BIG DATA AND ANTITRUST ENFORCEMENT

Giovanni Pitruzzella[1]

Abstract: *The interaction between information, innovation and market outcomes is shaping the modern digital industries of the 21st century: the business models of search engines, social networks, e-commerce websites and marketplaces are highly reliant on the ability to gather and process large amount of data. At the same time, it is increasingly recognized that the use of Big Data by online platforms and intermediaries has far-reaching consequences not only on economic activity, but also on social and political mechanisms: technological developments affecting information flows affect the organization of markets as well as the nature of individual interactions and the functioning of the political process. A set of complementary policy tools is needed to define a comprehensive governance of online markets that effectively protects competition, consumers as well as individuals' privacy and media pluralism. Not all sensitive issues raised by Big Data are also competition issues. However, because of the high degree of concentration that characterizes online markets, antitrust policy finds itself at the crossroad between Big Data and the transformative effects that the Internet is having on the economy and on society. Antitrust enforcement is well equipped and sufficiently flexible to adapt its analytical tools to deal effectively with potential data-driven competition problems and thus contribute to the economic governance of digital market. This article focuses on the implications that Big Data have for antitrust enforcement, i.e. on the potential application of competition law to those (pathological) situations in which Big Data might be used by a dominant company to foreclose competitors or to exploit consumers, might be a relevant factor in the assessment of mergers' anticompetitive effects or might facilitate collusive behavior.*

1. INTRODUCTION

The way information is created, distributed and used has always been a defining characteristics of societies and economies. Indeed, over centuries, technological developments affecting information flows have shaped the organization of markets, the functioning of the political process, as well as the nature of individual interactions. In recent times, the Internet has disrupted the relationship between information, society, democracy and the economy in many ways. It has changed the way individuals interact and disclose personal facts and opinions on a variety of sensitive matters, the way news are produced and distributed, as well as the way companies compete and markets are organized.

The novel interaction between information, innovation and market outcomes is shaping the modern Internet industries of the 21st century: new search engines, social networks, e-commerce websites and marketplaces have

---

[1] Chairman of the Italian Competition Authority

emerged. But also traditional industries are affected by the availability of an unprecedented amount of information and by the increased ability to store and process that information made possible by new ICT technologies.

In some industries, data have become an intangible assets at least as important as copyright and patents. Firms can certainly benefit from the ability to analyze detailed information about their current or potential customers, which can improve their marketing capabilities and lower advertising costs, and makes it possible to propose targeted offers to consumers. Big Data also lies at the core of digital companies' innovative services and business models and can contribute to the efficiency of online markets[2]. At the same time, however, online industries where Big Data plays a key role often show a high degree of market concentration. The correlation between Big Data and market structure is not spurious; indeed, alongside and in combination with other elements, in certain circumstances Big Data might be the source of market power and might raise barriers to entry.

Individuals can also benefit from sharing their personal data. Consumers might access innovative services that could not be offered without a certain degree of information sharing[3]. Online personal information operates as a currency, and in some cases the only one,

in the exchange of online services. Also, targeted online advertising may provide more relevant information to consumers and may be less intrusive than non-targeted ads. Moreover, consumers can benefit from being exposed from offers targeted to each consumer's preferences as this reduces search costs. At the same time, however, it has been observed that individuals may bear significant costs because of the lack of data protection in the online world, of which they may well not be aware. The state of uncertainty associated with privacy costs has been described with the "blank cheque" metaphor: as an individual reveals private information to other parties, she is signing a blank cheque; the cheque may never come back to her, or may come back for an indeterminably small or large price to pay[4].

The behavior of online platforms and intermediaries is increasingly recognized as having far-reaching consequences not only on economic activity, but also on social and political mechanisms. Therefore, a set of complementary policy tools is needed in order to define a comprehensive governance of online markets that effectively protects different fundamental values such as competition, consumer protection, privacy and pluralism. It is important to acknowledge that public policy should not aim a re-distributing benefits and costs related to data protection between individuals and companies, but at formulating a coherent set of rules that allow markets to work efficiently and fairly, fostering

---

[2] See OECD, *Data Driven Innovation for Growth and Well-Being: Interim Synthesis Report*, October 2014.

[3] For instance, live traffic information could not be provided without consumers disclosing their individual location and movements.

[4] See A. Acquisti, *The Economics of Personal Data and the Economics of Privacy*, OECD Background Paper, 2010.

the interests of individuals, the economy and society as a whole ensuring both innovation and the protection of fundamental rights.

Because of the very high degree of concentration that characterizes key online markets, antitrust policy finds itself at the crossroad between Big Data and the transformative effects that the Internet is having on markets and society. However, it should be clear that not all sensitive issues raised by Big Data are also competition issues. For instance, it is possible that a tradeoff arises between privacy and competition: when there are more opportunities to collect and analyze relevant user data that can be used as an input to provide certain services, it is less likely that Big Data becomes a barrier to entry and a driver of market power. Similarly, while market efficiency might increase when companies are able to recommend products/services in line with individual consumers' preferences, segregation and polarization in societies might increase when individuals are exposed only to like-minded opinions and news[5].

Notwithstanding the more general public policy issues, this article specifically focuses on the implications that Big Data have for antitrust enforcement, i.e. on the potential application of competition law to those (pathological) situations in which Big Data might be used by a dominant company to foreclose competitors or to exploit consumers,

is a relevant factor in the assessment of mergers' anticompetitive effects or might facilitate collusive behavior. The "antitrust approach" - which looks at the relationship between big data and competition under the established analytical framework to assess companies' anticompetitive conducts - suggests that a thorough understanding of the economic mechanisms at work in data-driven industries is necessary to develop sound policies and needs to be articulated not as a matter of theory, but with reference to specific markets and services[6].

2. BIG DATA AND ABUSE OF DOMINANCE

The recognition of the importance that Big Data plays in several online industries has raised the question of whether data may be considered an essential input in some markets and therefore whether the "essential facility" doctrine might also apply to data.

Holding a large amount of data is not a problem as such and it is unlikely to be problem when other companies can get hold of the same or similar data, by collecting it from their own users or even buying it in. In this perspective, it is clear that Big Data should not be thought of as an undifferentiated mass of information, but needs to be considered with specific reference to individual services and

---

[5] C.R. Sunstein, The law of group polarization, *Journal of Political Philosophy*, 2002(10); C.R. Sunstein, *Divided Democracy in the Age of Social Media*, Princeton University Press, 2017.

[6] See G. Pitruzzella, Big data, competition and privacy: a look from the antitrust perspective, *Concorrenza e Mercato*, vol. 23, 2016.

Rivista Italiana di Antitrust
Italian Antitrust Review

AUTORITÀ GARANTE
DELLA CONCORRENZA
E DEL MERCATO

N. 1 (2017)
The New Frontiers of Innovation and Competition
Big Data
Debate

markets: data relevant for targeted online advertising might not be relevant for e-commerce websites.

Moreover, it is important to recognize that data, by itself, are often of low value. In fact, value derives mainly from the information obtained through the analysis of data. Along the value chain that comprises the collection, storage, analysis and usage of Big Data, different types of barriers might limit entry at different stages[7]. But it is important that companies' can benefit from their investments in data-based activities that create value for society.

The importance of the trade-off between static and dynamic competition lies at the heart of the notion of essential facility. In fact, it is clear that the legal notion of essentiality goes well beyond the mere recognition of the relevance that Big Data may have in the competitive process. Even in those circumstances in which Big Data is an important source of competitive advantage and a barrier to entry, antitrust law does not necessarily require companies to supply the data they collect to their competitors. In fact, it is necessary to consider that an "obligation to supply" is a strong disincentive to invest in those activities through which big data is collected and analyzed that might bring benefits to consumers in the forms of innovative services.

Therefore, for a refusal to supply to fall under Article 102 prohibition, several cumulative

conditions must be verified: it must be put in place by a dominant company; it must relate to data that is objectively necessary to be able to compete effectively on a (downstream) market; it must be likely to lead to the elimination of effective competition on the downstream market and to consumer harm[8].

More generally, however, it is also possible that data-driven exclusionary conduct might take place when a vertically integrated company uses data acquired at one level to distort competition in a related market.

A different set of potential concerns relates to possible data-driven exploitative abuses of dominance. For instance, one possibility is that Big Data is used to implement advanced forms of price-discrimination[9]. The concern is that, by collecting comprehensive and detailed information on individual users, companies may be able to infer with a high level of detail individual consumers' willingness to pay for a certain good/service and thus charge individualized prices. The impact that price discrimination might have on consumer's welfare depends upon the degree of competition in the market. In fact, it is not obvious that price discrimination by oligopolistic firms would necessarily decrease

---

[7] Daniel L. Rubinfeld and Michal S. Gal, Access barriers to big data, *Arizona Law Review*, forthcoming.

[8] See the *Communication from the Commission: Guidance on its enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings*, OJ C 45, 24.2.2009 and the case law in Oscar Bronner (C-7/97, judgement of 26 November 1998), IMS Health (C-418/01, judgement of 29 April 2004) and Microsoft (T-201/94, judgement of 17 September 2007).

[9] See Executive Office of the President of the United States , *Big data and differential pricing*, 2015.

Rivista Italiana di Antitrust
Italian Antitrust Review
AGCM AUTORITÀ GARANTE DELLA CONCORRENZA E DEL MERCATO

N. 1 (2017)
The New Frontiers of Innovation and Competition
Big Data
Debate

consumer welfare in the same way that price discrimination by a monopolist would. In addition, this is a type of conduct where the difference between efficiency and equity considerations becomes particularly relevant: price discrimination may well improve (allocative) efficiency by allowing companies to expand the size of the market, but may lead to outcomes that are perceived as unfair. However, it is not clear if and how antitrust enforcement should be guided by fairness considerations that entail placing different weights on the welfare of different groups of consumers.

3. BIG DATA AND MERGER REVIEW

As in all other industries, mergers and acquisitions play a big role in shaping the structure of digital markets. In 2016, digital transformation from cloud, mobile, social and big data analytics technologies resulted in high-value merger deals[10]. In fact, M&A can be an important tool for corporations to keep pace with the disruption coming from digital technologies. Many mergers affect a deep layer of the value chain: the number of deals targeting big-data technology reached over one hundred in the second quarter of 2016[11]. However, the mergers that have fueled attention on the relationship between Big Data

and market power are those that have involved well-known digital companies that manage global search engines, social networks and communications services[12].

Merger review is probably the area in which we shall more readily witness the development of our understanding of the role of Big Data for market power and assess the potential theories of harm related to the combination and holding of large sets of data. Notwithstanding the fact that turnover-based thresholds might not allow competition authorities to scrutinize all mergers where Big Data plays a central role, merger control is also the area where, in the near future, competition authorities might more directly affect the evolution of digital markets.

In general, considerations pertaining to Big Data might be relevant in the analysis of both horizontal and vertical/conglomerate anticompetitive effects of mergers, as the combination of the parties' datasets post-merger may have an impact on the merged entity's market power and/or on barriers to entry/expansion in the market for actual or potential competitors. Any such data combination could only be implemented by the merged entity to the extent it is allowed by applicable data protection rules with respect to the collection, processing,

---

[10] See EY, Global technology M&A report: April–June 2016.

[11] *Ibid.*

[12] See, for instance: GOOGLE/DOUBLECLICK, Commission Decision of 11 March 2008, Case No. COMP/M.4731; MICROSOFT/YAHOO!, Commission Decision of 18 February 2010, Case No. COMP/M.5727; INTEL/MCAFEE, Commission Decision of 26 January 2011, Case No. COMP/M.5984; FACEBOOK/WHATSAPP, Commission Decision of 3 October 2014, Case No. COMP/M.7217; MICROSOFT/SKYPE, Commission Decision of 7 October 2011, Case No. COMP/M. 6281.

Rivista Italiana di Antitrust
Italian Antitrust Review

AUTORITÀ GARANTE
DELLA CONCORRENZA
E DEL MERCATO
AGCM

N. 1 (2017)
The New Frontiers of Innovation and Competition
Big Data
Debate

storage and usage of personal data. Moreover, an analysis of the merger party's ability (and incentives) to combine the different datasets would have to be undertaken. Recently, on this issue, the European Commission has fined Facebook 110 million euros for providing incorrect and misleading information on the technical possibility of automatically matching Facebook and WhatsApp users' identities[13]. In any case, any theory of harm would have to be considered in light of a range of factors such as: (i) the scope of the relevant product market; (ii) market structure; (iii) the importance of data for the supply of the specific service; (iv) the different sources (including third-party) through which companies relevant data/information can be collected.

For instance, the analysis of Big Data is likely to be particularly relevant in the assessment of horizontal mergers among companies active in online advertising, where Big Data is a key input in the provision of targeted ads. Insofar, in the cases that it has examined, the European Commission has found that there will continue to be a large amount of internet user data that are valuable for advertising purposes and that are not within the merged entity's exclusive control[14]. When mergers raise vertical and/or conglomerate effects, the theory of harm normally revolves around possible foreclosure effects that can arise when the merged parties have the ability and incentives to exclude rivals from a market to the detriment of consumers. Big Data might be relevant both directly, when the foreclosure strategy rests on access to data, and indirectly, when Big Data, and most notably data-driven network effects, might act as a source of barrier to entry[15].

One final aspect refers to the analysis of the impact of the merger on competition also in terms of privacy. It has been observed that if consumers value privacy as a desirable characteristic of a service, a reduction in privacy is analogue to a reduction in the quality of the service provided[16]. In the Facebook/WhatsApp merger, the Commission had stated that any privacy-related concerns flowing from the increased concentration of data as a result of the transaction do not fall within the scope of the EU competition law rules but within the scope of the EU data protection rules[17]. More recently, in its review

---

[13] The Commission at the time of its decision had also carried out an 'even if' assessment that assumed user matching as a possibility, concluding that, even in this scenario, its conclusions as to the lack of anti-competitive effects of the proposed transaction would stand.

[14] See, for instance, FACEBOOK/WHATSAPP, Commission Decision of 3 October 2014, Case No. COMP/M.7217.

[15] For instance, in the recent Microsoft/LinkedIn merger, the European Commission identified potential competition problems deriving from the: (i) tying between Windows PC operating system and LinkedIn; and (ii) integration of LinkedIn features into Office/Outlook and the degradation of interoperability between the latter and third-party PSN services. The theory of harm was also based on the analysis of the role that (data-driven) network effects have on barriers to entry.

[16] See OECD, *Big Data: Bringing competition policy to the digital era*, October 2016.

[17] FACEBOOK/WHATSAPP, Commission Decision of 3 October 2014, Case No. COMP/M.7217.

of the Microsoft/LinkedIn merger the Commission has concluded that foreclosure effects in the market for professional social networks might negatively affect consumers because of the marginalization of competitors that offer a greater degree of privacy protection to users than LinkedIn (or make the entry of any such competitor more difficult)[18]. Therefore, privacy considerations appear to become increasingly relevant also in merger review.

4. BIG DATA AND COLLUSION

The high degree of transparency that characterizes online markets and the widespread use of pricing algorithms, which exploit the increasing ability to gather and process large amounts of online data, may have an impact on collusive behavior[19].

Online price transparency increases both consumers' and companies' ability to compare price information online. On the demand side, price comparison tools and electronic marketplaces allow consumers to quickly compare prices of products across a large number of online sellers and my thus facilitate consumer choice, leading firms to compete more aggressively on prices. At the same time,

rational companies would naturally exploit the same degree of price transparency to identify the best positioning of their offers in the market. Indeed, sellers can closely monitor – also through *ad-hoc* software that can be bought off the shelves – (the evolution of) prices of their competitors and easily define and implement dynamic pricing strategies. Empirical evidence shows that dynamic pricing is extremely common[20].

It has been observed that these features of online market environment might foster the ability of companies to reach, monitor and enforce collusion[21]. For instance, reaching an agreement may be easier when companies use the same algorithm to define prices. Also, it is well known that sustainability of collusion requires effective enforcement, i.e. detection and retaliation of deviant firms. The use of pricing algorithms might increase the likelihood that cheating on the collusive "agreement" will be detected as well as the speed of punishment. In fact, companies can monitor their rivals' prices and detect changes in real time. Also, (strategic) dynamic interaction occurs more quickly than in traditional markets, thereby easing companies' ability to implement harsh punishment strategies, making punishment stronger, swifter and more certain.

The impact that online pricing algorithms might have as a tool to sustain "traditional" explicit collusion – by increasing transparency

---

[18] MICROSOFT / LINKEDIN, Commission Decision of 6 December 2014, Case No. COMP/M.8124.

[19] See OECD, *Algorithms and Collusion*, May 2017; Ezrachi, A. and M. E. Stucke, *Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy*, Harvard University Press, 2016.

[20] See European Commission, *Final report on the E-commerce Sector Inquiry*, COM(2017) 229 final.

[21] See OECD, *Algorithms and Collusion*, May 2017.

and thus the ability to police the agreement – does not appear to raise entirely new issues for competition enforcers. However, innovative questions, both in terms of policy and actual enforcement, might arise because of the impact that algorithms may have on tacit collusion. From a policy perspective, one question is whether or not the scope of antitrust law should be revised to take into consideration the impact that these pricing algorithms have on the diffusion of tacit collusion. However, it is not clear yet if this phenomenon is common or not, and/or if there are spillover effects on offline competition. It is also necessary to identify the scenarios in which the use of pricing algorithms may raise the most serious concerns.

In terms of enforcement, a key issue is how the traditional notion of liability extends to the development and use of pricing algorithms. For instance, companies might unilaterally create and use computer algorithms to achieve a given target, such as profit maximization and the machines, through self-learning and experiment, determine independently the strategy to maximise profits, which might also result in collusive behavior[22].

5. CONCLUSIONS

The close interaction between information, innovation and market outcomes is shaping the modern digital industries of the 21st century: the business models of search engines, social networks, e-commerce websites and marketplaces are founded on operators' ability to gather and process large amount of data. At the same time, it is increasingly recognized that the use of Big Data by online platforms and intermediaries has far-reaching consequences not only on economic activity and consumer welfare, but also on social and political mechanisms: technological developments affecting information flows shape the organization of markets as well as the functioning of the political process and the nature of individual interactions.

Antitrust finds itself at the crossroad between Big Data, market power and the transformative effects that the Internet is having on markets and society. Antitrust policy is well equipped and sufficiently flexible to adapt its analytical tools to deal effectively with data-related competition problems and to contribute to the economic governance of online markets. Well-functioning markets are necessary to foster innovation and progress (benefiting both companies and consumers) and to benefit consumers: to this end, merger review and enforcement against abuses of dominance and cartels are certainly essential.

At the same time, digital markets need a broad set of rules to foster the overall interests of society safeguarding individuals' fundamental rights. Antitrust is an important component of the wider set of policy instruments that can be used to govern digital markets, which also

---

[22] See Ezrachi, A. and M. E. Stucke, *Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy*, Harvard University Press, 2016.

comprise consumer protection, data protection, media pluralism. As the EU approach shows, it is important that these tools are used in a complementary way, pursuing common goals that encompass the promotion of growth and innovation as well as the welfare of individual consumers and citizens' fundamental rights.

Rivista Italiana di Antitrust
Italian Antitrust Review

AUTORITÀ GARANTE
DELLA CONCORRENZA
E DEL MERCATO
AGCM

N. 1 (2017)
The New Frontiers of Innovation and Competition
Big Data
Debate

6. BIBLIOGRAPHY

A. Acquisti, *The Economics of Personal Data and the Economics of Privacy*, OECD Background Paper, 2010.

Court of Justice, C-7/97 Bronner, 26 November 1998.

Court of Justice, C-418/01 IMS Health, 29 April 2004.

European Commission, *Communication from the Commission: Guidance on its enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings*, OJ C 45, 24.2.2009.

European Commission, *Final report on the E-commerce Sector Inquiry*, COM(2017) 229 final, 2017.

European Commission, GOOGLE/DOUBLECLICK, Case No. COMP/M.4731, 11 March 2008.

European Commission, MICROSOFT/YAHOO!, Case No. COMP/M.5727, 18 February 2010.

European Commission, INTEL/MCAFEE, Case No. COMP/M.5984, 26 January 2011.

European Commission, FACEBOOK/WHATSAPP, Case No. COMP/M.7217, 3 October 2014.

European Commission, MICROSOFT/SKYPE, Case No. COMP/M. 6281, 7 October 2011.

Executive Office of the President of the United States , *Big data and differential pricing*, 2015.

EY, *Global technology M&A report: April–June 2016,*
http://www.ey.com/Publication/vwLUAssets/EY-global-technology-m-and-a-report-2q16-final-look/%24FILE/EY-global-technology-m-and-a-report-2q16-final-look.pdf, 2016 .

General Court, T-201/04 Microsoft, 17th September 2007.

A. Ezrachi, A. and M. E. Stucke, *Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy*, Harvard University Press, 2016.

OECD, *Data Driven Innovation for Growth and Well-Being: Interim Synthesis Report*, October 2014.

OECD, *Big Data: Bringing competition policy to the digital era*, October 2016.

OECD, *Algorithms and Collusion*, May 2017.

G. Pitruzzella, Big data, competition and privacy: a look from the antitrust perspective, *Concorrenza e Mercato*, vol. 23, 2016.

D. L. Rubinfeld and M. S. Gal, 2017, Access barriers to big data, *Arizona Law Review*, forthcoming.

C.R. Sunstein, The law of group polarization, Journal of Political Philosophy, 10, 2002.

C.R. Sunstein, *Divided Democracy in the Age of Social Media*, Princeton University Press, 2017.