

DATA COLLECTION IN ONLINE PLATFORM BUSINESSES: A PERSPECTIVE FOR ANTITRUST ASSESSMENT



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I. INTRODUCTION

There has been growing attention to the role that data and data analytics are playing in the online world. The current public debate is associating the collection of massive amounts of data by large online platforms to extraordinary clout on the public at large and almost unassailable dominance among economic actors. The reality is of course more complex – and less dramatic. This article focuses on the impact of data on the value creation opportunities of online platforms and consequently on their organization and on the relation with their users. It proposes to include the analysis of platform business models in the antitrust analytical framework to better evaluate the extent of market power and distinguish genuinely abusive market behavior from the normal conduct of business in a new technological environment. This entails an understanding of the interrelations existing among diverse services and users interacting on a platform. This article leaves aside societal choices, such as whether there should be specific levels of privacy or media diversity. Instead, it argues that it is important to understand how different online platform businesses turn large amounts of collected information into new and better services to assess the terms and conditions of their relations with users and their impact on markets.

II. THE ROLE OF DATA IN ONLINE PLATFORM BUSINESSES

Online digital platforms in this article refer to businesses built on a technology and related set of standards that allow the aggregation of content and services on a digital support that interconnects users for the purpose of communicating, transacting or content sharing. This includes platforms such as Amazon, Google Android, Facebook but also less diversified ones such as Paypal, Uber, YouTube or Booking. Online platforms rely on communication and information management technologies to generate new services and improve existing ones. Successful platforms often significantly reduce the search costs, transaction costs, and information costs of service delivery compared to their offline equivalent.² Information collection and management, together with instant and large scale interconnection, lead to a significant increase in the set of counterparty options easily accessible by users.

Data play an important role in the quality and profitability of platforms' services. Data are used by platforms for many productivity enhancing purposes such as predictive analysis of customer or market behavior, service customization, targeting of offers, or to improve the relevance of contextual information in media services. Because data can be a powerful driver of efficiency and profitability, the collection and optimal management of data can be an important component of platform activity that impacts the entire business organization. This is the case of many online services such as advertising, shopping, search, content sharing, holiday planning and preventive healthcare.

Data analytics, the capacity to extract actionable information from data, is becoming an important source of competitive advantage.³ Sophisticated data analytics facilitate better decisions on such matters as optimal market segmentation, the identification of individual customer needs, optimal pricing, the design of new products and services, and even business model innovation.⁴ These practices enhance firm performance and profitability and provide a competitive edge for those businesses that know how to exploit these opportunities. Examples of data driven service improvements range from Amazon's personalized product recommendations, LinkedIn targeted posting of job vacancies, or real traffic information used by Google for navigation.

Access to data clearly determines the opportunities for businesses to exploit the benefits of data analytics. When a platform benefits from a large amount of users who perform a variety of activities, data will be abundant and there will be many opportunities to use it to the platform's advantage. This naturally raises the question whether a new service without any initial self-generated data can succeed in markets populated by data rich incumbents.

² Goldfarb & Tucker, *Digital Economics*, No. w23684, National Bureau of Economic Research, 2017.

³ Kiron et al., "Analytics: The Widening Divide," *MIT Sloan Management Review* 53.2 (2012): 1. The French competition authority's report on online advertising for example also recognizes that "targeting effectiveness" is an important dimension of competition in that sector.

⁴ Davenport, *Big Data at Work: Dispelling the Myths, Uncovering the Opportunities*. Boston (USA): Harvard Business School Publishing Corporation, (2014); Akter & Fosso Wamba, "Big data analytics in E-commerce: a systematic review and agenda for future research," *Electronic Markets* 26.2 (2016): 173-194.

Access to data is not normally at the root of an online platform's success. For that, an online platform business must provide real value that motivates user engagement. Immediate access to data may not be a necessary condition to design a new successful online service proposition. Although big data analytics are important to some online platform services, not all efficiencies on platforms are generated by large scale user generated data and a platform may attract users with other features not significantly impacted by big data optimization.

A winning proposition can consist of a superior usage of public information, a superior management of individual information, or the successful reduction of the costs linked to the provision of a service. For example, health tracking devices and their associated applications succeed by providing convenience to the users in the management of their own individual data. Once such online services grow, they will indeed gain access to large data inflows that open the doors for new applications. But these are not necessary for take-off.

For those services that rely on user data aggregation, several strategies can be used to attract users at the start of their lifecycle. They include promoting usage among technology enthusiasts, rewarding the first users, and behavioral tactics such as "gamification," the practice of presenting an interface as a game. Different strategies will be chosen depending on the type of user participation needed for growth. A marketplace platform is more likely to use financial rewards while a service requiring high levels of user engagement will adopt more behavioral strategies.⁵ Experimental studies have validated the positive impact of gamification and service design on user engagement in some contexts.⁶ Waze for example used an attractive design and features reminiscent of games and social networks to successfully build from scratch a route recommendation service based on real time traffic information collected from its users.⁷ Passively collected data was later used for targeted advertising based on user travel information.

In addition to access to data, technical skills and tangible capital are also needed to develop big data capabilities. Managerial and organizational capabilities are similarly important and, for instance, managerial inertia has been identified as a factor inhibiting big data analytics capabilities in some firms.⁸ Providing a company with access to data is therefore not a guarantee of platform success. In addition, depending on the type of data analytics needed, an online service can use data brokers and independent data analytic services for data based optimization.⁹ It is therefore not a general truth that access to user generated big data is a necessary condition for online platforms' success and, in all certainty, it will not be a sufficient condition either.

Competent application of data analytics is no doubt an important factor for the performance of many online digital platforms. But the relative contribution of data analytics to the value generation and success of the platform will vary depending on the nature of the services provided. Similarly, the extent to which data usage is at the source of a platform's competitive advantage will vary across activities and businesses.

Understanding what different types of users value in a platform is an important step when assessing the role of data and data analytics in the performance of an online service. Such an assessment can only be properly made with a case specific empirical analysis of the characteristics driving users' valuation of the service. Assuming without validation that access to data is the defining factor for market performance (or market power) or that it represents the most important barrier to entry in the provision of a particular activity may lead to ineffective intervention by regulators.

Whether or not data collection and analytics are the main drivers of platform success, the incorporation of data collection as part of the value creation proposition will undoubtedly impact many of the platforms' decisions relating to the design of the business, its internal rules, and the terms and conditions of its contracts. The next section explores the impact of data driven services on the governance of platforms' businesses and on their users.

5 Nielsen, *Participation Inequality: Lurkers vs. Contributors in Internet Communities*, October 9, 2006, <https://www.nngroup.com/articles/participation-inequality/>.

6 Hamari, Koivisto & Sarsa, "Does Gamification Work? — A Literature Review of Empirical Studies on Gamification," *Proceedings of the Annual Hawaii International Conference on System Sciences*, (2014), https://www.researchgate.net/publication/256743509_Does_Gamification_Work_-_A_Literature_Review_of_Empirical_Studies_on_Gamification.

7 Users on Waze appear on the map with the name and accessories of their choice, are visible to each other, and accumulate points and visible titles as they increase their participation.

8 Mikalef et al., "Big data analytics capabilities: a systematic literature review and research agenda," *Information Systems and e-Business Management* (2017): 1-32. Ransbotham, Kiron & Kirk Prentice, "Beyond the hype: the hard work behind analytics success," *MIT Sloan Management Review* 57.3 (2016).

9 "Data Brokers: A Call for Transparency and Accountability," Federal Trade Commission, May 2014.

III. IMPACT OF DATA DRIVEN PLATFORM MODELS ON ITS GOVERNANCE AND USERS

Every successful platform will have access to a large body of user data that it can use to develop additional services or to optimize the services they already offer. In that sense, successful platforms may benefit from a virtual loop: success in one service leads to a large data collection potential which leads to more efficient services and so on, as long as the platform also has the technological and commercial capabilities to support this. The possibility of a positive loop generated by data has raised concerns that access to large data collection can become a source of market power and unassailable incumbency.¹⁰ We first look at how the efficiency gains from data may affect a platform's business model and then look at the impact on final users and businesses.

A. Impact on Platform Organization

Once data analytics have become part of the platform's value proposition, this will affect how platforms run their services and how they relate to its partners and users. Platforms that can extract a lot of value from data analytics will put a lot of effort into traffic generation through the acquisition of new users and the inducement of repeat visits. Because the ability to track users on a platform by itself generates useful data, the platform owner will be interested in attracting users even when they do not transact or generate monetary benefits on the service's sites or applications they visit. Therefore they may provide incentives for engagement in terms of free services and low prices beyond what is justified by the profitability of any one particular service. In doing so, platforms take into account the positive externality that users generate with their traffic and engagement on the whole platform business by way of the data collected. The extent to which platforms incentivize user traffic beyond the transactional aim will be affected by the extent to which it can monetize the behavioral data obtained either by improving the quality or relevance of its services or by developing new services. Targeted advertising is an example of such services as is targeted advice in healthcare or financial services.

The literature on two-sided markets provides a framework to analyze how a service requiring the matching of two parties takes into account the value generated by any additional adopter on the valuation of users on the other side of transactions.¹¹ This framework explains how service providers choose prices in order to maximize total value created by incentivizing those users whose positive impact exceeds their personal valuation of the service.

Similarly, an online platform will also design users' terms of participation in order to maximize the total value generated on the platform and will do so by incentivizing the participation of those users that provide the most value beyond their own personal benefit.¹² User types that provide the most useful data will therefore be particularly incentivized to participate. Models that take into account data-induced positive externalities can therefore be useful to explain the terms and incentives offered to particular types of users of a platform. Conduct aimed at incentivizing data collection such as preferential placement or the offer of free services is often efficient in this context.

The possibility to recombine different types of data for new or better services may contribute to the decision to develop and efficiently integrate new services on the platform. The ability to recombine collected data from various sources may also allow platforms to expand into new services. Online platforms may integrate the provision of data analytics services to third parties inside or outside the platform. Google or Facebook for example integrate data driven advertisement serving on their platform. The integration of new data intensive services by a platform might be done for reasons of efficiency or because the platform might be trying to protect its monetization and appropriation mechanisms with the usage and control of its data. Tying as a strategic competitive practice aimed exclusively at protecting market share or preventing entry is also a possibility.¹³

¹⁰ For example, the 2017 amendment of the German Competition Act made access to personal data a criterion for market power (§ 18(3a)).

¹¹ Rochet & Tirole, "Platform competition in two-sided markets," *Journal of the European Economic Association* 1.4 (2003): 990-1029; Evans & Schmalensee, *The Industrial Organization of Markets with Two-Sided Platforms*, No. w11603. National Bureau of Economic Research, 2005; Rysman, "The Economics of Two-Sided Markets," *Journal of Economic Perspectives* 23.3 (2009): 125-43.

¹² Some online platforms may be maximizing growth rather than monetized value. For an analysis of platform ecosystem governance see for example Schreieck, Maximilian, Manuel Wiesche, and Helmut Krcmar. "Design and Governance of Platform Ecosystems-Key Concepts and Issues for Future Research." *ECIS*. 2016

¹³ Farrell & Weiser, "Modularity, vertical integration, and open access policies: towards a convergence of antitrust and regulation in the internet age," *Harv. JL & Tech.* 17 (2003): 85.

Platform governance decisions as represented by platform rules, terms, and conditions are driven by objectives that may not fully align with that of the various platform users and notably its business users. The next section discusses this tension, which helps explain the origin of many complaints of platform behavior and possibly some of the regulatory drive initiated in certain jurisdictions.¹⁴

B. Impact on Platform Final Users

The very wide adoption of data driven platforms seems to indicate an overall positive welfare effect on users. There were 3.8 billion users of the internet worldwide in 2017 and 2.8 billion of these were active social media users with an annual growth rate of 21 percent. Social media penetration is 66 percent in the U.S. and 49 percent in Europe.¹⁵ E-commerce adoption and expansion are also significant with online sales representing 10 percent of global retail sales in 2017 with a growth above 20 percent globally in the past few years.¹⁶ The usage of digital platforms for an increased number of applications has been steadily growing even as more information about the extent of data collection and the uses made of data have become public. The latest privacy breach scandals appear likely to result in behavioral adjustments rather than a complete demise of the advertisement supported business model, which relies heavily on data collection.

Online services are in general affordable and overall attractive due to the lower transaction costs, lower search costs and user-friendly interfaces that they provide. The engagement incentives provided by online platforms for the purpose of collecting behavioral information have also certainly contributed to affordability including the provision of free services. Some empirical evidence supports the claim that targeting facilitated by data analytics seems to have increased the relevance and quality of products promoting user engagement and platform profitability.¹⁷ Data collection may have also facilitated the development or quality of complementary services on platforms.¹⁸ Yet, the full impact of algorithmic targeting and pricing is yet to be evaluated.¹⁹

Few people doubt the overall value contribution of successful online digital platforms. The question that has preoccupied regulators seems to be whether users are well served on each and every service offered to them on digital platforms and in particular whether the data collection activity is contributing to the degradation of some services.

The regulatory concern is that a lack of alternatives – or high switching costs – in the provision of a given service may lead users to accept a higher level of data collection than they would otherwise choose. Regulators have looked at the degree of market power of some online platform services to assess the possible excessive nature of their data collection. But the link between market power and the allegation of abusive data collection has not been easily established as similar practices are adopted by different types of companies with various degree of market penetration. In Germany, where possible excessive data collection by Facebook is being investigated, regulators are focusing on the legal admissibility of the contract terms under civil or privacy law.²⁰ At the EU level, the focus of the scrutiny is currently on the quality of the information provided to users regarding the collection and usage of their data.²¹ In fact, although privacy is considered a factor of competition, there is little conclusive evidence on how much users are willing to pay, in monetary terms or otherwise, for keeping certain levels of privacy and whether they are willing to forego the experience of personalized targeting.

14 “Proposal for a Regulation on promoting fairness and transparency for business users of online intermediation services,” COM(2018) 238 of April 26, 2018.

15 Digital trends 2017 – The Next Web – <https://thenextweb.com/insights/2017/01/24/digital-trends-2017-report-internet/>.

16 <https://www.emarketer.com/Report/Worldwide-Retail-Ecommerce-Sales-eMarketers-Estimates-20162021/2002090>.

17 Pathak, Garfinkel, Gopal, Venkatesan & Yin, Empirical Analysis of the Impact of Recommender Systems on Sales, *Journal of Management Information Systems*, 27:2, 159-188, (2014).

18 Facebook’s recent announcement of an online dating service is but one example.

19 See for example Chen, Mislove & Wilson, “An empirical analysis of algorithmic pricing on amazon marketplace,” *Proceedings of the 25th International Conference on World Wide Web*. International World Wide Web Conferences Steering Committee, 2016.

20 “Background Information on Facebook Proceedings,” Bundeskartellamt, December 2017 - https://www.bundeskartellamt.de/SharedDocs/Publikation/EN/Diskussions_Hintergrundpapiere/2017/Hintergrundpapier_Facebook.pdf?__blob=publicationFile&v=6.

21 “Proposal for an EU Regulation on promoting fairness and transparency for business users of online intermediation services,” of April 26, 2018 EC 2018/0112 (COD).

C. Impact on Businesses

A perceived lack of fair competitive environment has been a bigger concern for businesses competing with or using platforms. Online platforms tend to offer attractive terms for their online services, which puts pressure on competitors outside the platform. The attractive terms resulting from the internalization of users' positive externalities will create challenges for competing firms that do not extract benefits from data collection or from any other positive side-effect of traffic. These firms may have difficulties matching some of the attractive conditions offered by online platforms for similar services.

Standalone businesses often chose to join a platform in order to benefit from the platform's efficiencies. This is the case when retailers join an online marketplace such as Ebay or Amazon to increase their reach and benefit from the lower transaction costs. Joining a platform involves the acceptance of its rules and conditions that may be designed to enhance the platform's overall value. Participating businesses may find that these terms are not optimal if they do not sufficiently benefit from the platform's overall success. Unhappiness of suppliers about platform pricing has been manifest in the pricing of e-books and in the case of hotel platforms MFN clauses in several European countries. Both cases were analyzed by antitrust regulators without going into the specificities of the concerned platform's business model and value generation process.

Regulators in the EU have noted with some concern the decreasing share of revenue obtained by traditional providers along the value chain of particular online services.²² Service providers with the ability to engage users and with the know-how to collect, analyze, and monetize data are gaining a more prominent role on online platforms. Rent sharing may be adapting accordingly with those actors less able to produce such value obtaining a lower share of revenue. Some participating businesses have expressed uneasiness about the participation terms they face on platforms and have become wary about their relative performance in the value chain.

To the extent that online services need data to increase the quality and profitability of their services, obtaining access to such capabilities becomes important. Whether such capabilities are provided on equal terms by the platform, whether they can be contracted to a third party, or whether participating businesses can develop and diversify to build their own will impact business performance and the likelihood of success inside or outside a platform. This is more so in those services where data analytics are a source of competitive advantage. Assessing the barriers to data-generated business intelligence is therefore an important element to establish the relative competitive position in some data intensive markets.

Abuses of market power and anticompetitive behavior cannot be excluded when examining platform conduct. But the analysis of platform conduct and performance needs to take into account the technological reality and value generating process of particular online platforms in order to assess the intent of online platform businesses. This is particularly so in the analysis of the role and impact of data collection.

IV. ANTITRUST ASSESSMENT OF DATA INTENSIVE BUSINESS MODELS

The above discussion illustrates some aspects of the disruption brought about by the increased role of data for online platform-supported businesses. Two questions are particularly important for market regulators when considering whether ownership or usage of a large dataset presents antitrust issues. The first question is whether access to data provides an online platform with the sufficient market power to be able to impose detrimental terms to its users. The second question is whether business users on a platform are put at a competitive disadvantage with a competing platform service because of a lack of access to the whole platform data and data analytics capabilities.

A. Data, Market Power and Abuse

Academic literature initially centered on network effects as the source of possible platform market power. These network effects have been studied with models of consumer behavior where users' preferences depend on the number of a particular type of users (often their own) on a platform.²³ Lately, the role of data, as well as the increasing returns to scale and higher efficiency that they generate, have been highlighted as a potential barrier to entry. The reply to this assertion is not generic but rather requires a case specific analysis.

²² See for example the concern about traditional media on page 5 in the European Commission Communication on "Tackling online disinformation: a European Approach," COM(2018) 236 of April 26, 2018.

²³ Biglaiser & Crémer, "The value of incumbency in heterogeneous platforms," (2016), https://www.econstor.eu/bitstream/10419/130450/1/cesifo1_wp5829.pdf; Caillaud & Jullien, "Chicken & egg: Competition among intermediation service providers," *RAND Journal of Economics* (2003): 309-328.

It has become common practice to describe the quality and relevance of data according to parameters of volume, velocity, variety and value.²⁴ But data is also differentiated by the nature of the information it contains and the range of its possible uses. Not all data is useful for the provision or enhancement of a given service. The relevance of the data for the provision of the service being analyzed is a first step in the assessment of data as a barrier to entry.

A given type of information may also be susceptible to collection from many different sources in which case access to one source will not present by itself a barrier to entry.²⁵ Location data for example are collected by multiple apps on a phone but also by some car manufacturers.²⁶ The ubiquity of some types of data and the fact that most data are non-exclusive, and non-rival, suggests that in many applications the real handicap for a firm is not the lack of access to particular data but rather a potential lack of capability by the firm to collect, store and analyze useful data.²⁷

But there may be instances where a platform has access to a unique type of data generated under unique circumstances. For example, this could occur in the case of data generated by wearables such as a smart watch or certain historical data that cannot be replicated. The question would then be whether any particular market cannot be served without access to this particular dataset or whether it can be provided with another combination of data. Also relevant is the question of whether a firm with a quality proposition could nonetheless enter and grow its own data. The extent to which such new entry is possible will depend on the possibility to attract the first users without the benefit of much user data, on the extent of the returns to scale for data, and the minimum scale needed for operational efficiency. It will also depend on whether potential new users are “locked in” another service because of the personal data and content they have committed there. If the portability of previously committed content is important for the users’ decision to migrate to the new service or to multi-home, then the feasibility of such portability will be a factor in the determination of barriers to entry. Finally, the role that other factors of competition play in the success of a particular service should also be taken into account in the assessment of barriers to successful entry.

Economies of scope in data have an ambiguous role on entry. Large online platforms are characterized by the ability to collect large quantities of diverse data that they can use for the provision of a variety of services. In this way, in those markets where returns to scale are very important, they may benefit from economies of scale at the onset of any new service provision and in this way translate the benefits of incumbency from one service to the next. But by this same token, large platforms may be in a good position to enter markets already occupied by a successful incumbent. Lateral entry into a market by way of diversification is common in the online world and is a source of vigorous rivalry. Evidence of entry by diverse platforms into messaging systems, video streaming, payment services or e-commerce indicates that platform to platform competition is currently quite rivalrous and generates innovation.

Entry by specialized players may be hindered by the favorable terms given to users on platforms due to a more diversified business model and a stronger ability to monetize on non-paying traffic and data. Platforms’ low prices are sometimes being described by competing businesses as predatory. A key question for the assessment of such conduct is whether in fact this below cost pricing increases the profitability of the overall platform through feedback effects. If the conduct is profitable only through the exclusion of competitors, the conduct may indeed be predatory. If the conduct is profit maximizing, for example through the monetization of user traffic, taking these positive externalities into account may lead to accepting the conduct as legitimate. This is akin to an acceptance of a multisided market framework for the analysis of online platform behavior. Under such a framework, all of the platform’s derived efficiencies count for the analysis of a particular conduct. A standalone player may then be found to be a less efficient provider, maybe due to lack of economies of scope, and may be required to compete with superior quality or other types of efficiencies, possibly through partnerships.

24 Rubinfeld & Gal, “Access barriers to big data,” *Ariz. L. Rev.* 59 (2017): 339.

25 *Id.*

26 “Big Brother on Wheels: Why your car company may know more about you than your spouse,” *Washington Post*, January 15, 2018 https://www.washingtonpost.com/news/innovations/wp/2018/01/15/big-brother-on-wheels-why-your-car-company-may-know-more-about-you-than-your-spouse/?noredirect=on&utm_term=.c46a557ea128.

27 Tucker & Wellford, “Big Mistakes Regarding Big Data,” (December 1, 2014). *Antitrust Source*, American Bar Association, December 2014. <https://ssrn.com/abstract=2549044>.

When businesses decide to join a platform, the privileged access by the platform's own competing service to platform's user data may lead to a characterization of unfair competition. For example, in its Amazon Home Services proposition, Amazon tells participant free-lancers that their services will be advertised to Amazon's customers based on their browsing activity and at the time of relevant sales. Buyers purchasing furniture, plumbing items or electronic devices will be offered local help for assembling, repair, or installation on the spot. Some argue that such privileged use of information by a platform-provided service may represent a barrier to fair competition for rival providers of such intermediation services. In this case, one would want to look at whether the data in question is unique and necessary for the success of the service. For example, the information on customers' purchases may be available from other sources such as payment systems. Yet speed and timeliness of the information, combined with instant access to the consumer, can play a role in the profitable use of the information. In this particular case, rivals to Amazon Home Services do not seem to have been displaced, indicating that access to the user information of one of the largest retailers available may not be determinant for success in local home services intermediation. The relevance of the information at stake in determining the success and viability of a service is a case by case empirical question.

When the efficiencies provided by a particular set of data seem determinant for the provision of a particular service, the question for regulators becomes whether access to such data should be granted to all business participants of the platform on equal terms. Access to the data may not be necessary if competitors observe and can replicate targeted offers.²⁸ But where such observation is not possible in the same conditions, the question remains about whether the data providing a competitive edge should be shared. Open access may not be efficient for the materialization of efficiencies related to data and data analytics. Instead, integration or a privileged partnership may be necessary to materialize and appropriate these efficiencies. Close partnerships or integration can be optimal if the efficiencies necessitate joint investment and development. This is particularly the case in environments of rapid technological change requiring coordination for smooth interaction.²⁹ The complex technical standardization necessary for joint exploitation of data by some services may also be a factor of integration. Transaction costs and issues of incentives and appropriation may not make it efficient for a platform to replicate this privileged relation with several competing services at the same time.

The incentives by firms (absent compulsion) to grant access to their data will depend on the role of data in their business model. If the exploitation of a particular dataset that it collects is at the core of its business model, an online platform will be unlikely to share it. On the other hand, if granting access to data spurs the development of complementary applications that enhance the value of the platform, access will indeed seem likely. Optimal decisions as to whether to grant or deny access to an asset is well described in the industrial organization economic literature. The information systems literature has also usefully analyzed the organization of a complementary innovation in the digital space.³⁰

B. Incorporating Platform Business Models for Value Creation in Antitrust Analysis

In light of the above, a proper understanding and assessment of the conduct of an online platform regarding the collection, usage and protection of its data requires a case specific analysis that builds on an understanding of the dynamics at stake in a given platform's business model.

In particular, when assessing platform conduct, one should first understand the value proposition of the online platform including the mechanisms through which value is generated and appropriated. How is value being generated on the platform? How are the interdependent participants being incentivized for value maximizing behavior? How is the platform monetizing the value it creates? How are the benefits being allocated across platform users? This requires the analysis of the value generated on platforms including through the diverse use of data. It also requires the understanding of the various interdependencies on the platform across users and services and how these interdependencies are managed. The incentive mechanisms that internalize the diverse externalities across users must also be understood as well as the diverse forms of value contribution that users can provide. Only then, can one perform an informed analysis of whether a particular conduct has efficiency motivations or whether instead it can only be explained by an anticompetitive motive.

For the assessment of market power, the role of access to any particular data in the success of a service must be empirically scrutinized rather than assumed.

28 Rubinfeld & Gal, "Access barriers to big data," *Ariz. L. Rev.* 59 (2017): 339.

29 Riordan & Williamson, "Asset specificity and economic organization," *International Journal of Industrial Organization* 3.4 (1985): 365-378.

30 See for example the literature on boundary resources in Ghazawneh & Henfridsson, "Balancing platform control and external contribution in third-party development: the boundary resources model," *Information Systems Journal* 23.2 (2013): 173-192 and Eaton et al., "Distributed tuning of boundary resources: the case of Apple's iOS service system," *MIS Quarterly: Management Information Systems* 39.1 (2015): 217-243.

Similarly, in light of the diverse possible explanations for a particular conduct on a complex online platform, alleged harm should be demonstrated or at least properly described in a way that allows empirical scrutiny. Assuming harm from an alleged anticompetitive motive assigned to a specific conduct simply is not good practice in cases of such complex assessments.

V. CONCLUSION

Data has taken center stage in the regulatory scrutiny of platforms. Yet, many of the assertions regarding the role it plays in solidifying market power and in marginalizing businesses from fair competition are based on generalizations that have not been tested empirically. Much of the anxiety surrounding data rich business models may in fact stem from new value generation (and rent) for sectors of the economy that can use cutting edge technology and commercial know-how to collect, process, and deliver information in useful ways. Yet, thus far regulators have been unreceptive to examining the synergies and efficiencies generated by online platform technologies and business organization. Taking into account such efficiencies is necessary to better identify genuine anticompetitive behavior. Condemning practices without a proper assessment may only interfere with the optimal development of promising technologies to the long-term detriment of business' users and businesses. A better understanding of value creation in the context of data driven competition might both help focus enforcement and invigorate traditional businesses to develop the re-orientation they need for long-term success.

