both offline and online). Hence the ability to offer a wide selection of products at competitive prices is key to the platform's success. However, third-party sellers do not fully internalize these benefits and might offer lower variety and charge higher prices than optimal. Because of the misalignment between the long-term goals of the platform and the third-party sellers, platforms might integrate downstream to offer more products, higher quality, and cheaper prices. In this sense the incentives of the platform are aligned with the interests of consumers, even when they negatively affect the profits of third-party sellers with market power. Similarly, Etro (2020) finds that entry choices by the platform maximize consumer welfare: competition for customers with other distribution channels (other platforms or retailers) induces the platform to offer lower prices to both customers and third-party sellers, preserving the conditions for entry. Etro also argues that in the presence of third-party sellers' market power, the platform will be incentivized to offer more private label products to avoid double marginalization and disincentivized to operate as a reseller for the same reason.

Both papers also discuss the effect of platform entry on innovation and reach similar conclusions. Dryden et al. argue that while there is an incentive in the short term for the platform to capture the value generated by innovative sellers, this incentive is mitigated in the long run because the marketplace has an incentive to drive future volume (and incentivize future entry). Etro similarly concludes that e-commerce marketplaces internalize the effect of their entry decisions on future innovation because they earn revenues from all products sold on the platform, today and in the future. This is more likely when the platform expects to interact repeatedly with innovative sellers in the future.

Padilla et al. (2020)<sup>13</sup> suggest that foreclosure of third-party sellers on device-funded platforms is less likely when the demand for the device is growing but becomes more profitable when the demand for the device is saturated and the services offered by the device seller are not too inferior compared to the services offered by third-party competitors. Note that in their analysis the platform would have an incentive to foreclose third parties even when the services offered by the platform are inferior to the sellers' products, thereby hurting consumers. The authors also note that foreclosure harms not only third-party sellers and consumers but the platform itself, which earns lower profits in a world with less innovation. For this reason, the authors argue that the platform would be better off if it was able to credibly commit not to foreclose innovative sellers.

This is consistent with the observed behavior of several platforms which have developed organizational and reputational devices to credibly commit not to exploit their power as platform owners. For example, Gawer and Henderson (2007)<sup>14</sup> show that Intel, while often vertically integrating in adjacent markets for products that are complementary to its microprocessors, has established several mechanisms to signal that it will encourage innovation rather than use its platform power to squeeze its downstream competitors. First, Intel operates separate internal organizations with competing goals of either stimulating demand of microprocessors or turning a profit in the complementary market. Second, it made it easy for third-party innovators to enter adjacent markets by releasing key intellectual property. Note that this expands the market for microprocessors, but at the same time makes it more difficult for Intel to turn a profit in the complementary markets. Finally, in order to credibly commit to sequentially release intellectual property in the ecosystem, Intel created a separate, non-profit organization in charge of its intellectual property tasked with the goal of promoting the health of the ecosystem and expanding demand for microprocessors.<sup>15</sup>

Hagiu et al. (2020)<sup>16</sup> provide an alternative analysis which concludes that consumers benefit from platforms' dual role as sellers and marketplaces, but also emphasize possible inefficiencies due to self-preferencing<sup>17</sup> and copycat products. Furthermore, the authors study the implications of different regulatory frameworks when platforms can choose to operate as marketplace, simple reseller, or both in response to different policies. Even when platforms are likely to distort competition through practices such as self-preferencing and imitation of technologically superior products, banning vertical integration is the least favorite policy. The main reason is that the platform will respond to

the ban by choosing to be a reseller only (exploiting its role facilitating product discovery). As such, banning vertical integration will not restore the incentive to innovate nor fierce price competition between different products, which are the main potential harms of practices such as self-preferencing and product imitation. These authors conclude that alternative regulatory policies limiting self-preferencing and imitation are superior to preventing platforms to play a dual role.

### Empirical studies

Given the different conclusions that the theoretical models described above reach, it is not surprising that empirical studies of the effect of platform entry have found conflicting evidence.

Li and Agarwal (2017)<sup>18</sup> study the effect of Facebook's integration of Instagram on the demand for owned and competing third-party applications. The authors find that post-integration Instagram use by Facebook users increased and had a positive effect on the demand for large third-party applications and a negative effect on the demand for small third-party applications. The overall demand for the entire photo-sharing application ecosystem increased, which the authors interpret as evidence that Facebook's integration strategy overall benefited the market.

Studying a similar ecosystem, Foerder et al. (2018)<sup>19</sup> find that Google's entry into the market for photography apps on the Android platform in 2015 increased innovation by third-party app developers. Furthermore, the authors suggest that the increase in innovation is not driven by innovation as a competitive response, but rather by the fact that Google's entry created additional consumer attention and demand for photography apps.

A study by Wen and Zhu (2019)<sup>20</sup> finds that the *threat* of Google's entry into different app markets affects not only the level of innovation by third-party app developers but also the focus of their efforts. App developers that are vulnerable to Google's entry reduce innovation on affected apps but increase innovation on unaffected apps, both updating existing apps and introducing new ones. Furthermore, app developers that have popular products potentially affected by the entry react by increasing innovation for both affected and unaffected apps. The authors interpret this as evidence that Google's entry threat might reduce wasteful development efforts.

Zhu and Liu (2018)<sup>21</sup> find that Amazon is more likely to target successful products and that its entry discourages affected third-party sellers to pursue growth on the platform. However, the authors show that Amazon's entry increases product demand and reduces shipping costs for the consumer, which is consistent with an increase in consumer welfare. Note that these findings are in line with the insights provided in the previous section: a platform's entry decision can be aligned with the interests of the consumer even when it disfavors third-party sellers.

## Conclusion

Some policymakers and commentators have raised concerns about the dual role of platforms as both intermediary and participant in the marketplace. As such, platforms have an incentive to favor own products and disadvantage their competitors, harming consumers and hampering competition and innovation. Some have proposed an outright ban on the dual role, which would force platforms to choose between their role as marketplaces or as sellers. Economic literature however suggests that the economic effects of platform integration depend on the characteristics of the platform and the industry, and that platforms acting in their own self-interest might ultimately benefit consumers, competition, and innovation. These findings suggest that a fact-based, case-specific approach to the analysis of platform integration is better than broad-based legislation or regulation that will not fit all circumstances and might end up doing more harm than good.

### References

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- <sup>2</sup> For example, Khan, Lina, “Amazon’s antitrust paradox,” *Yale Law Journal*, 126, no. 3, 2017, 710–805.
- <sup>3</sup> For example, Khan, Lina, “The Separation of Platforms and Commerce,” *Columbia Law Review*, 119, no. 4, 2019, 973–1098. Among legislators, Senator Elizabeth Warren has been a strong proponent of the separation of platform and commerce. See Team Warren, “It’s time to break up Amazon, Google, and Facebook,” *Medium*, March 8, 2019. Available at: <https://medium.com/@teamwarren/heres-how-we-can-break-up-big-tech-9ad9e0da324c> (last accessed on May 5, 2021)
- <sup>4</sup> Recently the US Department of Justice (DOJ) brought action against AT&T’s acquisition of Time Warner alleging primarily that the vertical relationship between AT&T and Time Warner would allow AT&T to increase the price paid for Time Warner’s “must-have” content by AT&T’s distribution rivals. Ultimately, the DOJ lost the case, but this was the first vertical merger challenged in decades. For a description of the case, the arguments proposed by both sides and the judge’s decisions see, for example, Higbee, David, Jessica Delbaum, Matthew Readings, James Webber, and Djordje Petkoski, “DOJ loses first vertical merger suit brought in decades as federal judge approves AT&T’s acquisition of Time Warner,” *Perspectives*, June 14, 2018. Available at: <https://www.shearman.com/perspectives/2018/06/att-acquisition-of-time-warner> (last accessed May 25, 2021).
- <sup>5</sup> Other efficiencies might be achieved through vertical integration, which are not discussed here.
- <sup>6</sup> The key insight was first provided by Steve Salop and David Scheffman in 1983. See Salop, Steve and David Scheffman, “Raising Rivals’ Costs: Recent Advances in the Theory of Industrial Structure,” *American Economic Review*, 267, no. 2, 1983, 267–271.
- <sup>7</sup> For a more complete discussion of these issues and additional complications see Salinger, Michael, “Self-Preferencing,” In the *Report on the Digital Economy*, edited by Joshua Wright and Douglas Ginsburg, Global Antitrust Institute, 2019.
- <sup>8</sup> Hold-up problems arise when two parties refrain from working together efficiently, or underinvest, out of a concern that by doing so they might increase the other party’s bargaining power and decrease their own profits.
- <sup>9</sup> Economists have called this effect the “internalization of complementary efficiencies” or “ICE.” They also identified several exceptions to this rule—for example, when prices of the platform are regulated or in the presence of price discrimination in the market for complements. For a more complete discussion of the ICE principle and cases when it does not apply see Farrell, Joseph and Phil Weiser, “Modularity, Vertical Integration, and Open Access Policies: Towards a Convergence of Antitrust and Regulation in the Internet Age,” *Harvard Journal of Law and Technology*, 17, no. 1, 2003, 85–134.
- <sup>10</sup> See studies discussed below as well as Cristina Caffarra, “ ‘Follow the Money’—Mapping issues with digital platforms into actionable theories of harm,” *Concurrences: e-Competitions Platforms Bulletin*, August 29, 2019, art. N° 91579; and Etro, Federico, “Device-funded vs ad-funded platforms,” *DISEI Working Papers*, no. 19/2020.
- <sup>11</sup> Dryden, Neil, Sergey Khodjamirian and Jorge Padilla, “The Simple Economics of Hybrid Marketplaces,” *SSRN Working Paper*, 2020.
- <sup>12</sup> Etro, Federico, “Product Selection in Online Marketplaces,” *DISEI Working Papers*, no. 20/2020.
- <sup>13</sup> Padilla, Jorge, Joe Perkins and Salvatore Piccolo, “Self-Preferencing in Markets with Vertically-Integrated Gatekeeper Platforms,” *CSEF Working Papers*, no. 582, 2020.

- <sup>14</sup> Gawer, Annabelle and Rebecca Henderson, "Platform Owner Entry and Innovation in Complementary Markets: Evidence from Intel," *Journal of Economics & Management Strategy*, 16, no. 1, 2007, 1–34.
- <sup>15</sup> This final step encourages third-party innovators to enter the market for complementary products because it ensures that Intel will not "abuse" its dominant position *in the future* by not releasing important intellectual property to third-party innovators.
- <sup>16</sup> Hagiu, Andrei, Tat-How Teh and Julian Wright, "Should Platforms Be Allowed to Sell on Their Own Marketplaces?" *SSRN Working Paper*, 2020.
- <sup>17</sup> Self-preferencing or own-content bias refers to possibility for the platform to steer customers away from third-party products and towards own products. Self-preferencing can lead to consumer harm or to consumer benefit. During its investigation of Google's self-preferencing practices in 2012 the FTC concluded that "The totality of the evidence indicates that, in the main, Google adopted the design changes that the Commission investigated to improve the quality of its search results, and that any negative impact on actual or potential competitors was incidental to that purpose. While some of Google's rivals may have lost sales due to an improvement in Google's product, these types of adverse effects on particular competitors from vigorous rivalry are a common byproduct of "competition on the merits" and the competitive process that the law encourages. While Google's prominent display of its own vertical search results on its search results page had the effect in some cases of pushing other results "below the fold," the evidence suggests that Google's primary goal in introducing this content was to quickly answer, and better satisfy, its users' search queries by providing directly relevant information. Notably, the documents, testimony, and quantitative evidence the Commission examined are largely consistent with the conclusion that Google likely benefited consumers by prominently displaying its vertical content on its search results page." Available at: [https://www.ftc.gov/sites/default/files/documents/public\\_statements/statement-commission-regarding-googles-search-practices/130103brillgooglesearchstmt.pdf](https://www.ftc.gov/sites/default/files/documents/public_statements/statement-commission-regarding-googles-search-practices/130103brillgooglesearchstmt.pdf) (last accessed on May 25, 2021). Note that the EU Commission reached the opposite conclusion in 2017, fining Google €2.4 billion for favoring its own comparison-shopping website. De Corniere and Taylor argue that self-preferencing is harmful to consumers when there is conflict between the sellers and customers' interests, for example when sellers compete primarily on price; while it can be good for consumers when there is congruence between the customers' and the sellers' payoffs, for example when quality is the most important dimension of competition. See de Corniere, Alexandre and Greg Taylor, "A Model of Biased Intermediation," *The RAND Journal of Economics* 50, no. 4, 2019, 854–882.
- <sup>18</sup> Li, Zhuoxin and Ashish Agarwal, "Platform Integration and Demand Spillovers in Complementary Markets: Evidence from Facebook's Integration of Instagram," *Management Science*, 63, no. 10, 2016, 3147–3529.
- <sup>19</sup> Foerderer, Jens, Thomas Kude, Sunil Mithas and Armin Heinzl, "Does Platform Owner's Entry Crowd Out Innovation? Evidence from Google Photos," *Information Systems Research* 29, no. 2, 2018, 444–460.
- <sup>20</sup> Wen, Wen and Feng Zhu, "Threat of platform-owner entry and complementor responses: Evidence from the mobile app market," *Strategic Management Journal* 40, no. 9, 2019, 1336–1367.
- <sup>21</sup> Zhu, Feng and Qihong Liu, "Competing with Complementors: An Empirical Look at Amazon.com," *Strategic Management Journal* 39, no. 10, 2018, 2618–2642.