

Navigating Digital Markets: Competition, Antitrust and Regulation

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Abstract

This paper provides a comprehensive analysis of the dynamics of digital markets, focusing on the monopolization of these markets and competition among non-monopolized digital platforms. It explores the conditions leading to the monopolization of digital markets and investigates how competition is affected by platform differentiation, user decisions regarding single or multi-homing, and capacity constraints. It also discusses the recent trend of complementing antitrust frameworks with ex-ante regulation aimed at preventing anti-competitive practices, emphasizing the need for a balance between innovation, consumer protection, and market contestability in shaping a future where digital platforms operate responsibly, competition thrives, and users reap the benefits of a dynamic online ecosystem.

Keywords

Digital platforms. Gatekeepers, Antitrust. Regulation. Externalities.

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INTRODUCTION

The regulation of digital markets and the prevention of anticompetitive behavior by dominant platforms have become critical issues in today's interconnected world. As technology giants wield immense power over online ecosystems, policymakers and regulators grapple with finding effective solutions to maintain fair competition, protect consumers, and foster innovation.

In this paper, we investigate the complexities related to economic analysis, antitrust enforcement, and regulation in markets where large digital platforms, often referred to as gatekeepers, are present. In the modern landscape, these platforms have taken a prominent role, rapidly becoming the most valuable private companies on the planet. Alphabet (Google), Amazon, Apple, Meta (Facebook), and Microsoft, for instance, consistently rank among the top 10 most valuable companies worldwide.

Extensive economies of scale drive digital platforms to seek a global presence, while network externalities make it advantageous for users to have a large company connecting all other users in the network. The combination of economies of scale and network externalities may result in market tipping, where a company reaches a size that makes significant entry by

others into the market unfeasible. Economies of scope, on the other hand, lead digital platforms that hold market power in one segment, such as general searches, to expand into adjacent segments, such as targeted searches.

The intricate dynamics of digital ecosystems have repercussions for antitrust and regulatory interventions that attempt to curb anticompetitive behaviors. We investigate the main challenges faced by regulators and antitrust authorities and provide a comprehensive summary of the paths adopted by key jurisdictions in this matter, where a recent trend prioritizing regulatory remedies over competition policy seems to be emerging.

We also delve into the key provisions and strategies outlined in these new regulatory frameworks. By examining their shared objectives and divergent approaches, we gain insights into how different jurisdictions are tackling the complex dynamics of digital markets.

The paper is structured as follows. The second section provides a definition of the concept of digital platforms, while the third contains an analysis of the key market failures present in digital ecosystems. The fourth section uses tools from economic theory to explore how competition develops in digital markets, making a distinction between ‘competition in the market’ and ‘competition for the market’. The fifth section is dedicated to a discussion of the unique challenges posed by digital platforms to antitrust enforcement and the need to adjust traditional competition policy tools. Finally, the sixth section identifies the two main approaches to addressing specific issues in digital ecosystems: the antitrust and regulatory approaches. It provides a summary of the paths adopted by key jurisdictions in this matter and discusses the recent trend of prioritizing regulatory remedies. The last section concludes.

DEFINITION OF DIGITAL PLATFORM

Most of the analysis in this paper considers digital markets where platforms are present. Our first order of business, therefore, is to define a digital platform. We use the following definition, based on Spulber (2019): A platform is an entity that satisfies the following conditions: (a) it has a location, which can be geographical, virtual, or hybrid; (b) it consists of two or more sides, which can be buyers, sellers, or other groups; (c) it acts as an intermediary, managing transactions between the various sides; (d) it has technologies that enable purchases and sales, contract negotiations, communication between users, market creation, and user matching; (e) it has a coordination mechanism that provides incentives for participation from the various sides and manages user participation decisions.

In general, we can conceptualize a platform as an intermediary that provides an environment in which two or more distinct types of participants can carry out transactions involving products, services, or information. A crucial aspect for understanding the functioning of these platforms is their role as decision-makers. They have the ability to set prices, coordinate buyers and sellers, provide quality guarantees, and determine market participation conditions, among other responsibilities.

The definition of a digital platform immediately follows from the general definition of a platform presented above. A digital platform is an entity whose location is virtual (online) and satisfies conditions (b)-(e).

MAIN MARKET FAILURES IN THE DIGITAL ECOSYSTEM

Digital markets where platforms are present have several characteristics that deviate from the perfect competition paradigm. In this section, we discuss some of these features, known as market failures.

Network Externalities

One of the main characteristics of digital markets is the presence of network externalities. In economics, an externality is defined as the impact that a market transaction has on the preferences or technology of third parties who are not directly involved in that transaction. The classic example is pollution. When a company’s factory generates pollution, that pollution affects the health of individuals who live or work near the factory and who are not buyers of the company’s product.

In the context of digital platforms, this phenomenon is called network externality, which is subdivided into two types: direct and indirect (Clements, 2004). Direct network externality occurs when the value of a product or platform for a user is directly linked to the number of users of that product or platform. An illustrative example of this effect is observed in social media platforms, where each user benefits from the growth of the user base, as it expands their opportunities for interaction with more people.

Indirect network externality is a distinctive feature of two-sided markets, in which one group (side) of users values the presence of a larger number of users from the other group (side) (Rochet and Tirole, 2003). Digital platforms have, as one of their main characteristics, the facilitation of interactions between users on both sides of the market (for example, buyers and sellers, users and developers, producers and consumers) and the autonomous execution of transactions between them. For instance, as the number of sellers of a specific product increases on Amazon, the value attributed to the platform by consumers seeking that product also grows.

It is important to emphasize the difference between network externalities that appear in markets where digital platforms operate and those that exist in traditional markets, such as telecommunications. In the case of mobile telephony, for example, only direct network externalities are present, as each user is interested solely in the number of people using the same service, with whom

they can communicate. On the other hand, in the context of digital platforms, both direct and indirect externalities are present, as discussed earlier.

Economies of Scale

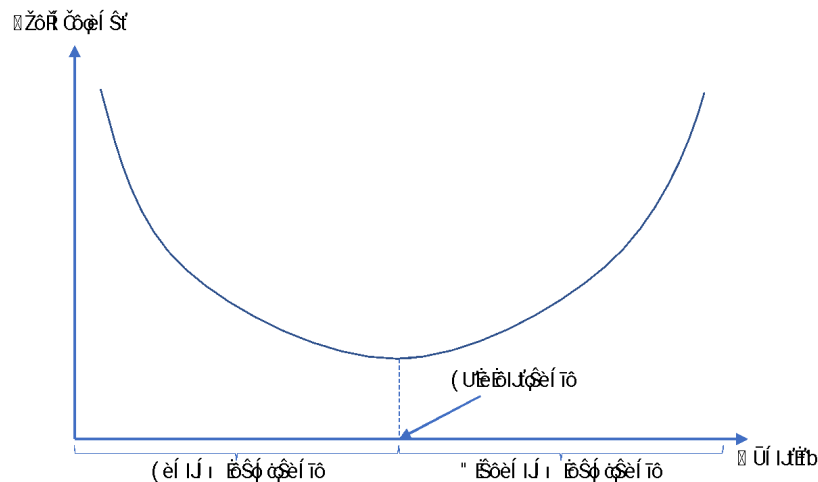
Digital platform markets play a fundamental role in facilitating transactions involving information goods and services. In general terms, the production of these items results in economies of scale, characterized by a reduction in average cost as production scale (volume) increases. This dynamic is driven by high fixed production costs, contrasting with relatively low variable costs.

Let’s take Amazon and its digital book platform as an example. It required substantial investments in software and hardware, but the cost of providing a digital book to a new user is practically insignificant. Similarly, Microsoft, in providing cloud computing services, faces substantial costs related to physical infrastructure, including servers, storage, software, and network components. However, the cost of providing this service to an additional user is negligible.

The reduction in average cost as production scale increases is a common feature in many industries and is attributed to the presence of fixed costs. It is essential to note, though, that variable costs tend to increase, at least beyond a certain production level. Since fixed costs remain constant, their relevance in the composition of average cost gradually diminishes. In this scenario, average cost more accurately reflects the behavior of variable costs.

The optimal production scale for an industry is the level at which, due to the interaction between constant fixed costs and increasing variable costs, the average production cost is minimized. This complex situation is visually depicted in Figure 1, illustrating economies and diseconomies of scale and highlighting the interplay between fixed and variable costs to achieve maximum operational efficiency.

Figure 1. Economies of Scale



It is important to note that the average production cost decreases as the company reaches the optimal scale. The decreasing segment of the average cost curve reflects the presence of economies of scale, indicating increasing operational efficiency. However, as the quantity produced surpasses the optimal scale, the average cost begins to rise, signaling the presence of diseconomies of scale.

In certain sectors, the optimal scale may be substantially larger than the quantity demanded at a price equal to the average cost at the optimal scale. In this context, an analytical approach may assume, from an economic standpoint, that the average cost curve is decreasing across the entire relevant consumption range, meaning that there is no identifiable optimal scale. This understanding highlights the complexity of cost management in different industrial contexts.

An industry characterized by significant economies of scale, where the average cost curve is decreasing within the relevant consumption range, tends to be more susceptible to market concentration. This occurs because entering companies often begin operating at a smaller scale than established companies, resulting in higher average costs. Besides making entry into the sector challenging, this situation puts companies that manage to penetrate in a competitive disadvantage, favoring market concentration.

In the digital platform segment, although the optimal scale is generally high, there is often room for multiple companies to operate due to the large demand. A notable example is the search engine segment, where Google and Bing compete for the market, indicating that even in sectors with economies of scale, competition can coexist as long as the demand is substantial

enough to support multiple participants and the cost for a user to join each platform is negligible. This is evident in the search engine segment, where access to the platform is free.

Economies of Scope

Economies of scope are present when “the cost of combining two or more product lines within a company is lower than the cost of producing them separately” (Panzar and Willig, 1981).

One of the most common sources of economies of scope is the presence of joint costs in the production of multiple products. For example, the infrastructure of a cable TV company’s network can be used for both cable TV services and fixed broadband services.

In digital platforms, scope economies are predominantly driven by user data collection. When a platform accumulates extensive information, it can utilize this data to train machine learning algorithms. The results of this process can be used to enhance advertising revenue by ad targeting more efficiently. Additionally, the platform can improve its existing products and even diversify into adjacent markets.

For instance, consider a platform that offers online mapping services. By leveraging the knowledge gained from user email and internet search patterns, this platform can develop an excellent product in the restaurant recommendations market. This process not only illustrates the effectiveness of scope economies but also highlights the ability of digital platforms to use strategic data for successful innovations and expansions.

Low Marginal Costs

It is common for digital goods and services to have relatively small marginal production costs, often close to zero. In many digital markets, the costs associated with transportation and distribution, which often represent a significant portion of expenses for traditional companies expanding their sales, are negligible. A clear example is Facebook’s cost of adding a user to its platform, which is practically zero.

Due to these low marginal costs, a rapidly growing digital platform has the ability to generate cash flows at levels and speeds unattainable for competitors with a more moderate pace of expansion. Additionally, some commonly used tests in competition analysis only identify anticompetitive practices when the price of a product or service is below its marginal (or incremental) cost, which is unlikely when the latter is small and impossible when it is equal to zero. For instance, the renowned Areeda-Turner test (Areeda and Turner, 1975) for predatory pricing suggests that prices below marginal cost should be considered predatory.

Global Scope

To achieve a global presence, various digital platforms face substantial costs, including expenses related to negotiating licenses and agreements in different jurisdictions with various stakeholders, adapting products and services to different languages, and regulatory compliance (Stigler Center for the Study of the Economy and the State, 2019). These costs associated with global expansion serve as significant barriers to entry for new competitors.

ECONOMIC THEORY OF COMPETITION AMONG DIGITAL PLATFORMS

The confluence of characteristics described in the previous section leads many digital markets where platforms operate to reach an inflection point, from which only one platform becomes dominant. This process, known as market tipping, occurs because the tendency is for the company that can better and more rapidly exploit the gains associated with an environment of significant economies of scale and scope, strong network externalities, low marginal costs, and high costs of international expansion to emerge as the winner in the race for that market.

This process is typically characterized as the transformation from “competition in the market” to “competition for the market,” resulting in concentration. The phase of “competition in the market” often benefits consumers by providing more affordable prices and higher quality. However, this period is typically short-lived. The extraordinary profits obtained by the winner serve as an incentive for both new companies to enter this race and for significant investments by existing participants, eventually leading to the stage of “competition for the market.” In this phase, the company that captures the largest consumer base tends to dominate the market. Although there is a possibility of an innovative company challenging the winner of the race in the future, the persistence of the same factors that led to initial concentration does not guarantee that competition between them will result in substantial benefits for consumers.

The economic theory regarding competition among digital platforms encompasses a variety of topics. In this section, we address two fundamental themes for analyzing competition in the markets where these platforms operate. The first is monopolization of digital markets. We examine the conditions that lead to the monopolization of digital markets and explore to what extent the monopolistic position of a platform can be challenged.

The second theme is competition among non-monopolized digital platforms. We investigate competition between digital platforms in markets where two or more companies hold significant market shares. Our focus is on how competition is affected by platform differentiation, user decisions regarding single or multi-homing (using multiple platforms), and capacity constraints (congestion).

Competition for the Market

As described in the previous section, the markets where digital platforms operate exhibit a combination of characteristics that tend to generate a powerful force of monopolization, with network externalities being a prominent factor. Platforms with a large user base benefit significantly from network externalities.

Let's illustrate this phenomenon with two identical platforms, A and B, which provide a user connection service without charging for it. Suppose users are randomly distributed between the two platforms, resulting in a greater number of users on platform A. In the presence of network externalities and assuming negligible switching costs, some users from platform B will migrate to platform A, widening the disparity between them. This process persists until platform A attains a dominant position. Thus, *ceteris paribus*, the existence of network externalities leads to market tipping.

This inclination toward monopolization is not necessarily undesirable from a social perspective. In fact, in situations like the one described above, market concentration is efficient because the marginal value created by each additional user increases as the user base on the same platform grows.

The scenario described above does not account for the existence of multiple sides of the market. Consider now a scenario where platform A is the incumbent (dominant) firms and platform B is attempting to enter (or compete in) this market. To succeed, platform B must attract a sufficient number of users on at least one side of the market. One way to achieve this is by using a strategy known as "divide and conquer," where one side of the market is subsidized (even charging a price of zero), and losses are recovered through revenues generated on the other side. The success of this strategy depends on platform A's reaction. It's plausible that platform A may also lower prices for users courted by platform B, effectively blocking its entry. The end result would again be the market tipping in A's favor.

It's not inevitable that the larger platform (in our example, platform A) wins the market race. Suppose a situation where platform B, although smaller, offers a superior-quality service compared to platform A. Even if network externalities dominate quality effects, platform B can surpass platform A if it is willing to endure losses for a certain period. By charging lower prices and absorbing corresponding losses, platform B can attract enough users over time to offset platform A's size advantage. Notably, this process also influences user expectations, making it more likely that an increasing number of users will choose platform B. Eventually, platform B can achieve a dominant position, allowing it to generate significant profits and recover past losses, thanks to its superior service quality and more pronounced network effects.

Competition in the Market

We now want to explore scenarios where competition between platforms unfolds in a market where tipping has not occurred, i.e., where there is competition between two or more platforms. We explore several factors that impact this competition, namely platform differentiation, multi-homing practices, and capacity constraints.

Platform Differentiation

Platform differentiation can happen along several dimensions, including product or services, pricing strategies, and business models.

Platforms can differentiate themselves based on product quality. For instance, consider two platforms – A and B. If platform A has a larger user base, some of its users might switch to platform B if B's service quality is sufficiently high to compensate for reduced network effects. Alternatively, the smaller platform (B) may attract a specific user group due to their loyalty. For example, TikTok competes with Facebook and Instagram in the social media segment, appealing to younger users. Generally, the more distinct platforms are in consumers' eyes, the less impact network externalities have on the competitive process.

Different pricing strategies constitute another form of platform differentiation. Imagine a market with two consumer groups on each side:

- Side 1 (buyers) divided into consumers of types X_1 and Y_1 (with X_1 being larger).
- Side 2 (sellers) divided into X_2 (larger) and Y_2 consumers.

Suppose X_1 and X_2 users value platform size (number of users) more than Y_1 and Y_2 users, respectively. The optimal pricing strategy for each platform would be to charge a relatively small price to one of the market sides and a relatively high price to the other side.

More specifically, platform A charges a relatively low price to side 1, attracting X_1 and Y_1 consumers. As X_1 users highly value network size, this strategy increases their connection to platform A, creating significant indirect network effects. Platform A can then charge a high price to side 2, compensating for revenue losses on side 1 (this maximizes platform A's profit).

In response, platform B charges a relatively low price to side 2, attracting X_2 sellers who won't pay platform A's high price. This enhances platform B's value for Y_1 consumers, allowing it to charge a higher price on side 1 (as long as the price increase doesn't exceed Y_1 's network externalities).

The result is the coexistence of platforms A and B. An example is the online job market, where one platform charges less to employers, leading to more job listings, while the other charges less to job seekers, resulting in more registered candidates (Ambrus and Argenziano, 2009).

The third and final form of platform differentiation we discuss here involves distinct business models. The VoD (Video on Demand) market exemplifies this situation well. VoD platforms span a spectrum of business models. At one extreme, there's the subscription model (known as SVoD), where subscribers pay a fixed fee (typically monthly or annually) for access to the service. At the other extreme, there's the advertising model (AVoD), where there's no subscription charge, but video content is interspersed with ads.

This occurs because platforms, acting as distribution channels for advertisers' content, are highly interchangeable. Some platforms seek to offer differentiated services to avoid direct competition. When one platform increases the number of ads and reduces subscription fees, it may be advantageous for another platform to do the opposite – raise subscription fees and decrease ads. This dynamic makes competition viable among multiple platforms.

Multi-homing

Multi-homing, which refers to a user's willingness to use more than one platform, also enables competition between two or more platforms even when network externalities exist. To better understand this, let's assume there are two active platforms, A and B, and two sides of the market, side 1 and side 2, as mentioned in previous examples.

Suppose that some users on side 1 of the market (e.g., consumers) participate in only one of the platforms. In other words, there are side 1 users who exclusively use platform A and side 1 users who exclusively use platform B. If the goal is to reach all these side 1 users, side 2 users (e.g., sellers or advertisers) will need to participate in both platforms.

The coexistence of multiple platforms can occur due to multi-homing – the willingness of users on one side of the market to connect to more than one platform to access a larger number of users on the other side of the market. However, the sustainability of this situation depends on factors such as platform cost structures, user perception of service quality, and the strength of network externalities.

Congestion

The last factor to be considered that facilitates entry into markets where tipping can occur is the existence of capacity constraints. Although physical limitations are not relevant in exclusively online markets, there are other types of restrictions that can lead to platform congestion, affecting users' perception of service quality.

For example, the available space for displaying ads may be limited, as it is generally assumed that users dislike being exposed to a large number of ads. Screen size, especially on mobile devices, can restrict the display of both ads and products for sale. In such cases, some companies may choose to advertise on less congested platforms.

Another example is in seasonal vacation rental platforms, where the platform's value for a seller increases with the number of buyers on the other side of the market but decreases with the number of sellers on the same side of the market. In this case, congestion is associated with a large number of sellers. It's possible that a seller would prefer to use a smaller (less congested) platform with fewer sellers, even if it means having access to a smaller number of buyers.

In summary, congestion on a larger platform may lead the most affected users to migrate to a smaller, less congested platform, enabling the survival of the smaller platform even in the presence of significant network externalities.

COMPETITION POLICY IN DIGITAL MARKETS: MAIN CHALLENGES

As discussed in the previous section, much of the trend toward concentration in digital markets stems from powerful network externalities. These externalities make competition analysis more difficult because there is no longer a direct relationship between the level of competition and consumer welfare. For instance, increased concentration in digital markets could lead to lower prices for some users and better internalization of network effects, thereby increasing consumer surplus.

In this section, we examine issues that, while not necessarily exclusive to digital markets, carry more weight in these markets and pose special challenges for competition enforcement.

User Data

Many digital platforms have the ability to collect an immense volume of data about their users. The resulting databases, commonly known as “big data,” provide them with new competitive advantages over their competitors, especially smaller platforms that are entering or attempting to enter the market.

These advantages stem from both the richness of user information and the number of users. Databases containing extensive information about email, location, internet search queries, and other aspects of user participation can be used to generate statistics about user population and to segment advertisements based on individual user characteristics. This creates externalities among platform participants, as the value of a specific user’s data exceeds its value solely for marketing products and services to that user.

Furthermore, user databases tend to exhibit increasing marginal returns. As the database size grows (both in terms of the number of users and attributes), the platform can identify new and more complex aspects of user behavior. For example, consider a platform that wants to identify users interested in buying tickets for a rock band’s concert in a specific city, possibly to display related ads to those users. If the platform only has information about users’ ZIP codes, its predictions regarding interest in the concert will be imprecise. However, by accessing additional data on user attributes such as income, band-related product purchases, and air travel, the platform can substantially improve the accuracy of these estimates.

The growth of the user database in terms of the number of users also enhances estimate precision, allowing the platform to “learn” how variables (ZIP code, income, band-related product purchases, air travel, etc.) affect the likelihood of ticket purchases for the concert within the population. In other words, it facilitates the construction of a population model regarding the relationships between variables.

It’s worth noting that this phenomenon leads platforms to offer an increasingly diverse range of services to boost user engagement. Consequently, the platform can collect information about other aspects of users’ social, cultural, and economic activities and predict their future choices more accurately.

This issue becomes particularly concerning in markets where market tipping has occurred. In such circumstances, these platforms act as data gatekeepers, meticulously monitoring and cross-referencing information about users’ online behavior. This precise and extensive data control further amplifies their competitive advantages, solidifying their position and hindering the entry of new competitors.

The challenge for antitrust analysis lies in the fact that the accumulation and utilization of an extensive volume of data also provide benefits to users. By customizing products according to user preferences, the platform effectively enhances the quality of these products. This happens, for example, when a search engine provides personalized results based on user preferences or when an e-commerce platform improves the matching between buyers and sellers. The often arduous task for antitrust authorities is to compare these benefits with the competitive harms arising from the entry barriers established by platform databases.

Measurement of Consumer Surplus

Traditional antitrust analysis aims to assess the social welfare impacts of concentration acts and various business practices. It often requires appropriate measurements of sales volume, quality, and consumer surplus. However, these measures can be challenging to obtain or may be inadequate in the context of digital platform activities.

For instance, using the number of users of a specific service in the consumer surplus calculation formula may be inappropriate if the platform has means to influence user choices. In such cases, the platform could make it difficult or even impossible for users to change default settings, impacting their choices. Another imperfect volume measure is the number of clicks on advertisements. An increase in clicks does not necessarily represent greater consumer surplus if it results from lack of control or biases exploited by the platform.

The examples mentioned above highlight that measuring consumer surplus and, more broadly, social welfare, should consider insights from a relatively recent field of economics known as Behavioral Economics (Kahneman and Tversky, 1979; Thaler, 2016). Behavioral Economics has identified several behavioral biases that digital platforms can exploit, with three being particularly notable (Fletcher, 2019):

- Status quo bias: Users prefer to maintain their current state, even if a change could improve their well-being. This bias encourages users to remain at their current reference level.
- Saliency bias: Users tend to focus on or respond to items, information, or stimuli that are more prominent, visible, or emotionally charged.
- Impatience bias: Users value benefits received instantly (or in the short term) more than those to be received in the future (or in the long term).

Digital platforms are clearly aware of these biases and seek to exploit them to increase their profits. Some possible tactics include structuring the user experience so that platform-favorable information is more prominent, creating a profitable status quo, inducing addictive or compulsive user behavior, and taking advantage of users' tendency to perform quick searches.

To illustrate this in more detail, let's consider the impatience bias. Due to users' propensity to click primarily on the first search results, neglecting those further down or on subsequent pages, platforms can adjust their algorithms to position the most lucrative results or those associated with products sold by the platform at the top of the page. This not only amplifies but also consolidates the platform's market power. Additionally, influenced by impatience bias, users may choose not to thoroughly read all platform access rules, inadvertently relinquishing their privacy rights or control over the use of their personal data. Once again, the platform can exploit this tendency, accumulating an ever-growing volume of data about its users and using it virtually without restrictions.

However, the theory and practice of competition law have not yet evolved to incorporate the necessary tools to effectively address the effects of these behavioral biases. There is also a risk that, in attempting to do so, antitrust authorities may inadvertently blend value judgments about social behavior with economic considerations, potentially distorting the analysis.

Another challenge associated with the measurement of consumer surplus is the prevalence of digital transactions conducted without the use of conventional currency. When users allow their personal data to be sold or used in ways they cannot control in exchange for services offered by the platform, they are effectively engaging in a form of barter. In this and other situations where the product or service is free, the price loses its function as a measure of social value because it no longer reflects the transaction's value. This adds a layer of complexity to evaluating the true costs and benefits for consumers in these digital interactions.

Quality Degradation

Certain behaviors of digital platforms can lead to a decrease in the quality of the user experience. When a platform manages to eliminate competitors or prevent new entrants, it may reduce the quality of its products or services without necessarily lowering prices to compensate users. This degradation of quality can manifest, for example, through reduced user privacy protection. Even if prices remain unchanged, this results in an increase in prices adjusted for quality, thus harming users.

In the context of a market where one side consists of advertisers, reduced competition often leads to an increase in prices adjusted for conventional quality. In other words, although the quality remains unchanged, prices for advertisers tend to rise. Ultimately, consumers bear the brunt of this situation, as advertisers partially pass on their cost increases to the products and services marketed on the platform.

Innovation

Many observers raise the question of whether regulatory or antitrust interventions in digital markets could lead to a decrease in innovation speed within the sector (Mattos, 2023; OECD, 2022; Petit and Teece, 2021). For instance, Mattos (2023) discusses the role of "Schumpeterian innovator" played by large technology companies and how it can be hindered by certain antitrust measures. He particularly warns that "structural breaks and prohibitions on acting in adjacent markets by Big Techs are interventions that pose enormous risks to Schumpeterian competition through innovations."

Certainly, the impact of government actions on innovation should be a primary concern. However, it is crucial to consider the possibility that digital platforms, instead of promoting innovation, may inadvertently block it. One channel through which this can occur is investment in start-up companies by venture capitalists (VCs). Generally, these investors hesitate to fund companies developing innovative products that could compete with those of incumbent platforms. They know that these platforms can use their immense financial capacity to prevent entry or make it unfeasible for these innovative companies to survive in the market (Stigler Center for the Study of the Economy and the State, 2019).

The result is fewer competitors entering the market and less innovation. Venture capitalists tend to favor companies creating products in new business categories or improving existing ones. For example, there is little news of significant investments in competitors to Google's search engine by venture capitalists. However, many complementary product projects (with potential to be acquired by Google) have received funding from these investors (Stigler Center for the Study of the Economy and the State, 2019).

Incumbent platform actions can also impact innovation through another channel: the behavior of new entrepreneurs. When assessing the expected profit from their projects, these entrepreneurs consider the platform's potential to create entry barriers or adopt practices that exclude products directly competing with their own offerings. Expected profits from projects that develop substitutes for platform products tend to be relatively lower compared to complementary products. Often, it is more advantageous for entrepreneurs to develop complementary products, expecting to sell their businesses to incumbent platforms.

This process positively impacts innovation because it stimulates the development of products complementary to the platforms. However, important distortions arise from this scenario. If entry barriers were eliminated and exclusion practices by incumbent platforms were removed, the expected profit from projects that aim to develop substitutes for the platform would significantly

increase. This change would incentivize the development of more products and services with the potential to enhance or even replace those offered by incumbent platforms.

In other words, when direct competition for the profits generated by incumbent platforms' core businesses is not a realistic possibility, there is a reduction in the entry of innovative companies that could challenge these platforms' dominance.

REGULATION VERSUS ANTITRUST IN DIGITAL MARKETS: THE INTERNATIONAL EXPERIENCE

We identify two main approaches to address the potential anticompetitive effects of digital platforms. The first is the traditional antitrust approach, where authorities intervene only in response to specific complaints. Essentially, an economic agent must submit a complaint (which can be about the complainant's own conduct, as in the case of leniency agreements) to the antitrust agency before an investigative process regarding the reported event is initiated.

Antitrust cases are typically slow to conclude, which contrasts with the speed of technological changes and the evolution of business practices in digital markets. This is one of the reasons for a different approach to be pursued: regulation. Behaviors considered unacceptable or illegal are identified and obligations and prohibitions are imposed on digital platforms. This strategy requires the development of a regulatory framework, including legal instruments (laws, norms, etc.) and regulatory agencies (new or existing). Some authors refer to this approach as *ex ante* intervention, as its purpose is to establish mechanisms capable of preventing conduct or events that can harm, thereby promote contestability in digital markets (Dietrich and Vinje, 2021; Georgieva, 2021; Tombal, 2022).

We have more to say about these two approaches in what follows.

Antitrust in Practice

The previous section identified some of the challenges posed to antitrust in digital markets from a theoretical viewpoint, especially those with a heavy presence of digital platforms. Perhaps this explains why antitrust authorities have so far had limited success in their fight against what they consider to be anticompetitive actions taken by those platforms.

Indeed, there is a relative scarcity of significant victories by antitrust authorities in cases against large technology companies, known as "big tech." In Brazil, for instance, although the Administrative Council for Economic Defense (CADE) has analyzed a considerable number of cases involving concentration acts and anticompetitive conduct in digital platform markets, only five of them were related to large digital platforms. Additionally, only two of the concentration acts resulted in restrictions imposed on the companies involved.

In the United States, where antitrust has a long and distinctive tradition, there are several cases where the courts rejected proposed actions. These rejections often reflect the complexity of antitrust arguments, the interpretation of existing laws, and the challenges in proving the existence of anticompetitive practices. Here are some of them:

- The Federal Trade Commission's attempt to block Microsoft's acquisition of video game manufacturer Activision Blizzard (still subject to appeal).
- State prosecutors' effort to restore an action seeking the breakup of Meta (initially filed in 2021).
- Lawsuit filed by Epic Games accusing Apple of monopolizing the App Store.
- The Federal Trade Commission's attempt to block Meta's acquisition of virtual reality company Within.
- The lawsuit of the District of Columbia's attorney general against Amazon claiming that it prevents sellers on its platform from offering lower prices to consumers elsewhere.

These failures highlight the need to adapt antitrust laws to specific issues in the technology sector and underscore the challenges faced by authorities in creating effective regulations and ensuring timely and assertive enforcement in this dynamic and complex market.

That is not to say that all antitrust endeavors have failed. There are examples of recent successful initiatives and concessions by companies in response to antitrust action, but they are relatively few and less impactful:

- Epic Games succeeded in a lawsuit against Google, accusing the latter of maintaining an illegal monopoly in the Android app market.
- The General Court of the European Union upheld the European Commission's decision to sanction Google for imposing illegal restrictions on mobile device manufacturers using the Android system and mobile network operators, with the aim of consolidating the dominant position of its search engine on the internet (although the fine was reduced from €4.34 billion to €4.125 billion).
- Microsoft chose to separate its chat and video application Teams from its Office software in an attempt to avoid sanctions by the European Commission.

It's also important to mention the recent FTC lawsuit against Alphabet (the company that controls Google), accusing it of trying to protect the dominant position of its search engine on the internet through illicit agreements with internet browser developers,

smartphone manufacturers, and mobile network operators. In these agreements, Alphabet pays substantial amounts to ensure that Apple and other companies use Google as the default search engine. Many analysts consider this antitrust case, whose final arguments were made in court on May 3 and May 4 of 2024, to be the most significant against a big tech company in the internet era.

Regulation in Practice

In the regulatory approach, government agencies must actively monitor the market and have the authority to intervene whenever they identify threats to free competition, following parameters established by legislation, even in the absence of a formal complaint. This approach is adopted around the world and in various regulated sectors of the Brazilian economy¹. One possible explanation for the use of preventive regulatory intervention lies in the difficulty faced by competition authorities in addressing all necessary dimensions to combat the harmful effects, confirmed or potential, of digital platform's actions.

Importantly, the distinction between this approach and antitrust is not absolute. Any preventive regulatory framework needs to incorporate sanctions to be applied if preventive measures prove insufficient to avert practices harmful to competition. Similarly, among traditional antitrust mechanisms, there are measures that can be interpreted as preventive.

Initiatives from the European Union, the United States, and the United Kingdom in the legislative field, embodied in the Digital Market Act (DMA), the American Innovation and Choice Online Act (AICO), and the Digital Markets, Competition, and Consumer Bill (DMCCB), respectively, are examples of the regulatory approach, although they contain various values and rules from the traditional antitrust approach. The DMA came into effect on November 1st, 2022, while the DMCCB was approved on May 23, 2024 (it is not in effect yet) and the AICO is still being discussed in the American Congress.

In those three countries, regulation centers on digital platforms that are considered gatekeepers of digital markets². The identification of these gatekeepers in the European Union and the United States is based on a closed list of activities and quantitative criteria. The United Kingdom has taken a different approach, granting regulators more flexibility to determine which companies fall under the legislation.

In the United States and the European Union, companies operating in the digital sector (each legislation defines the activities within this sector) that exceed certain numerical thresholds in terms of revenue, market value, and number of users are immediately classified as gatekeepers. In the United Kingdom, while there is also a necessary condition that establishes revenue limits, the regulator needs to conduct an analysis to determine whether the company holds a Strategic Market Status (SMS), defined as a combination of substantial and entrenched market power with strategic significance. The Digital Markets, Competition, and Consumer Bill does not specify how this assessment should be carried out; it will be up to the regulator to develop appropriate criteria after the law's approval.

There is also a difference in approach in terms of the scope of activities subject to regulatory control. While the European Union and the United States have created closed lists of activities to be regulated, the United Kingdom has opted for a more open definition, covering all activities where digital technologies are a fundamental component of the products and services offered.

The European Union's Digital Market Act establishes that companies falling within the gatekeeper definition must identify themselves, meaning they must communicate to the European Commission that they are subject to the law's requirements. The first phase of this process was completed on September 6, 2023, when the European Commission designated Alphabet, Amazon, Apple, Bytedance, Meta, and Microsoft as gatekeepers after a 45-day review process. This process was initiated after the Commission received notifications from Alphabet, Amazon, Apple, Bytedance, Meta, Microsoft, and Samsung, communicating their potential gatekeeper status. A total of 22 essential platform services of gatekeepers are now regulated according to the rules of the Digital Market Act. It's important to note that the European Commission can initiate its own investigation to determine whether a company qualifies as a gatekeeper, even if the company does not meet the quantitative criteria established by the law.

In the United States, both the Federal Trade Commission (FTC) and the Department of Justice are responsible for determining whether a digital platform should be designated as a gatekeeper (covered platform), according to the criteria established in the American Innovation and Choice Online Act. There is no provision in the law that requires companies to self-identify as potential gatekeepers. Additionally, there is no mention of sources and methods of data collection to be used by regulators for designation. Since the law is still pending in the US Congress, no company has been designated as a gatekeeper in the US yet.

As in the United States, there is no official list of gatekeepers in the United Kingdom, as the Digital Markets, Competition, and Consumer Bill is not yet in effect. When that happens, it will be the responsibility of the Competition and Markets Authority

¹ For example, ANATEL (the Brazilian National Telecommunications Agency) has the General Competition Goals Plan (PGMC) at its disposal, which sets guidelines and goals to foster competition in the telecommunications market.

² The DMA uses the word "gatekeeper", while the AICO prefers "covered platform" and the DMCCB favors "undertaking with strategic market status."

(CMA) to assess whether a company holds a strategic market position. In other words, the CMA will determine whether the company possesses (i) substantial and entrenched market power and (ii) strategic significance. The law does not specify the criteria to be used by the CMA in step (i), merely stating that the analysis should be prospective and consider the expected or foreseeable consequences of not designating the company as having SMS. Regarding step (ii), the law mentions relatively vague conditions based on the company's scale, number of commercial users, and ability to influence commercial user behavior and extend its market power to other markets.

All three laws stemmed from the recognition that existing competition policies were insufficient to address abuses of market power by major digital platforms. Additionally, all of them incorporate some version of the following objectives: (i) Prevent conduct that harms competition; (ii) promote market contestability; (iii) encourage innovation; and (iv) ensure that users are treated fairly and have ample freedom of choice.

We can categorize the instruments against market power abuses present in them into two distinct types. The first consists of conduct obligations, while the second type pertains to conduct prohibitions. Among the obligations, the following stand out:

- Conduct business fairly and reasonably.
- Develop processes to resolve complaints and disputes with existing or potential users.
- Provide clear, relevant, and accurate information about digital activities (such as options, default platform settings, etc.) and make it easily accessible to existing or potential users.
- Offer consumers greater choice and control over their data usage – for instance, allowing them to opt out of sharing their data for personalized advertising and receive only non-personalized ads.
- Notify existing or potential users in advance of relevant changes to the platform's digital activities.
- Avoid influencing users' app choices through pre-installations, defaults, and app store design.
- Open up data to rival companies' search mechanisms to enhance competition.

Among the prohibitions, the following are noteworthy:

- Avoid using terms, conditions, or policies that discriminate against specific users or potential users.
- Refrain from giving preferential treatment to their own products and services at the expense of other companies.
- Not require or encourage users or potential users to engage in tied purchases of platform products and services.
- Not restrict existing or potential users' access to the platform's products and services.
- Ensure interoperability between the platform's products and services and those of other companies.
- Not hinder existing or potential users' ability to use products or services from other companies.
- Avoid using data obtained from transactions involving products or services where the company holds market power to gain anticompetitive advantages in other markets.
- Allow commercial users access to data generated by their own activities on the platform.
- Not prevent users from uninstalling software applications or changing default settings that direct them to products or services offered by the platform.
- Refrain from retaliating against any user who reports legal violations by the platform.
- Abstain from participating in concentration acts.

CONCLUSION

In this paper, we studied key competitive aspects of the digital ecosystem, with a focus on the actions of digital platforms and their exercise of market power. The result was a portrait of competition in digital markets connecting their essential properties, including network externalities, economies of scale and scope, and the tendency toward market tipping. We also tied those properties into an examination of the behavior of digital platforms and a discussion of the key challenges to antitrust enforcement in digital markets.

After an investigation of the choices made by governments in countries where discussions on restraining anticompetitive behavior in this arena are most advanced, we identified a trend towards the expansion of the regulatory framework, which now includes legislative pieces specifically designed for dominant digital platforms. The platforms subject to this preventive regulation are known by different names, such as gatekeepers, covered platforms, and companies with strategic market position. The European Union and the United Kingdom have already passed dedicated laws for this type of regulation – the Digital Markets Act and the Digital Markets, Competition, and Consumer Bill, respectively. In the United States, there is a bill currently under consideration in Congress – the American Innovation and Choice Online Act – but there is no timeline for its approval.

Markets in which digital gatekeepers operate present a combination of characteristics that make the application of traditional antitrust defense mechanisms challenging and weaken their effects. Notably, the existence of indirect network externalities, a feature of what economists call two-sided markets, renders commonly used antitrust analysis tools ineffective or necessitates

adaptation. This occurs because conduct by platforms on one side of the market that appears anticompetitive may actually benefit the other side of the market.

In addition to addressing the technical challenges posed by market failures unique to digital platforms, antitrust intervention faces the sluggishness of legal processes, limiting its ability to respond promptly to developments in sectors where technology and business practices change rapidly and frequently.

This narrative leads to the primary conclusion of this report: the recent trend observed in key jurisdictions – to complement antitrust frameworks with ex ante regulation aimed at preventing anticompetitive practices – is a predictable result of the so far inadequate response of traditional antitrust intervention.

Nevertheless, the path toward a fair and competitive digital landscape is multifaceted. While the DMA, AICO, and DMCCB share common goals, they diverge in their methods. As these legislative efforts continue to evolve, it is essential to strike a balance between innovation, consumer protection, and market contestability.

By learning from each other's experiences and adapting to the ever-changing digital environment, regulators and antitrust authorities around the world can shape a future where digital platforms operate responsibly, competition thrives, and users reap the benefits of a dynamic online ecosystem.

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