

BIG TECH, SMALL TECH, AND THE DATA ECONOMY: WHAT ROLE FOR EU COMPETITION LAW?

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INTRODUCTION

The role that competition law plays (or should play) in the data economy has been at the center of the policy debate in multiple countries. The proliferation of data into different fields of the economy presents a tremendous opportunity for economic growth. Data permits companies to improve the quality of the products and services that they offer to consumers. It also enables companies to reduce their costs, increase their efficiency, and identify new business opportunities. Reliance on data can therefore enhance the competitiveness of firms and the economy more generally. However, there is a concern that the data economy has given rise to increasingly concentrated markets, where a small number of firms has gained disproportionate market power. Some commentators have argued that the reason for the emergence of large firms with highly entrenched market positions is the weak enforcement of competition law that has failed to keep up with the development of the data economy.¹ Those comments have initiated a general debate that has by now spread across many continents and that questions whether there is a need to strengthen, or at least revise, the enforcement of competition law to promote the development of a competitive data economy.²

In the United States, there have been several suggestions on how to address the challenges the data economy poses for antitrust enforcement. Some commentators have argued that there is a need to break up or curtail the so-called tech giants.³ Others have advocated for changes to the existing antitrust regime. For example, a 2019 report published by the Stigler Center at the University of Chicago argues that the specific features of digital platforms make markets prone to tipping, which refers to a situation in which a singular player gains control

¹ See, e.g., TIM WU, THE CURSE OF BIGNESS: ANTITRUST IN THE NEW GILDED AGE 121-22 (Columbia Global Rep. 2018).

² See, e.g., Common Understanding of G7 Competition Authorities on Competition and the Digital Economy (June 5, 2019), https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2019/18_07_2019_G7_Erklarung.html (document reflecting “the G7 competition authorities’ common understanding of the issues raised by the digital economy for competition analysis.”); JACQUES CRÉMER, YVES-ALEXANDRE DE MONTJOYE & HEIKE SCHWEITZER, COMPETITION POLICY FOR THE DIGITAL ERA (2019) [COMPETITION POLICY FOR THE DIGITAL ERA]; UNLOCKING DIGITAL COMPETITION, REPORT OF THE DIGITAL COMPETITION EXPERT PANEL; REPORT OF THE DIGITAL COMPETITION EXPERT PANEL (March 2019) [hereinafter UNLOCKING DIGITAL COMPETITION]; STIGLER COMMITTEE ON DIGITAL PLATFORMS, FINAL REPORT (2019) [hereinafter STIGLER CENTER REPORT]; see also Competition Policy in a Globalized, Digitalized Economy, Platform for Shaping the Future of Trade and Global Economic Interdependence, World Economic Forum (Dec. 2019); Competition Issues in the Digital Economy: Note by the UNCTAD Secretariat, United Nations Conference on Trade and Development (May 1, 2019).

³ See, e.g., Elizabeth Warren, *Here’s How We Can Break Up Big Tech*, MEDIUM (Mar. 8, 2019), <https://medium.com/@teamwarren/heres-how-we-can-break-up-big-tech-9ad9e0da324c>; WU, *supra* note 1, at 132-33.

over the entire market.⁴ The report also argues that these specific features render the market power of digital incumbent entrenched and difficult to challenge, which in turns diminishes the market's ability to self-correct.⁵ The report suggests that to address that issue, US courts ought to strengthen antitrust scrutiny for digital platforms by, among other things, relaxing some of the existing legal doctrines.⁶

Although a similar debate about the need to strengthen the antitrust enforcement in the data economy has emerged across the Atlantic, some commentators have suggested that the European Union should *weaken* its enforcement. Siemens' proposed acquisition of Alstom, a French manufacturer of high-speed trains, which the European Commission prohibited in 2019, presents a relevant example.⁷ Critics of the Commission's decision have argued that relaxing the enforcement of competition law is necessary to facilitate the development of EU champions that would be better positioned to compete in the global arena.⁸ Although Siemens and Alstom are firms that are active in traditional industries, the proposal to weaken competition-law enforcement seems particularly appealing in the context of the data economy, given that the European Union has not been home of tech companies of comparable size as those that have emerged in the United States and China.⁹

In this article, we examine the competition policy that the European Union should adopt for the data economy generally and, more specifically, for the Industry 4.0¹⁰—the coming digitalization of the manufacturing process and of the industry more broadly.¹¹ We explain

⁴ STIGLER CENTER REPORT, *supra* note 2, at 8.

⁵ *Id.* at 16-17; *see also id.* at 94-95; *id.* at 37.

⁶ *Id.* at 17; *see also* C. Scott Hemphill & Philip J. Weiser, *Beyond Brooke Group: Bringing Reality to the Law of Predatory Pricing*, 127 YALE L.J. 2048 (2018); Howard Shelanski, *Antitrust and Deregulation*, 127 YALE L.J. 1922 (2018); Jonathan B. Baker, Jonathan Sallet & Fiona Scott Morton, *Unlocking Antitrust Enforcement*, 7 YALE L. J. 1916 (2018).

⁷ Press Release, Mergers: Commission Prohibits Siemens' Proposed Acquisition of Alstom (Feb. 6, 2019), https://europa.eu/rapid/press-release_IP-19-881_en.htm.

⁸ *See, e.g.*, A FRANCO-GERMAN MANIFESTO FOR A EUROPEAN INDUSTRIAL POLICY FIT FOR THE 21ST CENTURY 3 (Feb. 19, 2019), https://www.bmw.de/Redaktion/DE/Downloads/F/franco-german-manifesto-for-a-european-industrial-policy.pdf?__blob=publicationFile&v=2.

⁹ *See* Jeremy Kahn, *Why Can't Europe Do Tech?*, BLOOMBERG (Aug. 16, 2018), <https://www.bloomberg.com/news/features/2018-08-16/inside-europe-s-struggle-to-build-a-truly-global-tech-giant>.

¹⁰ Our definition of Industry 4.0 follows the definition outlined in the World Bank Report "Europe 4.0: Sharing the Data Economy." The report adopts a cost-based classification of Industry 4.0 technologies and differentiates between technologies based on whether they reduce three types of costs: (i) the cost of matching supply and demand (transactional technologies); (ii) the cost of computing and data storage (informational technologies); and (iii) the cost of substituting workers and routine functions with machines (operational technologies).

¹¹ *See* Andreja Rojko, *Industry 4.0 Concept: Background and Overview*, 11 INT'L J. INTERACTIVE MOBILE TECHS. 77 (2017); *Manufacturing's Next Act*, MCKINSEY (June 25, 2015), <https://www.mckinsey.com/business->

that weakening the enforcement of competition law to facilitate the development of EU champions would be a misguided policy for the European Union. A less competitive internal market, which would necessarily result from a weaker enforcement of EU competition law, is unlikely to increase the competitiveness of EU firms in the global arena.

However, we also explain that there is no need to relax the existing legal doctrines to permit EU enforcers to capture anticompetitive practices in the data economy.¹² In that respect, the challenges that the European Union faces in enforcing competition law in the data economy differ, at least to some extent, from those faced in the United States. A strong belief in the market's ability to self-correct and the fear of false positives (cases in which a firm is incorrectly found liable of infringing the law) have led US courts to develop legal doctrines that impose on plaintiffs a high burden of proof. Those doctrines limit the circumstances in which a firm's conduct can be found unlawful under US antitrust law. In contrast, EU courts have shown historically less concern with false positives and less confidence in the market's self-correcting mechanisms. Consequently, the Court of Justice of the European Union (CJEU) has developed legal doctrines that already permit enforcement agencies to address a wide variety of conducts, including those that would be considered perfectly legal in the United States. There is no need to further relax those doctrines to permit the European Commission and national enforcement agencies to address anticompetitive practices in the data economy.

Nonetheless, that does not suggest the European Commission and national enforcement agencies face no challenges in applying competition rules to the data economy. The data economy has changed, at least in some respects, the way in which firms compete in the market. Consequently, the tools that enforcers have used to identify and address anticompetitive practices in traditional industries might not work well in scrutinizing a firm's behavior in the data economy. The European Commission as well as national enforcement agencies have already adopted some steps to address those challenges. These are positive changes. We propose the adoption of additional measures that are modest, although in our view, important. These include:

- (1) prevent anticompetitive use of data,
- (2) clarify the role that competition law has in ensuring access to data,
- (3) provide a timely relief against anticompetitive practices,
- (4) develop a balanced approach to merger control.

functions/operations/our-insights/manufacturings-next-act; *Embracing Industry 4.0 and Rediscovering Growth*, BCG, <https://www.bcg.com/en-us/capabilities/operations/embracing-industry-4.0-rediscovering-growth.aspx>.

¹² We focus exclusively on doctrines that address a firm's unilateral conduct. We express no opinion on doctrines related to collusive agreements, merger analysis, or state aids.

The article is structured as follows. Part I provides a basic introduction to the different types of data, data analytics methods, and the relation between possession of data and market power. Part II examines the basic principles of competition law, comparing the main similarities and divergences between EU and US systems, particularly when scrutinizing a company's unilateral conduct. Part III scrutinizes the challenges that the data economy poses for the enforcement of competition law. Finally, Part IV provides policy suggestions for the competition policy that the European Commission and national enforcement agencies should adopt to promote the development of a competitive data economy.

I. DATA: THE NEW GOLD, IN ABUNDANCE

Before examining the role that competition law has (or should have) in a data economy, it is helpful to differentiate between the different types of data, examine how data analytics affect the value of data, and evaluate the implications that access to data has for market power and competition.

A. TYPES OF DATA

Data can be divided into two big groups: personal and nonpersonal. Although the debate often focuses on personal data, some data is nonpersonal, such as data related to traffic, weather, energy consumption, or a machine's performance. (Nevertheless, the lines become increasingly blurry when personal identification becomes possible by aggregating a few indicators of nonpersonal data.) The distinction between personal and nonpersonal data is not merely semantic. Most important, personal data enjoys a higher protection. In the European Union, personal data is subject to the GDPR, as well as to privacy regulations adopted by member states. There is no such protection for nonpersonal data.

The report *Competition Policy for the Digital Era* prepared for the European Commission in 2019 distinguishes between three types of data, based on the way in which it is collected: (1) **volunteered data**, (2) **observed data**, and (3) **inferred data**.¹³ Volunteered data includes names, date of birth, employment history, or other information that a user voluntarily discloses to the data collector. The second group, observed data, includes data that can be observed based on the user's activity, such as a user's buying habits or online research. Inferred data refers to data generated by "clustering algorithms or predictions."¹⁴ For example, Spotify, the media-service provider, may infer a user's music preferences by relying on data about the music that the user has played in the past and comparing it with the music played by other users with similar preferences.

The volume of collected data will increase significantly with Industry 4.0, where connectivity will become ubiquitous. For example, in the context of Industry 4.0 operational technologies, which are defined as technologies combine data with automation, such as in robotics and 3D printing, data will be collected throughout the entire manufacturing process. Most data will be machine-generated and therefore created by computer processes, without the direct

¹³ COMPETITION POLICY FOR THE DIGITAL ERA, *supra* note 2, at 24.

¹⁴ *Id.*

intervention of a human. Data will be both personal and non-personal. Machine-generated data will be observed, inferred, and volunteered.

B. DATA ANALYTICS, MACHINE LEARNING, AND BIG DATA

Although data is often abundant, it is rarely commercially valuable in its raw form.¹⁵ Firms must analyze data to obtain valuable business insights. The term data analytics refers to a set of digital methodologies, such as software, that firms deploy to analyze data and obtain valuable information.¹⁶

Analytics methods might be relatively basic or more advanced.¹⁷ More advanced analytical methods include (1) data mining, which aims to identify existing patterns and relationships, (2) predictive analytics, which seeks to predict future trends, and (3) methods such as machine learning and artificial intelligence (AI) that use automated algorithms to process data more quickly than conventional analytical models. The term big data refers to large sets of data that cannot be processed by using traditional software tools within a tolerable time, either because of the data size, heterogeneity, or the speed which it is updated (often referred as the three Vs of big data: volume, variety and, velocity).¹⁸

Companies can use the insights obtained from data analytics to make informed business decisions. In the context of Industry 4.0, insights obtained from data analytics might permit a company to optimize its inventory planning, predict possible malfunctioning throughout the manufacturing process, improve logistical efficiency, enhance the quality of its products, and optimize its pricing strategy. Insights obtained from data analytics might also permit a company to develop new products and services and, more generally, identify new business opportunities. Therefore, data analysis will be essential for a firm's competitiveness.

¹⁵ See, e.g., Niko Mohr & Holger Hürtgen, *Achieving Business Impact with Data*, MCKINSEY 3 (2018) ("Data in its raw and most basic form is virtually worthless until we give it a voice by gleaming valuable insights from it.").

¹⁶ *Id.* at 4.

¹⁷ *Id.* at 8.

¹⁸ See, e.g., Daniel Castro & Travis Korte, *Data Innovation 101: An Introduction to the Technologies and Policies Supporting Data-Driven Innovation*, CENTER FOR DATA INNOVATION (Nov. 4, 2013), <http://www2.datainnovation.org/2013-data-innovation-101.pdf>. For an analysis of whether antitrust should treat differently algorithms and AI see Nicolas Petit, Submission to the FTC Hearing on Competition and Consumer Protection in the 21st Century Emerging Competition, Innovation, and Market Structure Issues Around Algorithms, Artificial Intelligence, and Predictive Analytics (Nov. 13-25, 2018).

C. DATA, MARKET POWER, AND MARKET ACCESS

Although access to data might be valuable, holding a large data set does not automatically confer market power to the data collector. Public bodies that collect large data sets (such as data about health, transport, or environment) perhaps provide the best example for why holding a large amount of data does not directly translate into market power. It is the processing of data, the transformation of data into valuable business insights, and the subsequent implementation of business actions based on those insights that can enable a company to gain market success and obtain market power.

Nonetheless, access to data might be necessary to enter and compete in a market. For AI and data analytics to be effective, access to large data sets might be essential. Evidence from Industry 4.0 startups show that access to data, at the early stages, constitutes a major barrier for entrepreneurs to develop, test, and pilot products and services with potential adopters.¹⁹ Companies that are unable to access large data sets might be unable to compete or even enter a market. It should consequently come as no surprise that some have questioned whether data should be considered an essential facility, such as telecom infrastructure.²⁰ One could argue that when access to data is essential, firms should have a duty to grant access to the collected data. But should they? In the case of nonpersonal data collected by public bodies the argument might be straight forward. If the objective is to promote development, dissemination and deployment of AI and other advanced analytical methods, then public policies could promote access to data and ensure that public bodies make their data available for entrepreneurs and small and medium enterprises (SMEs) to test or pilot their products and services (provided that necessary measures to protect privacy are adopted). In other cases, however, where the data collector is a private entity, the answer is less obvious.

In short, data will be the essential component of the Industry 4.0 era. The insights obtained from data analytics will provide a great resource that can enable a firm to enhance its competitiveness both domestically and internationally. However, data, or the lack of thereof, can also be a major impediment to competition. The relevant question is what role, if any, competition policy should play in addressing access to data and, more generally, in ensuring the development of a competitive and cohesive data economy.

¹⁹ See, Anwar Aridi & Daniel Enrique Querejazu, World Bank Group, *Manufacturing a Startup: a Case Study of Industry 4.0 Development in the Czech Republic* (2019), <http://documents.worldbank.org/curated/en/498571562044573589/Manufacturing-a-Startup-a-case-study-of-Industry-4-0-development-in-the-Czech-Republic>; see also STIGLER CENTER REPORT, *supra* note 2, at 37; but see Lesley Chiou & Catherine E. Tucker, Search Engines and Data Retention: Implications for Privacy and Antitrust NBER Working Paper No. w23815 (Sept. 2017) (finding little empirical evidence that reducing the length of storage of past search-engine searches affected the accuracy of search results).

²⁰ See, e.g., AUTORITÉ DE LA CONCURRENCE & BUNDESKARTELLAMT, COMPETITION LAW AND DATA 17 (2016) [hereinafter JOINED REPORT BY THE FRENCH AND GERMAN COMPETITION AUTHORITIES].

II. COMPETITION LAW: EU V. US

Competition law refers to a set of rules that prohibits practices that harm competition, which is defined as the process through which firms that offer substitute goods or services seek to win consumers.²¹ The basic notion is that competition benefits consumers and the society at large. Recognizing this basic notion, both the United States and the European Union (as well as more than 100 other countries) have adopted laws that prohibit firms to engage in practices that restrict competition. There are many similarities between EU competition law and US antitrust law. However, there are also some important differences, particularly in the way that the two systems address the conduct of firms with market power. Given that the discussion about competition policy for the data economy often focuses on companies that have strong market power, it is worth examining the main similarities and the main differences in the way the two systems scrutinize the market behavior of those companies.

A. THE GOALS OF COMPETITION LAW

Competition law is based on the notion that competition is beneficial for consumers and the economy at large. The most obvious benefit of competition is that it stimulates firms to reduce the prices of goods and services they sell to consumers.²² It also stimulates them to increase the quality of their goods and services. When consumers can pick among different suppliers, they will typically opt for those that offer goods or services for a better price, of a higher quality, or both. In addition, competition stimulates firms to operate more efficiently, by lowering their costs or increasing their productivity.²³ It also encourages firms to invest in the development of new products, services, or business models, and through this, competition stimulates innovation.²⁴ Indeed, competition might drive less efficient firms out of the market. However, it permits more efficient businesses to expand. When more efficient businesses replace less productive ones, overall efficiency in a sector rises.

²¹ See RICHARD WISH & DAVID BAILEY, *COMPETITION LAW* 1, 3 (Oxford Univ. Press 7th ed. 2012) (“[C]ompetition law consists of rules that are intended to protect the process of competition in order to maximize consumer welfare.”).

²² See *id.* at 4; JEAN TIROLE, *ECONOMICS FOR THE COMMON GOOD* 357 (Princeton Univ. Press 2017); MASSIMO MOTTA, *COMPETITION POLICY* 19-22 (Cambridge Univ. Press 2009).

²³ TIROLE, *supra* note 22, at 359.

²⁴ *Id.*

Beside protecting competition, **in the European Union, competition law has an additional goal: promoting economic integration within the internal market.**²⁵ The basic idea of the internal market of the European Union is that people, goods, services, capital (and *now data*) should freely move across member states. The integration of the internal market was perceived as essential to stabilize the region, but also as a catalyst to create a more dynamic, innovative, and competitive EU economy. Competition law, in turn, was considered as an important tool for removing artificial trade barriers within the internal market. In particular, it was used as a tool for prohibiting firms to enter into agreements that would “restore the national divisions” by limiting the trade across member states.²⁶ Market integration continues to be an important objective of EU competition law.²⁷ *Because of its unique goal, EU competition law might prohibit firms from engaging in a type of behavior that would be considered perfectly lawful under a different law regime, such as US antitrust law.*

B. ANTICOMPETITIVE BEHAVIOR

Given that both EU competition law and US antitrust law aim at protecting competition, it should come as no surprise that they prohibit firms from engaging in similar conduct. Both EU competition law and US antitrust law include prohibitions against (1) anticompetitive agreements (such as a theoretical agreement among smartphone manufacturers to increase the prices of their smartphones), (2) anticompetitive behavior by companies with strong market power, and (3) mergers that are detrimental for competition. In addition, in the European Union, competition law also addresses (4) public restriction of competition, such as anticompetitive *state aid*. Whereas the prohibition of anticompetitive agreements and merger reviews are relatively similar, there are some important differences in the way the two systems address the behavior of firms with market power.²⁸

At the outset, it bears emphasis that neither EU competition law nor US antitrust law condemn a firm simply for having significant market power. A firm that offers its products or

²⁵ WISH & BAILEY, *supra* note 21, at 23; MOTTA, *supra* note 22, 13.

²⁶ *See, e.g.*, Joined Cases 56/64 and 58/64, *Établissements Consten S.à.R.L. & Grundig-Verkaufs-GmbH v. Comm’n* [1996] ECLI:EU:C:1966:41, para. 340 (“An agreement between producer and distributor which might tend to restore the national divisions in trade between member states might be such as to frustrate the most fundamental objections of the community. The Treaty, whose preamble and content aim at abolishing the barriers between states . . . could not allow undertaking to reconstruct such barrier.”).

²⁷ *See* Press Release, Antitrust: Commission Fines Guess €40 Million for Anticompetitive Agreements to Block Cross-Border Sales (Dec. 17, 2018), https://europa.eu/rapid/press-release_IP-18-6844_en.htm.

²⁸ US antitrust law typically uses the term monopolist to identify a company with significant market power. In contrast, EU competition law speaks about a dominant company. Although the two terms do not refer to identical concepts, for the purpose of this paper, we will use the two terms as synonymous.

services for the best quality-adjusted price is likely to win consumers. It would be counterproductive for competition law to condemn a firm simply for having obtained market power. Judge Learned Hand, who served on the US Court of Appeals for the Second Circuit, expressed this idea in a 1945 decision *United States v. Aluminum Company of America*: “[t]he successful competitor, having been urged to compete, must not be turned upon when he wins.”²⁹ Massimo Motta, former Chief Competition Economist of the European Commission, similarly explains: “[i]t is exactly the prospect of enjoying market power (i.e. of making profit) that pushes firms to use more efficient technologies, improve their product quality, or induce new product varieties.”³⁰ He explains that if enforcement agencies “tried to eliminate or reduce market power whenever it appeared, this would have the detrimental effect of eliminating firms’ incentives to innovate.”³¹

However, **both EU competition law and US antitrust law prohibit firms with market power from engaging in anticompetitive (or exclusionary) practices.** In the United States, Section 2 of the Sherman Act prohibits firms “to monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize” the market.³² In the European Union, Article 102 of the Treaty on the Functioning of the European Union (TFEU) prohibits a dominant company from abusing its market position.³³ Despite containing different language, both provisions prohibit a firm from engaging in exclusionary behavior that harms competition. Determining whether a given firm’s behavior is exclusionary and therefore unlawful is often a challenging task. Vigorous competition, such as offering goods or services of a superior quality or for a better price, might also exclude rivals from the market. But this is not the type of exclusionary behavior that competition law condemns.³⁴ Rather, it is exactly the type of behavior that competition law seeks to stimulate. The type of conduct that competition law prohibits can be broadly describe a conduct that permits a firm to gain or maintain market power by harming competition, rather than by offering lower prices, higher quality, or more innovative products.

Nonetheless, there are important differences between the way in which the two systems analyze a firm’s exclusionary conduct. EU competition law typically sets a lower burden than US antitrust law to show that a challenged practice is unlawful. As a result, *the same practice is more likely to be found in violation of EU competition law than in violation of US antitrust*

²⁹ 148 F.2d 416, 430 (1945).

³⁰ MOTTA, *supra* note 22, at 64.

³¹ *Id.*

³² 15 U.S.C. § 2.

³³ Consolidated Version of the Treaty on the Functioning of the European Union Art. 102, May 9, 2008 O.J. (C 115) 89 [hereinafter TFEU].

³⁴ See, e.g., Case C-413/14 P, *Intel Corp. v. Comm’n*, 2017 ECLI: EU:C:2017:632, para. 133-44.

law. The differences between the two systems become particularly evident when scrutinizing three types of practices: duty to deal, margin squeeze, and predatory pricing.

I. DUTY TO DEAL

An important difference between EU competition law and US antitrust law concerns the way in which the two systems force (or do not force) a firm to deal with its competitors. The US system is based on a strong belief that companies, including those with significant market power, should be free to select the companies with which they want to do business. The US Supreme Court emphasized that principle in its 1919 decision in *United States v Colgate & Co.* when it said that US antitrust law “does not restrict the long recognized right of a trader or manufacturer engaged in an entirely private business freely to exercise his own independent discretion as to parties with whom he will deal.”³⁵ In 2014, the Court reiterated that principle in *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP*, when it said that compelling “firms to share the source of their advantage is in some tension with the underlying purpose of antitrust law, since it may lessen the incentive for the monopolist, the rival, or both to invest in those economically beneficial facilities.”³⁶ The Supreme Court has created an exception to the general rule of no duty to deal. In a 1985 decision in *Aspen Skiing Co. v. Aspen Highlands Skiing Corp*, the Court said that a monopolist’s termination of a (presumably profitable) cooperation with a small rival might violate the Sherman Act.³⁷ Some lower courts have also applied the “essential facility doctrine” that, when specific circumstances are met, imposes on a firm a duty to grant access to its facility to its competitors.³⁸ Nonetheless, after the Supreme Court decision in *Trinko*, a refusal to deal with a competitor is unlikely to be found in violation of US antitrust law.³⁹

In contrast, a firm’s refusal to deal with its competitors is more likely to trigger a liability under EU competition law. The CJEU said that although firms, including those that hold a dominant market position, are generally free to choose the companies with which they want to do

³⁵ 250 U.S. 300, 307 (1919).

³⁶ 540 U.S. 398, 407-08 (2004).

³⁷ 472 U.S. 585, 611 (1985).

³⁸ See, e.g., *Hecht v. Pro-Football, Inc.*, 570 F.2d 982, 992-93 (D.C. Cir. 1977); *MCI Commc’n Corp. v. AT&T*, 708 F.2d 1081, 1132-33 (7th Cir. 1983).

³⁹ In *Trinko*, the Court said that the *Aspen Skiing* decision is “at or near the outer boundary.” *Trinko*, 540 U.S. at 409. Therefore, unless the criteria listed in *Aspen Skiing* are met, a court is unlikely to find a refusal to deal with a competitor unlawful. *But see* *FTC v. Qualcomm*, Case No. 17-CV-00220, 2019 WL 2206013, at *67 (N.D. Cal. May 21, 2019) (find that a refusal to license standard-essential patents to a competing manufacturer violated Section 2 of the Section Act.).

business, in some cases, a dominant firm's refusal to deal might violate Article 102 TFEU.⁴⁰ In determining whether a dominant firm has abused its dominant position, the Commission examines whether (1) access to the firm's good or service is indispensable to compete in the market, (2) the refusal to deal would eliminate effective competition in the market, and (3) there is no objective justification for such refusal.⁴¹ Notably, a dominant firm's refusal to deal can be abusive both in cases in which a dominant firm ends an existing business relationship,⁴² as well as in situations in which the dominant firm refuses to start a new business cooperation.⁴³ The CJEU has even found that refusal to deal might be abusive even if the two firms do not (yet) compete in any relevant market.⁴⁴ In short, a dominant firm's refusal to deal with a competitor is much more likely to be found unlawful under EU competition law than under US antitrust law.

2. MARGIN SQUEEZE

The differences between the ways in which EU competition law and US antitrust law address cases concerning a refusal to deal is reflected **also in the different approaches toward cases of a so-called *margin squeeze***. Margin squeeze refers to a situation in which a firm has market power in the upstream market and supplies an essential input to downstream competitors. Think about network industries, such as a telecommunication industry. The upstream monopolist could price its input (in this case, the price of accessing its telecom infrastructure) in such a way to "squeeze" the margin of its downstream competitors (such as firms that compete in the supply of telecom services). The US Supreme Court said that such a practice, typically referred as margin squeeze, is not an actionable offence under US antitrust law. In the 2009 decision in *Pacific Bell Telephone Co. v. linkLine Communications, Inc.*, the Court said that "if a firm has no antitrust duty to deal with its competitors at wholesale, it certainly has

⁴⁰ See, e.g., Cases 6 and 7/73, *Commercial Solvents v. Comm'n*, [1974], ECR 223, para. 25; Joined Cases C-241/91 P and C-242/91 P *Radio Telefis Eireann (RTE) and Independent Television Publications Ltd (ITP) v. Comm'n*, [1995] EU:C:1995:98, para. 28; Case C-7/97, *Oscar Bronner GmbH & Co. KG v. Mediaprint Zeitungs*, [1998] ECR I-7791, para. 40; Case C-418/01, *IMS Health v. NDC Health*, [2004], ECLI:EU:C:2004:257, para. 52; Case T-201/04, *Microsoft Corp. v. Comm'n* [2017] ECR 2007 II-03601, para. 319.

⁴¹ Guidance on the Commission's Enforcement Priorities in Applying Article 82 of the EC Treaty to Abusive Exclusionary Conduct by Dominant Undertakings, ¶ 81 OJ C 45 (Feb. 24, 2009) [Commission's Guidance on Exclusionary Practices].

⁴² Joined Cases C-468/06 to C-478/06, *Sot. Lélos kai Sia EE and Others v. GlaxoSmithKline AEEVE Farmakeftikon Proionton*, ECLI:EU:C:2008:504 (2008).

⁴³ See, e.g., Joined Cases C-241/91 P and C-242/91 P *Radio Telefis Eireann (RTE) and Independent Television Publications Ltd (ITP) v. Comm'n*, [1995] EU:C:1995:98; Case C-170/13, *Huawei Techs. Co. v. ZTE Corp.* [2015] ECLI:EU:C:2015:477, para. 45.

⁴⁴ See, e.g., Joined Cases C-468/06 to C-478/06, *Sot. Lélos kai Sia EE and Others v. GlaxoSmithKline AEEVE Farmakeftikon Proionton*, ECLI:EU:C:2008:504 (2008); Cases 6 and 7/73, *Commercial Solvents v. Comm'n*, [1974], ECR 223.

no duty to deal under terms and conditions that the rivals find commercially advantageous.”⁴⁵ In other words, the Court found that a company has no duty under US antitrust law to price its products in a way to preserve its competitors’ margins. In contrast, the CJEU has said a dominant firm might violate EU competition if it engages in a margin squeeze that can exclude from the market competitors that are “at least as efficient” as the dominant firm.⁴⁶ For example, in 2018, the CJEU agreed with the European Commission that Slovak Telekom and its German parent company, Deutsche Telekom, violated EU competition law by first refusing to grant access to their fixed broadband network to competitors and subsequently by engaging in a margin squeeze.⁴⁷ Therefore, in the European Union, a dominant firm might be condemned not only for refusing to deal with its rivals but also for pricing its products and services in a way that squeezes rivals’ margins.

3. PREDATORY PRICES

A further difference between EU competition law and US antitrust law arises with respect to predatory pricing, which refers to a firm’s practice of selling products or services at a loss. The concern with predatory pricing is that selling products or services below costs might permit a firm to exclude competition and subsequently increase prices to above-competitive levels.⁴⁸ The underlying rationale is that even though consumers may benefit from low prices in the short term, in the long term they would be worse off. Evidence that a dominant firm’s prices are predatory could trigger a liability under Article 102 TFEU, and there are indeed several cases in which predatory prices have been found in violation of EU competition law.⁴⁹ Although US antitrust law also prohibits predatory practices, US courts have expressed more skepticism with the idea that predatory pricing could harm competition and consumers. They have emphasized that a predatory practice is unlikely to harm consumers unless there is a danger that the firm that engaged in predation is able to maintain its monopoly “for long enough both to recoup the predator’s losses and to harvest some additional gain.”⁵⁰ Consequently, to find predatory pricing unlawful under US antitrust law, US courts have required a plaintiff to provide both evidence (1) that the price is below an appropriate measure of cost and (2) that there is a dangerous probability that the company will be able to

⁴⁵ 555 U.S. 438, 450 (2009).

⁴⁶ See, e.g., Case C-52/09, *Konkurrensverket v. TeliaSonera Sverige AB*, 2011, ECLI:EU:C:2011:83, para. 31; Case T-271/03, *Deutsche Telekom v. Comm’n*, 2008 E.C.R. II-477, para. 167–68, 192, 200–03; Case C-295/12 P, *Telefónica & Telefónica de España v. Comm’n*, [2014] EUR-Lex CELEX LEXIS 2062 (July 10, 2014), para. 124.

⁴⁷ Case T-851/14, *Slovak Telekom v. Comm’n*, [2018] CLI:EU:T:2018:929.

⁴⁸ See, e.g., *WISH & BAILEY*, *supra* note 21, at 739.

⁴⁹ See, e.g., Case C-202/07 P, *France Télécom SA, v. Comm’n*, [2009] ECR 2009 I-02369, para. 109; *AKZO Chemie BV v. Comm’n*, Case C-62/86, [1991] ECR 1991 I-03359, para. 71.

⁵⁰ *Matsushita Elec. Indus. Co., v. Zenith Radio Corp.*, 475 U.S. 574, 589 (1986).

“recoup[e] its investment in below-cost prices.”⁵¹ In contrast, EU competition law does not require proof of recoupment.⁵² Because of the different standard of proof, a firm’s predatory practice is more likely to be found unlawful under EU competition law than under US antitrust law.

C. DIFFERENT MARKETS AND DIFFERENT PHILOSOPHIES

As explained in Part II.A and Part II.B, there are important differences between EU competition law and US antitrust law, particularly when addressing the behavior of companies with significant market power. Table 1 summarizes the similarities and divergences between the two legal systems (although admittedly in an oversimplified way).

Table 1. EU Competition Law v. US Antitrust Law

	US Antitrust Law	EU Competition Law
Stated Goals	Protecting competition (to increase consumer welfare)	+ market integration (removing artificial barriers to trade)
Prohibitions against	(1) anticompetitive agreements; (2) exclusionary behavior; (3) mergers detrimental for competition	+ (4) public restrictions of competition (<i>state aid</i>)
General Differences in Addressing Exclusionary Behavior	Prohibits exclusionary conduct	+ but stricter limitations on the conduct of dominant firms
	Reluctant to force companies to deal with competitors	Might force a dominant company to deal with rivals
	Margin squeeze not an actionable offence	Might condemn margin squeeze
	Predatory pricing actionable only if there is a probability of recoupment	Evidence of predatory prices sufficient to find a violation

Source: authors

As Table 1 shows, EU competition law prohibits firms to engage in a wider set of practices. Even when addressing the same type of practices, EU competition law imposes a lower burden

⁵¹ Brooke Group Ltd. v. Brown & Williamson Tobacco Corp. 509 U.S. 209, 224 (1993).

⁵² See Case T-340/03, France Télécom SA, v. Comm’n, [2007] ECR II-00107, para. 227-28.

of proof on the plaintiff, such that a challenged conduct is more likely to be found unlawful under EU competition law than under US antitrust law. Therefore, firms face stricter limitations in the European Union than they do in the United States.

Although a comprehensive analysis of the reasons for the differences between EU competition law and US antitrust law falls outside the scope of this article, some general observations deserve attention.

The US reluctance to intervene in cases involving a firm’s alleged exclusionary behavior reflects both the strong belief that the market will be able to self-correct and concerns about false positives. If a firm uses its market power to charge monopoly prices, and there are no significant barriers to market entry, the monopolist’s high profits should attract new entrants into the market. Those new entrants will undercut the incumbent’s prices, pushing prices back to competitive levels. Because the market will be able to self-correct, US antitrust law sees no need for an intervention. An intervention could be even detrimental, if it deters firms from engaging in procompetitive practices that benefits consumers. Indeed, the Chicago school that gained prominence in the United States in the 70s argued that *false positives* impose higher costs on the society than false negatives, which are cases in which a court finds no antitrust violation although the firm’s behavior harms competition.⁵³ Judge Frank H. Easterbrook famously said that “[i]f the court errs by condemning a beneficial practice, the benefits may be lost for good. Any other firm that uses the condemned practice faces sanctions in the name of stare decisis, no matter the benefits. If the court errs by permitting a deleterious practice, though, the welfare loss decreases over time. Monopoly is self-destructive.”⁵⁴ Led by the concerns of false positives and by the trust in the market’s ability to self-correct, the US Supreme Court has gradually adopted antitrust doctrines that have increased the plaintiffs’ burden of proof to show that a firm’s challenged behavior is unlawful.⁵⁵

In contrast, **the CJEU, the European Commission, and enforcement agencies of the member states of the European Union have traditionally shown less confidence in the market’s self-correcting mechanisms and less concerns about false positives.** Competition law often has

⁵³ See, e.g., Frank Easterbrook, *Limits of Antitrust*, 63 TEXAS L. REV. 1, 2 (1984). (“If the court errs by condemning a beneficial practice, the benefits may be lost for good.”); see also Frank H. Easterbrook, *Vertical Arrangements and the Rule of Reason*, 53 ANTITRUST L.J. 134, 135-36 (1984) (“There are limits on the ability of courts to sort the beneficial from the deleterious manifestations of [restrictive dealing] practices, and most of the time it is better not to try than to try and fail.”).

⁵⁴ Easterbrook, *Limits of Antitrust*, *supra* note 53, at 2.

⁵⁵ See, e.g., *Pac. Bell Tel. Co. v. Linkline Commc'ns, Inc.*, 555 U.S. 438 (2009); *Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398 (2004); *Brooke Grp. Ltd. v. Brown & Williamson Tobacco Corp.*, 509 U.S. 209 (1993); *Matsushita Elec. Indus. Co., v. Zenith Radio Corp.*, 475 U.S. 574, 594 (1986).

been perceived as a necessary tool to eliminate trade barriers within the internal market, as well as a fundamental mechanism to introduce and maintain competition in markets that have been traditionally controlled by state monopolies. Similarly, concerns about false positives rarely appear in the CJEU’s decisions. If anything, the CJEU has been historically more concerned about setting legal standards that would undermine the ability of enforcement agencies to address practices that are detrimental for competition.⁵⁶ As a result, the CJEU has developed legal doctrines that permit the European Commission and national enforcement agencies to address a large set of practices, including those that would fall outside the domain of US antitrust law.

In sum, whereas US legal doctrines reflect a strong reliance on the self-correcting mechanism of the market and emphasize the negative effects of an unwarranted intervention, EU competition law has shown less confidence in the market’s self-correcting mechanisms and less concern about erroneous decisions. As we will explain in Part III, those differences are relevant when designing the right competition policy for Industry 4.0, particularly when examining the proposal that courts should relax the existing legal standards to be able to address practices that are harmful for competition.

⁵⁶ *See, e.g., See, e.g.,* Case C-52/09, *Konkurrensverket v. TeliaSonera Sverige AB*, 2011, ECLI:EU:C:2011:83, para. 58 (stating that limiting a liability for a margin squeeze to cases that meet the refusal-to-del requirements “would unduly reduce the effectiveness of Article 102 TFEU”); *id.* para. 108 (stating that it would be contrary to the objective of competition law to limit the intervention to “mature markets”); Case C-413/14 P, *Intel Corp. v. Comm’n*, 2017 ECLI: EU:C:2017:632, para. 44 (expressing concerns about adopting strict requirements to establish a territorial jurisdiction would offer companies “easy means” for avoiding EU competition rules).

III. APPLICATION OF COMPETITION LAW TO THE DATA ECONOMY: NEW REALITIES

The data economy poses challenges for the enforcement of competition law. There is a concern that the tools used to identify anticompetitive practices in traditional industries might not work well when applied to the data economy. For example, given that prices in the data economy are often low, sometimes even close to zero, focusing on the effects that a firm's behavior has on price might fail to identify behaviors that are detrimental for competition. In addition, the specific features of the data economy might render the market power of incumbent companies durable and difficult to challenge. That might decrease the market's ability to self-correct. Consequently, some commentators have suggested that courts and enforcement agencies ought to adopt a stricter approach when enforcing competition law in the data economy. Indeed, both in the United States and in the European Union there is an ongoing debate about the right competition policy for the data economy.

A. DURABLE MARKET POWER OF DIGITAL INCUMBENTS

The specific features of the data economy can render the market power of digital incumbent companies entrenched and difficult to challenge. **These features include low marginal costs, network effects, economy of scale, and reliance on data,**⁵⁷ and are particularly evident in the case of digital platforms.

Consider Uber, the most popular American ride-sharing platform. Whereas designing a platform where riders and driver can connect to each other might require significant investments, once the platform is set, the cost of serving an additional consumer is relatively low. Low marginal costs might in turn permit firms to earn "extreme returns" when serving a large pool of consumers.⁵⁸ Goods or services offered in the data economy might have *strong network effects*, which refers to a situation in which the value that a product or a service has for a consumer increases as other people use the same product or service. For example, the higher the number of costumers that use Uber, the more valuable the platform is for drivers, and the other way around. Furthermore, firms can rely on the data they obtain from consumers to improve the quality of their products or services. For example, Uber might be able to determine the most common roads used by consumers and incentivize drivers to offer

⁵⁷ See, e.g., COMPETITION POLICY FOR THE DIGITAL ERA, *supra* note 2, at 20.; John M. Newman, *Antitrust in Digital Markets*, VANDERBILT L. REV. at 6 (Forthcoming 2019); <https://promarket.org/how-to-protect-competition-and-consumers-in-digital-markets/>; STIGLER CENTER REPORT, *supra* note 2, at 7.

⁵⁸ COMPETITION POLICY FOR THE DIGITAL ERA, *supra* note 2, at 2.

rides in that area. Similarly, when it comes to economy of scope, which refers to a situation in which it is more effective for a firm to offer a bundle of different goods or services rather than only an individual product, Uber can rely on the analysis of large data sets to expand its activities into new markets areas, such as the market for renting electric bikes or scooters or the market for food delivery. Uber’s network of users and information about where and when users travel can provide a competitive advantage over its rivals.

The data economy has also given rise to business models that, in the short to medium run, prioritize growth (that is, the maximization of the number of users) over profits.⁵⁹ In other words, digital firms might be willing to incur losses in the short or medium term, with the purpose of obtaining a large user base. For example, Uber and the competing ride-sharing platform Lyft have reportedly invested billions of dollars into subsidizing customers’ rides when competing among each other for the leading market position.⁶⁰ Despite making a loss in the short run, firms expect that building a large userbase might permit them to establish their market position and take advantage of network effects. Once a firm has established its presence in the market, it can focus on developing techniques to increase its profits. Business models that prioritize growth over profit favor firms that can achieve a type of financing that permits them to face losses in the short to medium run.⁶¹

Of course, features such as network effects, low marginal costs, competitive advantage based on access to information, or even the ability to sustain losses in the short to medium run, are features that are present also in other industries. However, commentators have argued that the combination of all those features in a single economy renders the incumbent’s market power *particularly durable*.⁶² In their view, markets in the data economy are prone to tipping.⁶³ Once the market has tipped, it might be difficult for new entrants to challenge the incumbent’s position. Even if new entrants are able to develop a competitive product or service, they might struggle to persuade a sufficient number of consumers to shift to their products or services because of the presence of network effects.⁶⁴ Incumbents also have access to a large pool of data that provides them a source of competitive advantage.⁶⁵ Furthermore, commentators have argued that the large return on scale generates a large cash flow for the incumbent that might be used to “outspend” or “out-invest” rivals or alternatively

⁵⁹ United Nations Conference on Trade and Development, *Competition Issues in the Digital Economy 4* (July 2019) [hereinafter UNCTAD Competition Issues in the Digital Economy]

⁶⁰ STIGLER CENTER REPORT, *supra* note 2, at 39.

⁶¹ UNCTAD Competition Issues in the Digital Economy, *supra* note 59, at 5.

⁶² *See, e.g.*, STIGLER CENTER REPORT, *supra* note 2, at 34.

⁶³ *See, e.g., id.* at 34-35; *see also* UNLOCKING DIGITAL COMPETITION, *supra* note 2, at 3.

⁶⁴ STIGLER CENTER REPORT, *supra* note 2, at 20, 22.

⁶⁵ COMPETITION POLICY FOR THE DIGITAL ERA, *supra* note 2, at 24; UNLOCKING DIGITAL COMPETITION, *supra* note 2, at 32-33.

acquire existing or potential competitors.⁶⁶ Because of the combination of all these factors, the market position of incumbent companies might be particularly difficult to challenge. In other words, once a firm gains a significant market power, the market might be *unable* to self-correct.⁶⁷

Against this backdrop, commentators have suggested that **courts ought to adopt a more interventionist approach when enforcing competition law in the data economy**. For example, the *Stigler Center Report* suggests that US antitrust law should “recalibrate the balance it strikes between the risks of false positives and false negatives,” because “[u]nderenforcement is likely to be costlier than previously thought because, among other things, market power of large technology platforms is more enduring.”⁶⁸ The report advocates two changes. First, it suggests that there is a need to revise some antitrust doctrines, such as doctrines about predatory prices and a duty to deal, that “were adopted . . . to minimize the risk of over-enforcement.”⁶⁹ Second, it suggests that courts should “impose less demanding proof requirements on antitrust plaintiffs.”⁷⁰ The report Competition Policy for the Digital Era similarly argues that “[t]he specific characteristics of many digital markets have arguably changed the balance of error cost and implementation costs.”⁷¹ It suggests that when markets are concentrated and barriers to enter the market are high, court and enforcers “may want to err on the side of disallowing potentially anti-competitive conducts, and impose on the incumbent the burden of proof for showing the pro-competitiveness of its conduct.”⁷² Therefore, both reports argue that courts and enforcement agencies should be less concerned about false positives when enforcing competition law in the data economy than they are in more traditional markets.

However, proposals about the need to relax the existing antitrust doctrines are less pertinent to the European Union than they might be in the United States. As explained in Part II.C, concerns about false positives have had a prominent role in shaping the US antitrust jurisprudence and have led to the adoption of antitrust doctrines that impose strict requirements on plaintiffs that seek to show that a firm’s behavior is unlawful. Because of the high standard of proof embodied in those doctrines, it might be difficult to establish that a firm’s behavior, such as a refusal to deal or a predatory pricing strategy, violates US antitrust law. But concerns about strict legal doctrines are less germane for the European Union, where *the existing legal doctrines already permit the European Commission and national enforcement agencies to address a variety of practices by dominant firms, including those that*

⁶⁶ *Id.* at 75.

⁶⁷ *Id.* at 31.

⁶⁸ STIGLER CENTER REPORT, *supra* note 2, at 94.

⁶⁹ *Id.* at 95; *see id.* at 96-98.

⁷⁰ *Id.*

⁷¹ COMPETITION POLICY FOR THE DIGITAL ERA, *supra* note 2, at 4; *see id.* at 51.

⁷² *Id.* at 51; *see also id.* at 3.

would fall outside the domain of US antitrust law. One could argue that those doctrines are already too loose and have always permitted EU enforcers “to err on the side of disallowing potentially anti-competitive conducts.” Therefore, **there is no need to further relax the existing EU doctrines to permit enforcers to capture anticompetitive practices in the data economy.**

B. CHALLENGES IN IDENTIFYING ANTICOMPETITIVE PRACTICES

A further concern in the data economy is that the analytical tools that courts and enforcement agencies have traditionally used for determining whether a challenged behavior is anticompetitive might not be directly applicable to the data economy. For example, to determine whether a company has significant market power, which is an essential requirement to show a violation of Article 102 TFEU or Section 2 of the Sherman Act, courts and enforcement agencies typically define the relevant market and assess the firm’s market power in that market. In defining the relevant market, they typically apply the *hypothetical monopolist test* (HMT) which asks whether a hypothetical monopolist would be able to sustain a small, but significant, non-transitory increase in price (SSNIP) (typically 5 percent) for its products. If in response to the hypothetical monopolist’s SSNIP consumers would switch to alternative products, then those products should be included in the relevant market. For example, if in response to an increase in price for Uber rides a significant number of consumers would switch to the use of Lyft and regular taxis, then those products should be all considered to be part of the same relevant market. However, the application of the HMT becomes problematic when a firm does not charge for its product. The shortcoming of the HMT became evident in the 2018 Android decision, where the European Commission examined whether Google had a dominant position in the market where Android, its operating systems for smartphones, competed. Because Google does not charge smartphone manufacturers any royalty for a license to Android, it would make little sense to ask whether manufacturers would switch to the use of an alternative operating system in response to a 5 percent increase of the price for Android.

In addition, the way in which companies compete in the data economy has also raised questions concerning the correctness of some basic economic assumptions that have guided the enforcement of competition law for many decades. Predatory pricing is a clear example. Historically, predation has been perceived as an irrational business practice (because it is too expensive for a company to engage in) and consequently relatively rare.⁷³ For example, Judge

⁷³ See, e.g., ROBERT H. BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF 155 (Free Press 1978).

Easterbrook said “there is no sufficient reason for antitrust law or courts to take predation seriously.”⁷⁴ However, the likelihood that a firm will engage in a predation is higher in an economy where firms focus less on maximizing their profit and more on expanding their business. Predation becomes an even more plausible when a firm is active in interrelated markets, where cross-subsidization among products or services is easy to implement. Lina Khan, former Director of Economy Policy at the Open Market Institute, raised this argument in her seminal article *The Amazon Antitrust Paradox* in which she argued that Amazon, the American multinational technology company and leader in e-commerce, achieved market power through its (1) willingness to sustain losses for an extended period and (2) by expanding into multiple businesses.⁷⁵ Among other things, she observed that Amazon’s willingness “to forego profits for growth undercuts a central premise of contemporary predatory pricing doctrine, which assumes that predation is irrational” for companies.⁷⁶

The data economy has also given rise to new concerns that previously did not exist in the enforcement of competition law. For example, enforcers started questioning what role, if any, should privacy have in their analysis. In 2014, the European Commission said, when approving the merger between Facebook and Whatsapp, that “[a]ny privacy-related concerns flowing from the increased concentration of data within the control of Facebook as a result of the [merger] . . . do not fall within the scope of the EU competition law rules but within the scope of the EU data protection rules.”⁷⁷ However, other enforcement agencies have given more emphasis to privacy considerations. For example, in February 2019, the German enforcement agency condemned Facebook for using its dominant market position to coerce consumers into accepting terms and conditions that granted Facebook the right to collect consumer data outside the Facebook website and assign these data to the user’s Facebook account.⁷⁸ The agency found Facebook’s practice to be abusive. Nonetheless, in August 2019, the Düsseldorf Higher Regional Court reversed the decision in interim proceedings, suggesting that unless there is evidence of harm to competition, privacy should not be a concern for antitrust enforcers.⁷⁹

⁷⁴ Frank H. Easterbrook, *Predatory Strategies and Counterstrategies*, 48 U. CHI. L. REV. 263, 26364 (1981).

⁷⁵ Lina Khan, *The Amazon Antitrust Paradox*, 126 YALE L.J. 710, 747 (2017).

⁷⁶ *Id.* at 753.

⁷⁷ European Commission, Facebook/Whatsapp, 3 October 2014, Case N. Comp./M. 7217, http://ec.europa.eu/competition/mergers/cases/decisions/m7217_20141003_20310_3962132_EN.pdf, para. 164; see also European Commission, Microsoft/LinkedIn, Case COMP/M.8124, http://ec.europa.eu/competition/mergers/cases/decisions/m8124_1349_5.pdf, para 176-177.

⁷⁸ Press Release, Bundeskartellamt Prohibits Facebook from Combining User Data from Different Sources (Feb. 7, 2019), https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2019/07_02_2019_Facebook.html.

⁷⁹ Oberlandesgericht Düsseldorf [The Higher Regional Court of Düsseldorf], Aug. 26, 2019, Kart 1/19 (V). For an analysis of the Facebook decision see Marco Botta & Klaus Wiedemann, *Exploitative Conducts in Digital Markets: Time for a Discussion after the Facebook Decision*, J. OF COMPETITION L. & PRACTICE (2019).

In sum, the data economy has changed the way in which companies compete, which has had implications for the enforcement for competition law. It is consequently appropriate for revisit the existing tools that are used to identify and address anticompetitive practices and determine which work well, and which might need revision.

IV. EU COMPETITION POLICY & INDUSTRY 4.0

Weakening the enforcement of competition law to promote the development of national champions in the Industry 4.0 would be a misguided policy for the European Union. Basic economic principles teach that addressing anticompetitive practices, as well as prohibiting mergers that are detrimental for competition, is essential to protect the competitive process, which stimulates companies to offer lower prices, higher quality, and encourages investments in innovation.⁸⁰ A competitive market stimulates the development of firms that are competitive both at the regional and at the global level. The European Union has long recognized those basic economic principles, and the specific features of the data economy do not justify a departure from those principles. *If anything, the analysis in Part III shows that the features of the data economy suggest that there might be a need for a stricter, rather than a weaker, enforcement of competition rules.* In addition, a weaker enforcement of competition rules would undermine the European Union's ability to foster cohesion and convergence within the internal market, by failing to protect smaller firms and new market entrants from anticompetitive practices by dominant incumbents. Therefore, although the European Commission might need to adopt policy measures to promote the competitiveness of EU firms in the global arena, those measures should not come at the expense of protecting competition.

A separate question is how the European Commission and national enforcement agencies should apply competition law to prevent anticompetitive practices in the data economy. We examine four issues — (1) the anticompetitive use of data, (2) a refusal to grant access to data, (3) antitrust remedies, and (4) merger control. We find that the existing doctrines are broad enough to permit the European Commission and national enforcers to address dominant firm's anticompetitive practices. This is particularly true when one considers the enforcers' ability to challenge a dominant firm's anticompetitive use of data. In some cases, the existing legal doctrines might also permit enforcers to address cases in which a dominant firm refuses to grant access to data. Nonetheless, it is important to recognize that competition law do not impose on firms a general duty to share the collected data with third parties. If the Commission finds that it would be desirable to impose such a duty, it should do so through regulation, rather than by expanding the scope of competition law.

Most actions are required in the context of antitrust remedies and mergers controls. Specifically, remedies imposed after lengthy investigations are unlikely to prevent harm to competition in rapidly evolving markets. Consequently, when applying competition law in the data economy, enforcers should rely more extensively on interim measures, which are remedies that can be imposed while the investigation it is ongoing. When it comes to mergers

⁸⁰ See analysis in Part II.

control, a revised approach in defining the relevant market might permit enforcers to better identify those mergers that might significantly decrease competition.

A. PREVENT THE ANTICOMPETITIVE USE OF DATA

Although data might be used to enhance a firm’s competitiveness and therefore strengthen the overall competition in the market, firms might also use data in ways that are detrimental for competition. For example, *a dominant firm might use the collected data to engage in exclusionary practices.* Indeed, many of the recent investigations that the European Commission has initiated, including those brought against Google, Facebook, and Amazon, focus on the firms’ use of data.⁸¹ In scrutinizing the behavior of these firms, the Commission should apply the general-accepted principles of competition law. A firm should not be condemned simply for its size. In other words, the general principle that monopolies are not per se bad should apply with equal force in the data economy as in other industries. However, the Commission should also uphold the general principle that a dominant firm has “a special responsibility” not to engage in conduct that “distorts competition.”⁸² When determining whether a challenged behavior is exclusionary, the Commission should base its decision on empirical evidence rather than theoretical conjectures. The existing principles of EU competition law are flexible enough to permit enforcers to address practices that are detrimental competition.

I. PREDATORY PRICING

A dominant firm might use insights obtained from data analytics to engage in price-related abuses, such as predatory pricing. Consider for example the European Commission’s investigation of Amazon.⁸³ Amazon provides an online platform where retailers can sell their

⁸¹ See, e.g., Press Release, *Commission Opens Investigation Into Possible Anti-Competitive Conduct of Amazon* (July 17, 2019), https://europa.eu/rapid/press-release_IP-19-4291_en.htm (note that the Commission is investigating a potential violation of both Article 101 TFEU and Article 102 TFEU) [hereinafter *Commission Opens Amazon Investigation*]; Silvia Amaro, *EU Start New Preliminary Probe Into Google and Facebook’s Use of Data*, CNBC (Dec. 2, 2019); *Bundeskartellamt Initiates Abuse Proceeding Against Amazon*, BUNDESKARTELLAMT (Nov. 29, 2019), https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Meldungen%20News%20Karussell/2018/29_11_2018_Amazon.html.

⁸² See Case 322/81, *Michelin v. Comm’n*, [1983] ECR 3461, para. 57; C-202/07 P, *France Télécom v. Comm’n*, [2009] ECLI:EU:C:2009:214, para. 105.

⁸³ Press Release, *Commission Opens Investigation into Possible Anti-competitive Conduct of Amazon* (July 17, 2019), https://europa.eu/rapid/press-release_IP-19-4291_en.htm.

products. At the same time, Amazon sells its own products on the platform that compete with those offered by retailers. The European Commission said that it will examine as part of its investigation (1) the agreements between Amazon and retailers that permit Amazon to collect and analyze retailers' data and (2) the role that that data has "in the selection of the winners of the 'Buy Box.'"⁸⁴ Although the Commission has not articulated the exact theory of harm, some commentators have voiced concern that Amazon is engaging in practices that favor Amazon's products over those offered by retailers.⁸⁵ Although in many cases engaging in practices that promote a firm's own products is a perfectly legitimate business behavior, it is possible to foresee circumstances in which Amazon's behavior would violate EU competition law.

Assume for example that Amazon uses the insights obtained from data analytics to undercut rivals' prices. If Amazon's prices are predatory, because they are below an appropriate measure of costs, Amazon's conduct would be unlawful under EU competition law. As explained in Part II.B, to show that a firm's predatory pricing violates Article 102 TFEU, there is no need to show recoupment. Evidence that Amazon prices its products below an appropriate measure of costs would be enough to establish a violation of Article 102 TFEU. The situation is notably different in the United States where evidence of predatory pricing would be insufficient to establish an unlawful behavior.

2. PRICE-PARITY CLAUSES

A dominant firm might use the collected data to enact vertical restraints, such as price-parity clauses. When a platform includes a price-parity clause in its agreement with a retailer, it prohibits the retailer to offer its products at a lower price elsewhere. In other words, the retailer cannot offer its product at a lower price on its website or on any other website.

Economist have recognized that price-parity clauses might have both procompetitive and anticompetitive effects.⁸⁶ On the positive side, a price-parity clause might permit a firm to protect its investment in developing a platform that promotes third-party's products. Specifically, the price-parity clause mitigates the risk that once a product has gained popularity, consumers will switch to buy it elsewhere because the product will be available at a lower

⁸⁴ *Id.*

⁸⁵ See Thomas Höppner & Philipp Westerhoff, *The EU's Competition Investigation into Amazon Marketplace*, KLUWER COMPETITION LAW BLOG (Nov. 30, 2018), <http://competitionlawblog.kluwercompetitionlaw.com/2018/11/30/the-eus-competition-investigation-into-amazon-marketplace/>; Shaoul Sussman, *Prime Predator: Amazon and the Rationale of Below Average Variable Cost Pricing Strategies Among Negative-Cash Flow Firms*, 7 J. OF ANTITRUST ENFORCEMENT 203 (2019); see also Greg Bensinger, *Competing with Amazon on Amazon*, WALL ST. J. (June 27, 2012), <https://www.wsj.com/articles/SB10001424052702304441404577482902055882264>.

⁸⁶ MOTTA, *supra* note 22, at 304.

price. However, a price-parity clause might also have anticompetitive effects if it undermines the ability and incentives of new firms to enter the market and compete with the incumbent platform. Hence, depending on the circumstances of the case, a dominant firm's use of price-parity clauses could trigger a liability under EU competition law, under either Article 101 TFEU or under Article 102 TFEU.

As noted in the report *Competition Policy for the Digital Era*, the anticompetitive effects of price-parity clauses might be particularly strong in the data economy, where network effects, economies of scope, and access to data already hinder the competitors' ability to challenge the incumbent's position.⁸⁷ Indeed, the European Commission has raised concerns with the use of price-parity clauses by digital platforms, including in the investigation that it brought against Amazon in 2015.⁸⁸ The Commission said that the price-parity clause Amazon imposed on e-book suppliers "could make it more difficult for other e-book platforms to compete with Amazon by reducing publishers' and competitors' ability and incentives to develop new and innovative e-books and alternative distribution services."⁸⁹ The investigation was ultimately concluded with a commitment decision (thus, without a determination of whether Amazon breached Article 102 TFEU), in which Amazon agreed that it will no longer enforce or introduce price-parity clauses in its agreements with e-book suppliers.⁹⁰

However, firms might use algorithms to impose de facto price-parity clauses on retailers that sell their products on their platforms. For example, some commentators have suggested that the algorithm that selects products for the Buy Box on Amazon's website effectively requires retailers to offer to Amazon the lowest price they offer elsewhere.⁹¹ In other words, Amazon's algorithm allegedly imposes on retailers a *de facto* parity clause. If those allegations are factually correct, Amazon's use of data might trigger additional antitrust scrutiny from the European Commission. The analysis would likely focus on whether the use of such a *de facto* price-parity clause harms or increases competition between Amazon and other competing

⁸⁷ COMPETITION POLICY FOR THE DIGITAL ERA, *supra* note 2, at 5.

⁸⁸ Press Release, Antitrust: Commission Opens Formal Investigation into Amazon's E-Book Distribution Arrangements (June 15, 2015), https://ec.europa.eu/commission/presscorner/detail/en/IP_15_5166.

⁸⁹ Press Release, Antitrust: Commission Accepts Commitments from Amazon on E-Books (May 3, 2017), https://ec.europa.eu/commission/presscorner/detail/en/IP_17_1223.

⁹⁰ *Id.*; see also Case AT.40153 E-book MFNs and Related Matters (Amazon) (May 7, 2017).

⁹¹ See Shaoul Sussman, *How Amazon's Pricing Policies Squeeze Sellers and Result in Higher Prices for Consumers*, PROMARKET (Aug. 29, 2019), <https://promarket.org/how-amazons-pricing-policies-squeeze-sellers-and-result-in-higher-prices-for-consumers/>; see also Naomi Nix, *Amazon Seller Complaints Drawing FTC Interest, Chairman Says*, BLOOMBERG (Aug. 13, 2019), <https://www.bloomberg.com/news/articles/2019-08-13/amazon-seller-complaints-drawing-ftc-interest-chairman-says>; Spencer Soper, *Amazon Squeezes Sellers that Offer Better Prices on Walmart*, BLOOMBERG (Aug. 5, 2019), <https://www.bloomberg.com/news/articles/2019-08-05/amazon-is-squeezing-sellers-that-offer-better-prices-on-walmart>.

platforms. Depending on the facts that emerge from the case, Amazon’s practice could trigger a liability under Article 102 TFEU.

3. NONPRICE-RELATED ABUSES

A firm could use the insights obtained from data analytics to engage also in non-pricing abuses. Consider the recent complaint that Spotify, a media service provider, filed in front of the European Commission in March 2019 against Apple, the US technology company that designs and sell iPhones.⁹² Apple provides a platform on which third parties can offer mobile applications (apps) for iPhones. Like in the case of Amazon, the concern is that Apple uses the data collected from users to identify the most successful apps and then engages in practices that favor its own apps over those offered by third parties. Spotify for example alleged that Apple engaged in several practices that unfairly limit Spotify’s ability to compete with Apple Music, an app that offers a competing media service.⁹³ In addition to challenging some of Apple’s pricing strategies, Spotify criticized Apple for (1) precluding Apple’s voice recognition system Siri from connecting iPhone users to Spotify (connecting instead only to Apple Music) and (2) refusing to launch a Spotify app on its Apple Watch.⁹⁴ As of the time of the writing of this paper, the Commission has not disclosed whether it intends to open an investigation against Apple. However, the decision that the Commission issued against Google in the *Google shopping* case, which is currently under appeal, suggests that that the Commission is willing to scrutinize cases of so-called self-preferencing.⁹⁵ If empirical evidence shows that the challenged practices tend to distort competition, then Apple’s conduct could be found to violate Article 102 TFEU.

B. CLARIFY THE ROLE COMPETITION LAW HAS IN ENSURING ACCESS TO DATA

Another form of a non-pricing abuse is a dominant firm’s refusal to grant access to data. The dispute *Hiq Labs Inc. v. LinkedIn* presents an example of how a dispute about access to data might arise between companies (see analysis in Box 1). Given that access to data is likely to be an increasingly important topic in the Industry 4.0, the Commission should clarify what role EU competition law plays in ensuring access to data that is needed to compete in the market.

⁹² See, e.g., Philip Blenkinsop, *Spotify Files EU Antitrust Complaint Against Apple*, REUTERS (Mar. 13, 2019).

⁹³ *Id.*

⁹⁴ *Id.*

⁹⁵ Press Release, Antitrust: Commission Fines Google €2.42 Billion for Abusing Dominance as Search Engine by Giving Illegal Advantage to Own Comparison Shopping Service (June 26, 2017), https://ec.europa.eu/commission/presscorner/detail/en/IP_17_1784.

Box 1. Hiq Labs Inc. v. LinkedIn

The need to ensure timely access to data became evident in *Hiq Labs Inc. v. LinkedIn*, a dispute between Microsoft's professional networking website LinkedIn and HiQ, a data analytics company that develops talent management algorithms. For several years, HiQ scraped information that users published on their public LinkedIn profiles and used that information, in combination with its predictive algorithm, to offer business insights to its clients. HiQ offered two primary products to its customers: (1) a service that permitted the customer, typically an employer, to identify employees that were at the greatest risk of being recruited by other firms and (2) a service that permitted the employer to identify employees' skill gaps. According to HiQ, the two services permitted its clients to offer incentives to retain valuable employees, as well as design internal training for employees to reduce the expense of external recruitment. In May 2017, LinkedIn sent a cease-and-desist letter to HiQ, demanding that HiQ stop accessing and copying data from LinkedIn's server. After the parties failed to reach an amicable solution, HiQ filed a suit against LinkedIn, asserting the right to have access to publicly available LinkedIn profiles. HiQ argued (among other things) that the decision to block access to the users' data was motivated by LinkedIn's plan to start offering services that would compete with those offered by HiQ. Although the dispute between HiQ and LinkedIn did not center on allegations about anticompetitive conduct, nor did it reach the European Union, it is possible to foresee how a case with a similar fact pattern could be brought under Article 102 TFEU, with the allegation that a refusal to grant access to data constitutes an abuse of a dominant position.

Source: *hiQ Labs, Inc. v. LinkedIn Corp.*, 938 F.3d 985 (9th Cir. 2019); *hiQ Labs, Inc. v. LinkedIn Corp.*, 273 F.Supp.3d 1099 (N.D. Cal. 2017).

Determining whether it is desirable to compel a firm to share its collected data with competitors **requires enforcers to balance between conflicting interests, including the interest of promoting competition and the interest of protecting incentives to innovate.** If access to data is essential to compete in a market, one could argue that a policy that grants the widest access to data is the most desirable because it will promote entry into the market and enhance competition. But developing a product or service that permits a company to collect data, such as building, promoting, and maintaining LinkedIn's platform, might require a large investment. The prospect of generating revenue from that investment stimulates a firm to incur these expenditures in the first place. Knowing that it will be forced to share the collected data with other companies, a firm might be reluctant to make such an investment and opt instead to free ride on others. Moreover, granting access to data might raise an additional concern. When the data at issue is *personal*, as it was in the case of data posted on LinkedIn, granting access to data will raise privacy concerns. In other words, privacy should be an additional concern when determining whether it is desirable to force a company to share the collected data with a third party.

As explained in Part II.B, **past EU decisions make clear that, in some cases, a dominant firm's refusal to deal might constitute an abusive behavior in violation of Article 102 TFEU. A dominant firm's refusal to grant access to data is not different.**⁹⁶ In other words, a refusal to grant access to data could be considered unlawful under EU competition law. In determining whether that is the case, the Commission analysis will likely focus on establishing whether (1) access to data is indispensable to compete in the market, (2) the firm's refusal to deal with a competitor would eliminate effective competition in the market, and (3) there is no objective justification for the firm's refusal to grant access to the collected data.⁹⁷ When those requirements are met, a dominant firm's refusal to grant access to data will be considered abusive and the company might be compelled to provide such access.

However, it is also important to recognize the limits of competition law. Article 102 TFEU only applies when a company holds a dominant market position and only if the three conditions discussed above are satisfied. When that is not the case, a refusal to grant access to data will not violate Article 102 TFEU.⁹⁸ That does not imply that there is a need to relax the existing doctrines to capture additional cases. Rather, it reflects the conclusion that a firm's refusal is unlikely to have detrimental effects on competition and that it would be inappropriate to rely on competition law to compel a company to share the collected data with competitors. In other words, Article 102 TFEU does not create a general duty for dominant firms to grant access to data.

If the European Commission concludes that it is desirable nonetheless to ensure that firms have access to data needed to compete in the market, it should consider adopting **regulatory and policy measures** to promote firms' ability to obtain that access. The *Directive on Re-use of Public Sector Information* and the *Regulation on Free Flow of Non-personal Data* are examples of such a measure. Policies adopted to ensure data portability are another example of measures that promote a firm's access to data. The European Commission might also consider other measures, such as tax incentives, that encourage companies to share their data with third parties, in particular with SMEs. We express no opinion as to whether the adoption of any of those measures is desirable. We do observe, however, that although competition law can in exceptional circumstances provide the necessary relief, it is not a tool that can (or should) ensure systematic access to data.

⁹⁶ Case C-418/01, *IMS Health v. NDC Health*, [2004], ECLI:EU:C:2004:257.

⁹⁷ See Part II.B.1.

⁹⁸ See, e.g., Case C-7/97, *Oscar Bronner GmbH & Co. KG v. Mediaprint Zeitungs*, [1998] ECR I-7791, para. 40.

C. PROVIDE TIMELY REMEDIES

The European Commission shall ensure that remedies that it imposes provide a sufficiently timely relief. Consider for example a case in which a firm is accused of unlawfully refusing to grant access to data. Under the current regime, even if a dominant firm's refusal to share the collected data is found to violate Article 102 TFEU, the process is likely to be too lengthy to provide a prompt access to data and avoid the negative consequences of the firm's anticompetitive conduct. For example, the European Commission's investigations of Google's business practices lasted almost a decade, from 2010 until 2017.⁹⁹ Imposing a remedy after such a lengthy investigation is unlikely to provide adequate relief in a data economy, when markets evolve quickly.

To address the problem of a timely intervention, the European Commission might rely on temporary remedies that provide a relief while the investigation is ongoing. For example, an *interim measure* is a tool already available, but that the Commission has used rarely in the last decade.¹⁰⁰ To impose an interim measure, the Commission must show (i) prima facie evidence of the existence of an anticompetitive behavior, and (ii) that the measures are necessary to prevent serious and irreparable harm to competition while the investigation is ongoing. When those conditions are satisfied, an interim measure can ensure timely access to data while the Commission performs its investigation to determine whether a dominant firm's refusal to grant access to the collected data violated Article 102 TFEU.

It is, however, also important to ensure that the firm under investigation can appeal the use of such measures. It goes without saying that an interim measure should not be imposed without due scrutiny of the possible negative effects that it might have on the market. To avoid abuse of discretion, companies should be able to challenge the decision to impose interim measures and courts are best suited to address those disputes.

⁹⁹ See Press Release, Antitrust: Commission Probes Allegations of Antitrust Violations by Google (Nov. 30, 2010), https://ec.europa.eu/commission/presscorner/detail/en/IP_10_1624; Press Release, Antitrust: Commission Fines Google €2.42 Billion for Abusing Dominance as Search Engine by Giving Illegal Advantage to Own Comparison Shopping Service (June 26, 2017), https://ec.europa.eu/commission/presscorner/detail/en/IP_17_1784.

¹⁰⁰ Regulation 1/2003, Article 8 ("In cases of urgency due to the risk of serious and irreparable damage to competition, the Commission, acting on its own initiative may by decision, on the basis of a prima facie finding of infringement, order interim measures."). Although the Commission has rarely used such remedy in the last decade, in October 2019, it imposed such interim measures in an ongoing investigation scrutinizing the conduct of Broadcom, the US semiconductor and infrastructure software products. Press Release, Commission Imposes Interim Measures on Broadcom in TV and Modem Chipset Markets (Oct. 15, 2019), https://ec.europa.eu/commission/presscorner/detail/en/ip_19_6109.

D. DEVELOP A BALANCED MERGER CONTROL

Finally, merger control is an important component of the competition policy for Industry 4.0. Indeed, mergers and acquisitions are not unilateral actions, and strictly speaking, merger control falls outside of the topic examined in this paper. However, because a merger might permit a company to gain significant market power, it is worth emphasizing some of the principles that should guide merger control in Industry 4.0.

One of the concerns with mergers among firms that operate in the data-driven economy is that **a merger might escape the agency's scrutiny even if it poses a risk of significantly reducing competition.** Firms that are planning to merge must notify their planned transaction to the relevant enforcement agencies if the transaction meets jurisdiction-specific thresholds, typically based on the firms' turnover. In reviewing the merger, the agency seeks to determine whether the proposed merger is likely to significantly reduce competition. If that is the case, the agency might prohibit the merger or alternatively accept specific remedies, such as a divestiture, that seek to preserve competition in the market after the two entities merge. However, as explained in Part III.A, many of the new business models that have arisen in the data economy favor growth over profit. Consequently, even a successful startup, that is (or might soon become) a competitor to the acquiring company, might not generate enough turnover to meet the threshold that would require companies to notify the merger. The Facebook-Instagram 2012 merger represents an often cited example of a merger that the escaped the Commission's merger review (although the merger was caught by the UK merger provisions).¹⁰¹ In response to those challenges, some member states of the European Union have introduced alternative thresholds *based on transaction value*.¹⁰² The European Commission should keep following the developments in those states, by examining the benefits and drawbacks of the newly adopted approaches.¹⁰³

¹⁰¹ The merger was also reviewed by the U.S. Federal Trade Commission that closed its nonpublic investigation without taking any actions. The Commission's vote to close the investigation was 5-0. *FTC Closes Its Investigation into Facebook's Proposed Acquisition of Instagram Photo Sharing Program*, Fed. Trade Comm'n (Aug. 22, 2012), <https://www.ftc.gov/news-events/press-releases/2012/08/ftc-closes-its-investigation-facebook-proposed-acquisition>.

¹⁰² See *Guidance on Transaction Value Thresholds for Mandatory Pre-Merger Notification*, BUNDESKARTELLAMT (May 14, 2018), https://www.bundeskartellamt.de/SharedDocs/Publikation/EN/Leitfaden/Leitfaden_Transaktionschwelle_Draft.html?nn=3600108.

¹⁰³ For an analysis of the practical effects of the new thresholds tests see Martin Sauermann, *The Transaction Value Threshold in Germany – Experiences with the New Size of Transaction Test in Merger Control*, COMPETITION POLICY INT'L (Oct. 8, 2019).

Even when a merger is notified to the relevant authority, the analysis of its potential effects might be challenging.¹⁰⁴ Merger review requires enforcement agencies to estimate the counterfactual, that is, the market that would exist in the absence of the proposed merger. Would a market be more competitive without the proposed merger? Would consumers be better off in the absence of the merger? That assessment might be particularly difficult in the data economy, where markets evolve rapidly and in directions that are often difficult to foresee. For example, buying a start-up with a quickly growing consumer base might permit a dominant company to eliminate potential competition.¹⁰⁵ However, given the uncertainty about the way in which markets develop, it might be difficult for the enforcement agency to determine at an early state whether the targeted start up could actually develop into a competitor.

Although we do not purport to provide a solution, two observations are relevant. First, *the European Commission should reconsider the approach it adopts in defining the relevant market*. The rapid expansion of some tech firms has been possible, in part, because of acquisitions that did not fall into the traditional categories of “horizontal” or “vertical” mergers. Google’s 2013 acquisition of Waze¹⁰⁶ and Facebook’s 2014 acquisition of WhatsApp¹⁰⁷ are relevant examples. Adopting a more flexible definition of the relevant market could permit the enforcers to better estimate the potential effects of the merger on competition. In that respect, the Commission’s announcement in December 2019 that it will revise the Notice on the Market Definition is particularly welcome.¹⁰⁸ Second, *the analysis of the potential effects of the merger should not focus merely on prices, but should consider also other aspect of competition, such as innovation and quality* (which can in turn include considerations such as privacy). The European Commission has already recognized the importance that innovation has in its merger analysis in some of its past decisions.¹⁰⁹ Of course, the analysis of those effects should not be speculative, but grounded on empirical evidence.

¹⁰⁴ COMPETITION POLICY FOR THE DIGITAL ERA, *supra* note 2, 117.

¹⁰⁵ *Id.* at 121.

¹⁰⁶ Ingrid Lunden, *Google Bought Waze for \$1.1B, Giving A Social Data Boost to Its Mapping Business*, TECHCRUNCH (June 11, 2013), <https://techcrunch.com/2013/06/11/its-official-google-buys-waze-giving-a-social-data-boost-to-its-location-and-mapping-business/>.

¹⁰⁷ Press Release, Mergers: Commission Approves Acquisition of WhatsApp by Facebook (Oct. 2, 2014), https://ec.europa.eu/commission/presscorner/detail/en/IP_14_1088.

¹⁰⁸ Remarks Delivered by Commissioner Vestager at the Chillin’ Competition Conference in Brussels, Defining Markets in a New Age (Dec. 9, 2019), https://ec.europa.eu/commission/commissioners/2019-2024/vestager/announcements/defining-markets-new-age_en.

¹⁰⁹ *See, e.g.*, European Commission, Case M.7932 Dow/DuPont, Decision of March 27, 2017, available at http://ec.europa.eu/competition/mergers/cases/decisions/m7932_13668_3.pdf.

Finally, it is important that in reviewing proposed digital mergers, the European Commission and national enforcement agencies maintain a balanced approach. A merger might have detrimental effects on competition. It might eliminate existing or potential competitors. It might also facilitate collusion among the remaining market players. In addition, a merger might entrench the incumbent's market position and undermine the ability of other companies to enter the market. However, mergers are also an important component of competitive markets, when the synergies between the two companies permit them to offer better, more affordable, or more innovative products or services to consumers. That might be the case when an SME has a valuable business idea, but the incumbent possesses the financial resources or other valuable assets that are necessary to bring the business project to a completion.¹¹⁰ In addition, the prospect of being acquired by a large entity is an important exit strategy and might be exactly what stimulates investment in SMEs in the first place.¹¹¹ A merger control that is too strict could have detrimental effects on SMEs and their ability to obtain needed financing. It is therefore important to limit the intervention to mergers that are likely to significantly harm competition.

Box 2. Does the GDPR harm the competitiveness of European firms?

A pertinent question is whether existing privacy regulations, such as the GDPR, could impair the development of a competitive Industry 4.0. To be effective, AI and machine learning often need access to large amounts of data. The concern is that the GDPR, which restricts a company's ability to collect, use, and share personal data, could undermine the ability of companies to rely on advanced analytical methods, such as AI. For example, the Center for Data Innovation, a nonprofit think tank (whose members include Apple, Amazon, Facebook, Google and Microsoft), argued in a 2019 report that the GDRP has "created artificial scarcity of data by making it more difficult for organizations to collect and share data." That outcome "diminished, and will continue to limit, Europe's ability to develop and use AI." The report argued that because the GDPR prescribes the use of data for any purpose other than those for which it was first collected, it will limit the companies' ability to use data in innovative ways that are not realized at the time of data collection. It added "[O]rganizations often create new value by combining data sets, which makes it difficult to predict the future value of data sets at the outset." There is also a concern that GDPR could be imposing high compliance costs (particularly from SMEs) and that the uncertainty in the legal provisions might discourage companies from engaging in conduct that would ultimately benefit the economy and consumers.

Although beyond the scope of this article, it is important to make some general observations about the GDPR and the implications it might have for the development and diffusion of Industry 4.0

¹¹⁰ COMPETITION POLICY FOR THE DIGITAL ERA, *supra* note 2, 110.

¹¹¹ *Id.* ("Simultaneously, the chance for start-ups to be acquired by larger companies is an important element of venture capital markets: it is among the main exit routes for investors and it provides an incentive for the private financing of high-risk").

technologies. That an existing regulation poses some limitation on a company's ability to compete at the global level does not weigh automatically in favor of eliminating that regulation. Prescriptions about minimum wages, environmental rules, and health and safety standards impose constraints on a company's ability to compete with rivals in foreign jurisdictions that are not subject to comparable regulation. Yet there might be valid justifications to keep those regulations in place. That being said, regulations should be tailored in a way to minimize the detrimental effects, including detrimental effects they might have on competition. Indeed, the GDPR itself sought to minimize the effects of existing heterogeneity in privacy regulations by harmonizing the divergent regulatory frameworks in member states of the European Union. European firms now have one overarching legal framework governing data privacy to which they must adhere. It is important to further monitor the impacts of the GDPR and introduce necessary adjustments to minimize any undesired consequences for the ability of companies to develop and leverage AI and other advanced data analytics methods (without infringing individuals' privacy).

The European Commission might consider three proposed improvements to the existing data privacy regulatory framework. First, it is desirable to reduce legal ambiguities to facilitate firms' compliance with the GDPR. Companies should not be reluctant to develop new products or services because of a concern that they will fail to comply with a regulation that they are unable to understand. The European Commission should therefore adopt measures that clarify existing legal provisions, focusing in particular on clarifying the circumstances in which data sharing is permitted or even encouraged. Second, the European Commission should consider adopting such clarifications in industries that rely extensively on personal data. For example, concerns that the GDPR could hamper a company's ability to rely on AI might have less weight in manufacturing and automation processes, when a large part of the collected data is nonpersonal. In contrast, the GDPR's effects might be more pronounced in other areas, such as healthcare, where access to personal information plays a more fundamental role in developing products or services. Hence, focusing on revising the legal framework for industries in which the GDPR might have more relevant consequences should be a priority for the European Commission. Third, ensuring that fines are proportional, particularly in cases of SMEs, could also help address concerns that the GDPR could discourage practices that are beneficial for consumers. As an example, the European Commission might consider the option of imposing a fine only on repeated infringers (and show lenience towards unintended violations).

Source: Authors; ELINE CHIVOT & DANIEL CASTRO, CENTER FOR DATA INNOVATION, THE EU NEEDS TO REFORM THE GDPR TO REMAIN COMPETITIVE IN THE ALGORITHMIC ECONOMY 6 (May 13, 2019), <https://www.datainnovation.org/2019/05/the-eu-needs-to-reform-the-gdpr-to-remain-competitive-in-the-algorithmic-economy/>.

V. CONCLUSION

The data economy generally, and the Industry 4.0 more specifically, offer great potential for the European Union. Reliance on insights obtained from data analytics will permit firms to increase their efficiency, improve the quality of their products and services, and strengthen their competitiveness both within the European Union and at the global level. However, data might be also used as a tool to harm competition. It is important that the European Commission and national competition authorities address practices that would undermine competition in Industry 4.0.

Although the specific features of the data economy pose challenges for the enforcement of competition law, the existing doctrines under EU competition law provide the legal basis to address a wide variety of practices. There is no need to further relax those doctrines to permit the European Commission and national enforcement agencies to address exclusionary practices. Nonetheless, EU enforcers might need to re-focus their analysis to be able to identify and effectively address practices that are detrimental for competition. When companies compete less on price, and more by offering innovative products and services to consumers, enforcers should give less weight to the effects that a challenged practice has on prices and focus more on the long-term effects on quality and innovation. Enforcers might also need to adopt remedies that provide a prompt relief in rapidly changing markets. The existing provisions provide the basis for adopting such actions. Therefore, the European Commission and national enforcement agencies are well positioned to address the challenges posed by the data economy.

