

Prospects for Big Data in the Shadow of Antitrust and Competition Laws

SEYED MILAD MAHMOOD KASHANI

(Dottorando di Ricerca in Diritto delle Persone delle imprese e dei mercati, Università degli Studi di Napoli Federico II)

Abstract

Big Data's explosive growth and widespread use have changed the world of business, bringing both benefits and difficulties. Companies are gathering enormous volumes of data, which has raised worries about compliance with antitrust and competition rules. This has made it necessary to carefully consider how Big Data might fit into this regulatory framework. This article examines the interactions between Big Data and antitrust laws and identifies important factors. Big Data collection and use can lead to questions about market dominance, entry hurdles, and the possibility of anticompetitive behavior. It explores the difficulties presented by monopolistic players who might use their access to enormous data resources to impede competition, obstruct market entry, or practice discrimination. It looks at how the gathering, sharing, and monetization of Big Data might result in the concentration of market power, necessitating the adaptation and handling of new aspects of competition in the digital age by antitrust authorities. Additionally, it highlights the necessity of a well-balanced strategy that fosters innovation and competitiveness while guarding against anticompetitive activity. In order to reduce the hazards associated with Big Data concentration, it examines alternative legislative methods, such as enforcing data-sharing responsibilities, fostering open standards, and improving transparency in data practices. In light of antitrust and competition regulations, this paper illuminates the potential for Big Data. While highlighting the significance of good regulation to stimulate competition, safeguard consumer welfare, and maintain a level playing field in the digital economy, it acknowledges the revolutionary potential of Big Data for business and society. It is essential to address the issues raised by Big Data within the antitrust framework in order to support innovation, economic progress, and an equitable market for all.

La crescita esplosiva e l'uso diffuso dei Big Data hanno cambiato il mondo degli affari, apportando sia vantaggi che difficoltà. Le aziende stanno raccogliendo enormi volumi di dati, il che ha sollevato preoccupazioni circa il rispetto delle norme antitrust e sulla concorrenza. Ciò ha reso necessario considerare attentamente come i Big Data potrebbero inserirsi in questo quadro normativo. Questo articolo esamina le interazioni tra Big Data e leggi antitrust e identifica fattori importanti. La raccolta e l'utilizzo dei Big Data possono portare a domande sulla posizione dominante del mercato, sugli ostacoli all'ingresso e sulla possibilità di comportamenti anticoncorrenziali. Esplora le difficoltà presentate dagli attori monopolistici che potrebbero utilizzare il loro accesso a enormi risorse di dati per impedire la concorrenza, ostacolare l'ingresso nel mercato o praticare la discriminazione. Esamina come la raccolta, la condivisione e la monetizzazione dei Big Data potrebbero comportare la concentrazione del potere di mercato, rendendo necessario l'adattamento e la gestione dei nuovi aspetti della concorrenza nell'era digitale da parte delle autorità antitrust. Inoltre, evidenzia la necessità di una strategia ben bilanciata che promuova l'innovazione e la competitività tutelandosi al tempo stesso da attività anticoncorrenziali. Al fine di ridurre i rischi associati alla concentrazione dei Big Data, esamina metodi legislativi alternativi, come l'applicazione delle responsabilità di condivisione dei dati, la promozione di standard aperti e il miglioramento della trasparenza nelle pratiche relative ai dati. Alla luce delle normative antitrust e sulla concorrenza, questo documento illustra il potenziale dei Big Data. Pur sottolineando l'importanza di una buona regolamentazione per stimolare la concorrenza, salvaguardare il benessere dei consumatori e mantenere condizioni di parità nell'economia digitale, riconosce il potenziale rivoluzionario dei Big Data per le imprese e la società. È essenziale affrontare le questioni sollevate dai Big Data nel quadro antitrust per sostenere l'innovazione, il progresso economico e un mercato equo per tutti.

Summary: 1. Introduction 2. Benefits of Big Data for Market Competition 3. Challenges Posed by Big Data Concentration 4. Antitrust Implications of Big Data: Exploring Future Prospects and Policy Directions 5. Conclusion

1. Introduction

Massive data sets were initially referred to when the phrase “Big Data” was coined¹. The emergence of Big Data has caused a profound change in the corporate environment, enabling firms to tap into massive amounts of data for analysis and decision-making. Data are unrivalled by-products of economic activity². Big Data is without a doubt a vital part of production in the digital economy, but it is not a goal in and of itself³. Big Data is being used more and more, but this has raised questions about how it may affect antitrust and competition regulations. More and more legislators and supporters believe that privacy laws and antitrust enforcement are the most effective legal tools for controlling Big Tech. Both legal disciplines are now viewed as tools for a major reorganization of the technology sector that would foster competition, stop unfair business practices like self-preferencing, dismantle monopolies, and safeguard consumer privacy⁴.

The term “Big Data” was first popularized by Harper’s Magazine in the late 1980s to describe the many customer data lists used to boost the effectiveness of direct mail marketing⁵. Big Data is a type of information asset that has so large volume, velocity, and variety that turning data into value requires specialized equipment and analytical techniques⁶. The Organization for Economic Co-operation and Development (OECD) defined “Big Data” in 2016 as high volumes and dimensions of data sets that also require advanced com-

¹ F. X. DIEBOLD. *On the Origin (s) and Development of the Term “Big Data*. No. 12-037. Penn Institute for Economic Research, Department of Economics, University of Pennsylvania, 2012.

² L. VELDKAMP, AND C. CHUNG. “*Data and the aggregate economy*.” *Journal of Economic Literature* (2019).

³ C. TUCKER. “*Digital data, platforms and the usual [antitrust] suspects: Network effects, switching costs, essential facility*.” *Review of industrial Organization* 54.4 (2019): 683-694.

⁴ D. HANLEY, AND K. MONTOYA. “*Privacy Protections Through Antitrust Enforcement*.” *Competition Policy International Antitrust Chronicle* (2022).

⁵ E. LARSON. “*What Sort of Car-rt-sort am I*.” *Junk Mail and the Search for Self Harper’s Magazine* (1989).

⁶ A. DE MAURO, M. GRECO, AND M. GRIMALDI. “*A formal definition of Big Data based on its essential features*.” *Library review* 65.3 (2016): 122-135.

puter techniques and software to extract value from them within a reasonable amount of time⁷.

There is a definition of “Big Data”, and it is based on research into data-driven markets and actual cases in data-related industries⁸. The OECD agrees that relying solely on volume in a Big Data definition may be misleading, regardless of whether the amount is expressed in gigabytes, petabytes, or exabyte⁹. Big Data has become a controversial subject in competition policy, yet there is no accepted definition of the term in the antitrust literature¹⁰. Officials from the Commission have defined Big Data as “large sets of data,” limiting its application to data volume¹¹. Similar to how the term “Big Data” is used by McKinsey, it is defined as “huge pools of data that can be acquired, communicated, aggregated, stored, and evaluated¹².” Big Data’s actual importance in antitrust has been questioned by competition policy specialists due to the term’s restrictive definition¹³. The most important source of data for many firms is interaction with current and potential customers, which generates a range of user-generated content and data as well as machine-generated data, including web server logs, network event logs, location data, etc.¹⁴. Businesses, however, also rely on data brokers for more information or even acquire other companies to obtain new data sets¹⁵. Large-scale Big Data production offers countless commercial options. Operational strategies, customer experiences, and product

⁷ Data, OECD Big. “*Bringing Competition Policy to the Digital Era.*” Background Paper by the Secretariat (2016).

⁸ X. BOUTIN, AND G. CLEMENS. “*Defining ‘Big Data’ in Antitrust.*” Competition Policy International: Antitrust Chronicle (2017): 22-28.

⁹ L. HILL, F. LEVY, V. KUNDRA, B. LAKI, AND J. SMITH. “*Data-driven innovation for growth and well-being.*” (2015).

¹⁰ M. E. STUCKE, AND A. P. GRUNES. “*Introduction: big data and competition policy.*” Big Data and Competition Policy, Oxford University Press (2016) (2016).

¹¹ E. OCELLO, C. SJÖDIN, AND A. SUBOČS. “*What’s Up with Merger Control in the Digital Sector? Lessons from the Facebook/WhatsApp EU merger case.*” Competition merger brief 1 (2015).

¹² J. MANYIKA, M. CHUI, B. BROWN, J. BUGHIN, R. DOBBS, C. ROXBURGH, AND A. HUNG BYERS. “*Big data: The next frontier for innovation, competition, and productivity.*” (2011).

¹³ X. BOUTIN, AND G. CLEMENS. “*Defining ‘Big Data’ in Antitrust.*” Competition Policy International: Antitrust Chronicle (2017): 22-28.

¹⁴ Z. CHEN, C. CHOE, J. CONG, AND N. MATSUSHIMA. “*Data-driven mergers and personalization.*” The RAND Journal of Economics 53, no. 1 (2022): 3-31.

¹⁵ B. KAMLEITNER, AND V. MITCHELL. “*Your data is my data: a framework for addressing interdependent privacy infringements.*” Journal of Public Policy & Marketing 38.4 (2019): 433-450.

development have all undergone radical change as a result of the ability to gather, analyze, and extract meaningful insights from massive volumes of data. Today's businesses have the ability to tailor services, optimize pricing tactics, and make data-driven decisions, fostering market competitiveness and innovation. Big Data has the ability to spur economic expansion, boost productivity, and provide customers with better-tailored goods and services. Data and privacy frequently go hand in hand; having more of one usually means having less of the other. Data is often gathered by technology businesses as a result of user behavior, such as a user's browsing history, but it can also be bought via exchanges or gathered from other programs that monitor people around the internet¹⁶.

But the emergence of big data has also sparked worries about market dominance, anticompetitive behavior, and the concentration of data in the hands of a small number of powerful firms. Large datasets amassed by a small number of businesses can raise entry costs, stymie fair competition, and encourage anticompetitive behavior. Market dominance brought about by exclusive access to priceless data sources can inhibit innovation, restrict consumer choice, and impede the growth of a vibrant and competitive market. Privacy sets boundaries and regulations for how corporations can collect data. However, privacy is not always straightforward or universally beneficial due to the various ways data is collected and utilized by services and applications. For instance, if a search engine were completely prohibited from gathering any user data, even if it was anonymized, it would be challenging to improve search result relevance and deliver a competitive and high-quality product to users¹⁷. Market concentration, enforcement of a fair playing field, and addressing anticompetitive conduct have historically been the main objectives of antitrust and competition legislation. Due to its position at the intersection of social and economic regulation, it is not advisable to examine and comprehend competition law in a one-dimensional manner¹⁸. Regulators now face fresh difficulties as a result of the development of Big Data. Policymakers, businesses, and consumers can more successfully negotiate the challenging

¹⁶ D. A. HANLEY. "A topology of multisided digital platforms." *Conn. Pub. Int. LJ* 19 (2019): 271.

¹⁷ M. E. STUCKE, AND A. P. GRUNES. "Introduction: big data and competition policy." *Big Data and Competition Policy*, Oxford University Press (2016) (2016).

¹⁸ I. LIANOS. "The Poverty of Competition Law." *CLES Research Paper Series* 2 (2018).

terrain of the digital economy by comprehending the potential for Big Data within the context of antitrust and competition laws. To ensure innovation, preserve consumer welfare, and nurture a vibrant market for the benefit of all stakeholders, it is imperative to strike a balance between the enormous promise of Big Data and the requirement for fair competition. Antitrust law can target “every” unfair trade practice or monopolization strategy, as well as exclusive agreements, tying, and mergers that “may be substantially to lessen competition or tend to create a monopoly”. The Supreme Court’s understanding that the antitrust rules have “dynamic potential,” are not limited to specific acts, and are to be generally targeted at all of the “economic consequences” of business conduct strengthens the antitrust statutes¹⁹.

2. Benefits of Big Data for Market Competition

Big Data’s widespread use has significantly improved market competition and transformed how companies run their operations and engage with customers. Companies can boost innovation and gain a competitive edge in a number of ways by leveraging the potential of Big Data analytics. Competition dynamics have changed significantly as a result of the growth of Big Data and big analytics²⁰. ‘Big Data’ is being heavily utilized by businesses all over the world to improve their goods and services quickly, raising the likelihood of anticompetitive behavior in the market. It may be said that the process is cyclical, with more customers leading to more data, which in turn leads to more honed goods or services, which in turn leads to more customers²¹.

Enhanced Consumer Insights: Big Data actively extracts information from unstructured data sets made up of a combination of photos, audio, video, clicks, and other data that is frequently and instantly collected²². Big Data gives companies a plethora of knowledge about the preferences, actions, and requirements of consum-

¹⁹ A. J. MEESE. “Justice Scalia and Sherman Act Textualism.” *Notre Dame L. Rev.* 92 (2016): 2013.

²⁰ A. EZRACHI. *Virtual competition: The promise and perils of the algorithm-driven economy*. Harvard University Press, 2016.

²¹ A. HAGIU, AND J. WRIGHT. “Data-enabled learning, network effects and competitive advantage.” *RAND Journal of Economics* (2020).

²² M. KUBINA, M. VARMUS, AND I. KUBINOVA. “Use of big data for competitive advantage of company.” *Procedia Economics and Finance* 26 (2015): 561-565.

ers. Companies can gain insightful information from massive datasets using advanced analytics and data mining techniques, which helps them better understand their target market. Due to their increased awareness of consumer desires and preferences, firms are better able to customize their offerings in terms of goods, services, and marketing tactics. Companies may attract and keep clients by providing individualized experiences and pertinent offerings, promoting healthy competition in the market.

Increased Operating Efficiency: These days, it's easy to access large datasets on individual behavior, or "Big Data," which may contain data that might be used for person-specific pricing²³. Data are linked to data subjects, also known as users, who incur privacy and other expenses while providing data²⁴. Businesses can optimize their operational procedures with the help of big data analytics. Businesses can spot bottlenecks, inefficiencies, and opportunities for improvement by evaluating vast amounts of data pertaining to supply chains, logistics, manufacturing, and resource utilization. Through the use of this data, businesses can more effectively supply goods and services, cut costs, and streamline processes. By enabling them to offer higher-quality products at competitive pricing and fostering market competitiveness, improved operational efficiency gives businesses a competitive edge.

Development of Innovative Products and Services: Big Data has the potential to spur innovation. Companies can find market gaps and unmet needs by examining market trends, customer input, and emerging patterns. In a complex ecosystem made up of numerous interconnected markets, many of which are multi-sided, Big Data is gathered, traded, and turned into monetary value²⁵. By addressing these gaps with new products, services, and business models, organizations are better equipped to disrupt current markets or build brand new ones. The capacity to recognize and take advantage of new market wants and trends promotes healthy competition among industry participants and propels ongoing innovation.

Data-Driven Decision-Making: Businesses are adopting more and

²³ B. R. SHILLER. *First degree price discrimination using big data*. Brandeis Univ., Department of Economics, 2013.

²⁴ Z. LIU, M. SOCKIN, AND W. XIONG. *Data privacy and temptation*. No. w27653. National Bureau of Economic Research, 2020.

²⁵ Data, OECD Big. *"Bringing Competition Policy to the Digital Era."* Background Paper by the Secretariat (2016).

more business strategies that use personal data as their primary input. Companies provide people with free services in an effort to collect important personal data about them so that advertisers can more effectively target them with behavioral advertising²⁶. Big Data offers organizations useful insights that can be used to enhance data-driven decision-making. Companies may make wise decisions on pricing tactics, market positioning, resource allocation, and investment opportunities by examining historical and current data. Companies may make more precise and strategic decisions thanks to data-driven decision-making, which lessens reliance on speculation and intuition. The ability of organizations to optimize their strategies based on practical insights obtained from in-depth data analysis increases competition.

Market research and competitive intelligence: Big Data analytics can give companies the tools they need to do market and competitive research. Companies may better understand their competitive environment by tracking and analyzing data from multiple sources, including social media, consumer feedback, and rival activity. Businesses can proactively respond to shifting market dynamics by using this knowledge to identify emerging trends, competition strategies, and customer sentiments. Companies may preserve their market position and foster healthy competition by consistently inventing and providing value to consumers by staying one step ahead of the competition. It is noted that certain businesses are now able to access, process, and analyze data almost instantly²⁷.

3. Challenges Posed by Big Data Concentration

If the information is not widely available, it cannot give the company a competitive edge. It should be clear that, as a result, data is a non-rivalrous good. The acquisition of the same or related data sets by other activities is not prohibited by the information gathered by one undertaking²⁸. Therefore, comparing Big Data to a currency is not totally accurate. Having exclusive access to data could result in

²⁶ A. EZRACHI, AND M. E. STUCKE. *“Artificial intelligence & collusion: When computers inhibit competition.”* U. ILL.L.Rev.(2017):1775.

²⁷ M. E. STUCKE, AND A. P. GRUNES. *“Introduction: big data and competition policy.”* Big Data and Competition Policy, Oxford University Press (2016) (2016).

²⁸ W. D. EGGERS, R. HAMILL, AND A. ALI. *“Data as the new currency: Government’s role in facilitating the exchange.”* Deloitte Review 13 (2013): 17-31.

a significant competitive advantage, but getting this access could be difficult given that customers typically share the same information with several market competitors²⁹. The undertaking should make proper use of the collected data. In order to extract more precise information from the data, cutting-edge algorithms, the combination of diverse data sets, and properly indexing the material can all be helpful. New algorithms may translate data into a range of “cognitive” or artificial intelligence services, some of which will open up new revenue streams for businesses.

Access to Big Data is important for gaining an advantage in the current global economy, where the extraction of pertinent information from data chunks drives every corporate plan. Recent discussions have claimed that companies with “Big Data” have a natural competitive advantage over rivals and that this data retention as a resource has to be regulated by competition laws³⁰. Big Data has many advantages, but the fact that it is concentrated in the hands of a small number of powerful businesses creates serious obstacles for market competition. Big Data might be a significant source of market power when products are free, especially if the data can be exploited to create barriers to entry³¹. Both the success of businesses in the market and the lives of customers and users face new issues as a result of the digitization of current business models and the new means of conducting business on digital platforms.

Big Data access issues are perceived as having the potential to impede the development of the digital economy and elicit overbroad regulatory responses. The EU Commission held a consultation in January 2017 on a variety of data-related issues, suggesting, among other things, that businesses be required to share non-personal, machine-generated data with third parties, including rivals, whether or not the data-holder holds a dominant position or engages in abusive behavior. It would therefore far beyond any access remedy recognized in the context of antitrust³². The leading American digital companies (Google, Facebook, Amazon, and Apple) appear to

²⁹ L. H. LUBYOVÁ. “*Big Data in the EU Competition Law.*” Charles University in Prague Faculty of Law Research Paper No (2018).

³⁰ M. GAMBARO. “*Big Data competition and market power.*” *Mkt. & Competition L. Rev.* 2 (2018): 99.

³¹ B. LASSERRE, AND A. MUNDT. “*Competition law and big data: The enforcers’ view.*” *Antitrust & Public Policies* 4.1 (2017).

³² J. MODRALL. “*Antitrust Risks and Big Data.*” Available at SSRN 3059598 (2017).

be harming free market competition with their business practices³³. The following are the principal difficulties linked to huge data concentrations:

Market Power and Monopoly Issues: Big companies currently offer recommendation systems, targeted marketing, customized products, etc. that are based on predictive analysis with “Big Data” as a key resource. These data-driven tactics also boost customer and seller retention and revenue, luring more sellers to platforms that serve as middlemen and making it challenging for new competitors to overtake such advantages³⁴. The concentration of market power by a small number of corporations can result from their acquisition of enormous volumes of data. Exclusive access to large datasets by dominant businesses may be used to establish monopolistic control over marketplaces. By limiting customer choice, impeding innovation, and raising entry costs for new firms, this power concentration can harm competition. Clients’ personal information is used by businesses to offer more individualized services, which at first appear to be simple but ultimately prevent clients from leaving and new players from entering the market³⁵. Powerful internet companies like Google and Meta (Facebook’s parent company) have evaded serious regulation by American lawmakers in recent years, raising the question of what legal strategy will most successfully bring them to heel³⁶.

The argument posits that comprehending the potential utilization of resources requires adopting a resource-based perspective on “market power.” Additionally, it suggests that competition authorities should approach creeping strategies with caution. Although short-term objectives may not appear to enhance market power, their long-term effects could potentially lead to a reversal of consequences³⁷. An exemplary case that illustrates this point is Ama-

³³ F. D. ESTELLA, AND A. R. MARTÍNEZ. “Derecho de la competencia vs. privacidad.” Cuadernos de derecho transnacional 14.1 (2022): 169-195.

³⁴ V. FAST, D. SCHNURR, AND M. WOHLFARTH. “Regulation of data-driven market power in the digital economy: Business value creation and competitive advantages from big data.” Journal of Information Technology 38.2 (2023): 202-229.

³⁵ B. HAGGART. “The age of surveillance capitalism: The fight for a human future at the new frontier of power, S. Zuboff (2018).” journal of digital media & policy 10.2 (2019): 229-243.

³⁶ D. HANLEY, AND K. MONTOYA. “Privacy Protections Through Antitrust Enforcement.” Competition Policy International Antitrust Chronicle (2022).

³⁷ G. GUPTA. “Does ‘big data’ provide a competitive advantage to firms: an antitrust analysis.” Asian Journal of Business Ethics 11.2 (2022): 423-442.

zon, which is currently dominating the online market. The EU's argument that access to personal data without authorization is the cost consumers must pay to access the free platform markets on the internet has brought privacy as a competition problem to the fore³⁸. When examining Amazon's history, we are astounded by its business strategies, characterized by deliberate financial losses and bold investments that risked profitability while expanding into various business sectors³⁹. In today's economy, the traditional corporate structure has given way to a digitalized economy. The latter runs on technological tools, with 'data' serving as the most important one in the current environment. 'Big Data' has made the problem even more urgent⁴⁰.

A number of decisions involving big data mergers have received sharp criticism from competition policy specialists, and Big Data has proven to be a significant challenge for the majority of competition regulators⁴¹. It is difficult to address antitrust issues in data marketplaces since there is no universally accepted definition of "Big Data" among experts. Big Data is claimed not to be under the scope of antitrust legislation⁴². Depending on its specific comparative advantage, one company may achieve a certain level of quality using a combination of Big Data, intellectual property, and highly skilled labor. In contrast, another company may achieve the same level of quality using the same set of ingredients but in a different proportion. Scale economies, capital needs, and promotional expenses, which are usually seen as entry obstacles, are allegedly not their main origins. Instead, the biggest barriers for a potential competitor to overcome are the price of knowledge and the level of uncertainty⁴³. In other words, it is what Big Data allows a company to accomplish, not big data itself that acts as an entry barrier.

Data Access and Interoperability: It is stated that the gathering,

³⁸ G. GOURL. *A Commissioner's Primer to Economics of Competition Law in India*. Springer Nature, 2023.

³⁹ D. STREITFELD. "As competition wanes, Amazon cuts back discounts." *New York Times* 4 (2013).

⁴⁰ G. GUPTA. "Does 'big data' provide a competitive advantage to firms: an antitrust analysis." *Asian Journal of Business Ethics* 11.2 (2022): 423-442.

⁴¹ M. E. STUCKE, AND A. P. GRUNES. "Introduction: big data and competition policy." *Big Data and Competition Policy*, Oxford University Press (2016) (2016).

⁴² S. D. TUCKER, AND H. WELLFORD. "Big mistakes regarding big data." *Antitrust Source*, American Bar Association (2014).

⁴³ H. DEMSETZ. "Barriers to entry." *The American economic review* 72.1 (1982): 47-57.

processing, and application of “Big Data” enables the development of various entry barriers for new competitors and information asymmetries for consumers, both of which have a negative impact on “market competition”⁴⁴. The concentration of Big Data may make it difficult to access and integrate such data. Companies with significant data resources may impose access restrictions, posing challenges for rivals or potential competitors who require access to vast datasets in order to compete successfully. Lack of data interoperability can hurt competition since it makes it difficult for various platforms and systems to interchange and use data in an efficient manner. Without a comprehensive privacy and data law, the predominant protection afforded to consumers over how their data is collected and used is through corporation-provided notices, which ultimately force users to agree to lengthy, non-negotiable, and near-incomprehensible terms of service contracts⁴⁵.

Discriminatory activities and an unfair edge: Steering, drip pricing, phony offers, and deception are just a few of the tactics that are employed to take advantage of the customers’ want to use a particular service or product⁴⁶. Dominant actors that have access to large amounts of data may engage in discriminatory activities that provide them with an unfair edge over rivals. They can use their access to a wealth of consumer data to target particular client segments, tailor prices, or engage in discriminatory pricing practices. Such actions can impair consumer welfare, hamper smaller players, and disrupt market competition. Consumer privacy concerns may be related to the effectiveness of a particular service or the aesthetics of a product, more so in the digital sphere, where there are multiple linkages between competition and privacy⁴⁷.

There are some restrictions on how consumer welfare and efficiency requirements can be applied, particularly in the digital space. It ignores issues like choice, data privacy, a decline in the variety of goods and services due to quick acquisitions, zero-price products

⁴⁴ V. FAST, D. SCHNURR, AND M. WOHLFARTH. “Regulation of data-driven market power in the digital economy: Business value creation and competitive advantages from big data.” *Journal of Information Technology* 38.2 (2023): 202-229.

⁴⁵ M. E. STUCKE. “Should we be concerned about data-opolies?.” *Geo. L. Tech. Rev.* 2 (2017): 275.

⁴⁶ M. BOTTA, AND K. WIEDEMANN. “To discriminate or not to discriminate? Personalised pricing in online markets as exploitative abuse of dominance.” *European Journal of Law and Economics* 50 (2020): 381-404.

⁴⁷ M. E. DOUGLAS. “The new antitrust/ data privacy law interface.” *Yale LJF* 130 (2020): 647.

that initially cause no loss but may later turn out to be predatory, and entry barriers brought on by massive data accumulation. Complementors, or trading partners, may also encounter these entrance hurdles since they risk exclusionary and exploitative abuses. All of these elements fundamentally point us in the direction of our worry about the potential decline of “competition as a process”⁴⁸.

Concerns Regarding Privacy and Data Protection: The Internet companies’ primary source of data in the age of Big Data is none other than people. Concerns about extensive data collecting and the ensuing manipulation are mounting⁴⁹. The concentration of big data prompts worries regarding privacy and data protection. There is a higher danger of data breaches, unauthorized access, and abuse of sensitive information when a small number of firms handle substantial amounts of personal data. Privacy infractions can reduce consumer trust, restrict consumer options, and perhaps trigger governmental actions that have an effect on the competitive environment.

Challenges for Innovation and Entrepreneurship: The concentration of Big Data might stifle innovation and entrepreneurship. Smaller, innovative start-ups find it more challenging to enter the market and compete on an even playing field when a limited number of dominant businesses possess enormous databases and resources. This absence of competition can thwart disruptive ideas, hamper innovation, and impede the creation of new goods and services.

4. Antitrust Implications of Big Data: Exploring Future Prospects and Policy Directions

Market strength comes from more than just the processing and acquisition of Big Data. Businesses can greatly benefit from Big Data, but just because a corporation has access to vast data sets doesn’t mean it will automatically be able to dominate a market. For an organization to have market power, it must have access to the appropriate data types and technological tools for processing that data⁵⁰.

⁴⁸ F. MARTY. *Is the Consumer Welfare Obsolete? A European Union Competition Law Perspective*. No. 2020-13. Groupe de REcherche en Droit, Economic, Gestion (GRE-DEG CNRS), Université Côte d’Azur, France, 2020.

⁴⁹ M. K. OHLHAUSEN, AND A. P. OKULIAR. “*Competition, consumer protection, and the right [approach] to privacy.*” *Antitrust LJ* 80 (2015): 121.

⁵⁰ L. H. LUBYOVÁ. “*Big Data in the EU Competition Law.*” Charles University in Prague

Big Data's increasing power over the modern digital economy has led to serious worries about how it can affect antitrust laws. Policy-makers and antitrust regulators are struggling with the need to address any anti-competitive activity and provide a level playing field for all market participants as huge volumes of data are gathered, processed, and used by tech giants and other large firms. The work's main thesis is that a firm's level of competitive advantage in a market may be dramatically impacted by access to "Big Data", which may then alter the dynamics of market rivalry⁵¹. It is anticipated that the amount of data processed on a worldwide scale will keep growing practically exponentially⁵².

It is explored how regulations governing data privacy or sharing that attempt to give customers more direct control may instead have unexpected repercussions because of a negative externality on payment data brought on by the loan market's information asymmetry⁵³. By allowing individuals to access, amend, and delete personal data stored by businesses, privacy protection rules like the GDPR established by the European Union or the CCPA in the U.S. improve individual ownership rights over personal data. Generally speaking, companies are only permitted to treat personal data in accordance with privacy protection policies in limited and specified circumstances, such as with an individual's explicit opt-in authorization⁵⁴.

Customers and their data actively contribute to the development of goods and services in the age of digital platforms and Big Data. One user's adoption of a platform or product influences the value of the service for other users through content creation and network externalities, resulting in dynamic data feedback and network effects that interact. Another example is how the data users provide affects future product innovation and improvements⁵⁵. Big Data can

Faculty of Law Research Paper No (2018).

⁵¹ G. GUPTA. "Does 'big data' provide a competitive advantage to firms: an antitrust analysis." *Asian Journal of Business Ethics* 11.2 (2022): 423-442.

⁵² Data, OECD Big. "Bringing Competition Policy to the Digital Era." Background Paper by the Secretariat (2016).

⁵³ C. A. PARLOUR, U. RAJAN, AND H. ZHU. "When fintech competes for payment flows." *The Review of Financial Studies* 35.11 (2022): 4985-5024.

⁵⁴ L. W. CONG, AND S. MAYER. *Antitrust, Regulation, and User Union in the Era of Digital Platforms and Big Data*. No. w30881. National Bureau of Economic Research, 2023.

⁵⁵ L. W. CONG, AND S. MAYER. *Antitrust, Regulation, and User Union in the Era of Digital Platforms and Big Data*. No. w30881. National Bureau of Economic Research, 2023.

give businesses a competitive edge, enabling them to improve their goods, services, and business processes. This gives them market power. But when one company gathers an overwhelming amount of data and uses it to dominate the industry, it might prevent competitors from entering the market and stifle innovation. The potential for dominant players to use their data assets in anti-competitive ways worries antitrust authorities.

Buying up smaller companies with rich data assets has become a popular tactic used by IT giants to solidify their position as market leaders. These data-driven mergers and acquisitions are being examined more closely by antitrust regulators to determine how they may affect competition. The main goals are to stop a small number of dominant businesses from amassing data and to ensure that these transactions do not impair consumer welfare or impede competition. It is emphasized that the shift in consumer behaviors toward an ever-increasing use of the Internet for everything from shopping to reading the news to watching movies to posting videos of themselves allows businesses to “record the actions of a large part of the population in such a precise way that detailed and individualized conclusions on their receptiveness to specific sales messages can be drawn”⁵⁶.

In order to overcome antitrust issues with Big Data, promoting data availability and interoperability is crucial. Creating rules for data sharing or opening up access to specific datasets can encourage competition and innovation. Policymakers may think about requiring data portability and interoperability standards, which would make it easier for customers to migrate between platforms or share data with rival services. The utilization of Big Data results in the creation of new techniques that can extract important information from huge collections of frequently unstructured data⁵⁷. When level production becomes directly proportionate to an increase in the amount and quality of user data without incurring additional expenditures, economies of scale take place⁵⁸.

Businesses can utilize Big Data to predict market trends, make better decisions, segment customers more effectively through targeted

⁵⁶ A. A. EFREMOV. “Formation of the concept of information sovereignty of the state.” *Law: J. Higher Sch. Econ.* (2017): 201.

⁵⁷ D. L. C. AUTORITÉ. “*Bundeskartellamt.*” *Competition Law and Data* 10 (2016).

⁵⁸ M. NUCCIO, AND M. GUERZONI. “*Big data: Hell or heaven? Digital platforms and market power in the data-driven economy.*” *Competition & Change* 23.3 (2019): 312-328.

advertising, and provide more individualized advice⁵⁹. Large volumes of data are being gathered and used, which presents privacy issues. Regulators are placing more emphasis on making sure businesses have valid user consent and adhere to data protection laws. By preventing dominant players from using user data for anti-competitive purposes, more privacy laws and enforcement can help allay possible antitrust worries. They can use this user data to increase the range of products and services they offer, thanks to economies of scale⁶⁰.

Big Data analytics frequently rely on intricate formulas that can affect the welfare of consumers and the course of the market. Regulators are looking into ways to guarantee fairness and transparency in algorithmic decision-making in order to stop discriminatory practices or market manipulation. These issues can be addressed by algorithmic audits, fairness and transparency standards, and enhanced inspection of automated decision-making systems. Traditional antitrust rules like the Sherman Act and more contemporary regulations aimed at data exchange and privacy protection are all put to the test by these developments. Computer and data scientists are currently investigating how user-centric data ownership and computation that respect privacy might benefit individuals and communities⁶¹.

International cooperation is necessary to successfully handle the antitrust implications of Big Data and the digital economy since they transcend national boundaries. In order to create shared frameworks and exchange best practices, policymakers and regulators are looking into opportunities for collaboration. The issues created by Big Data can be addressed and fair competition promoted by harmonizing antitrust laws and coordinating enforcement operations on a worldwide scale.

To take into account the particular difficulties presented by big data, traditional antitrust frameworks may need to be revised. Regulators

⁵⁹ S. BUCHHOLTZ, M. BUKOWSKI, AND A. SNIEGOCCI. *“Big and open data in Europe: A growth engine or a missed opportunity.”* Warsaw Institute for Economic Studies Report Commissioned by demosEUROPA 10 (2014): 116.

⁶⁰ C. SANTESTEBAN, AND S. LONGPRE. *“How big data confers market power to big tech: Leveraging the perspective of data science.”* The Antitrust Bulletin 65.3 (2020): 459-485.

⁶¹ A. PENTLAND, A. LIPTON, AND T. HARDJONO. *Building the new economy: Data as capital.* MIT Press, 2021.

may need to take into account elements like the possibility of data-driven exclusionary behavior, network effects, and data as a market barrier. Antitrust laws will need to be continuously reviewed and modified in order to strike the correct balance between promoting innovation and competition and preventing anti-competitive behavior.

5. Conclusion

Following the Commission's recent initiatives to foster a European data economy, Big Data is anticipated to become an even more contentious and hotly disputed topic in the sphere of antitrust. However, there is a great deal of ambiguity around the use of "Big Data" because no clear-cut, widely acknowledged meaning of the term has been developed in the antitrust literature.

Antitrust authorities must precisely define the term "Big Data" in order to evaluate claims that are supported by data efficiently. In the upcoming years, it is projected that there will be an increase in the number of antitrust proceedings involving data-centric enterprises due to the growing significance of data-driven initiatives for organizations. Therefore, antitrust regulators cannot afford to ignore the potential effects of enterprises using big data methods entering the market. If this fact is not taken into account, investigations may be conducted in the wrong locations and produce unreliable results.

It is essential to view our contribution as the first step in starting a conversation about the necessity of including a Big Data perspective in antitrust actions. Antitrust authorities can make sure that their inquiries are appropriately in line with the modern business environment by addressing the definitional issues brought on by Big Data and acknowledging its growing significance. This conversation serves as a springboard for a more thorough comprehension of the effects of big data on competition, encouraging a knowledgeable approach to antitrust enforcement in the digital era.