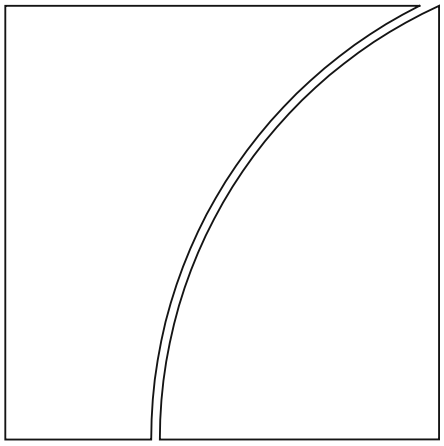

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by Linda Jeng, Jon Frost, Elisabeth Noble and Chris Brummer

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Consumer Financial Data and Non-Horizontal Mergers

March 2025

Authors: Linda Jeng, Jon Frost, Elisabeth Noble and Chris Brummer[1]

Abstract

This article explores the potential competitive implications of non-horizontal mergers where they involve extensive consumer data, including consumer financial data. As data become increasingly central to firm strategy, mergers between data-rich firms, while potentially leading to positive outcomes, can also create market power in ways not entirely accounted for by traditional antitrust theory. The article considers some of these implications. It introduces new metrics for valuing data sets held by merging firms that could help competition authorities evaluate market impacts more effectively. The article then suggests potential tools to mitigate anti-competitive effects of data-rich mergers. It advocates for further research to adapt competition policy to data-centric mergers, all with a view to maintaining open, innovative and competitive markets in the digital and data economy.

Keywords: antitrust, competition, big data, vertical mergers, non-horizontal mergers, big tech, data sharing, data concentration, data aggregation, financial services, data privacy, consumer financial data, open banking, open data, open finance, personal data, economics of data

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[1] The views expressed here are those of the authors and do not necessarily reflect those of the Bank for International Settlements (BIS), European Banking Authority (EBA), or any other affiliated institution. Examples from individual firms are used for illustration and should not be construed as a formal legal opinion about these specific cases. The authors wish to thank Carolina Abate, Oscar Borgogno, Ross Buckley, Pablo Ibáñez Colomo, Scott Farrell, Vikram Haksar, Daryl Lim, Philipp Paech, Noah Phillips, Matteo Mannino, Laura Veldkamp, participants of research seminars at the BIS and the UK Financial Conduct Authority (FCA), and an anonymous reviewer for their invaluable feedback. We thank George Sakkopoulos for research assistance and editorial support, Giulio Cornelli, Cecilia Franco and Haiwei Cao for data support, and Karla Patricia Ramirez Sanchez and Alessia Tortato for editorial support.
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I. Introduction: Economics of Data and Mergers in the Payments Sector

Mergers are among the most consequential economic transactions in the financial marketplace. They allow firms to diversify and spread risk across different revenue streams or to strengthen their positions in specific markets. They also provide an alternative for firms seeking to scale or move directly into new industry segments and markets where they have little prior expertise or resources.

Globally, merger and acquisition (M&A) deals set a record in 2021 with 62,590 transactions, passing $5 trillion USD in total deal value (breaking the 2007 record of $4.2 trillion).[2] In 2022, total deal value fell to $3.63 trillion—much lower than the previous year, but still surpassing the 2017 ($3.44 trillion) and 2020 ($3.42 trillion) totals.[3] (2023 saw a further decline as global M&A deal volumes failed to break the $3 trillion mark for the first time in a decade).[4]

Mergers fall into two main categories: (1) horizontal and (2) non-horizontal.[5] Horizontal mergers involve two competing firms that produce and sell the same products and are generally presumed to reduce competition. Non-horizontal mergers, meanwhile, involve firms that operate at different points along the supply chain or in complementary sectors.[6]

Because non-horizontal mergers do not directly reduce competition in the same market, they have traditionally received less scrutiny.[7] However, this is changing as access to data

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[2] Niket Nishant & Niket Nishant, *Global M&A Volumes Hit Record High in 2021, Breach $5 Trillion for First Time*, REUTERS, Dec. 31, 2021, https://www.reuters.com/markets/us/global-ma-volumes-hit-record-high-2021-breach-5-trillion-first-time-2021-12-31/.

[3] *Id.*

[4] Emily Rouleau, *ANALYSIS: Despite Q4 Boost, 2023 M&A Deal Volumes Disappoint*, BLOOMBERG, Jan. 9, 2024, https://news.bloomberglaw.com/bloomberg-law-analysis/analysis-despite-q4-boost-2023-m-a-deal-volumes-disappoint

[5] OECD, OECD GLOSSARY OF STATISTICAL TERMS (2008), https://www.oecd.org/en/publications/oecd-glossary-of-statistical-terms_9789264055087-en.html. Non-horizontal mergers are a catch-all category that covers mergers with elements of vertical integration, conglomerate effects, or both, and may also contain elements of horizontal integration. Non-horizontal mergers and theories of harm are discussed in a context particularly relevant for this paper in the OECD 2023, *Theories of Harm for Digital Mergers*, 293 (2023), www.oecd.org/daf/competition/theories-of-harm-for-digital-mergers-2023.pdf. For a definition of vertical and conglomerate mergers (together referred to as "non-horizontal mergers"), *see* Commission Communication Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings, 2008 O.J. C 265/6, paras. 4–5, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52008XC1018%2803%29.

[6] OECD Glossary, *supra* note 5.

[7] Steven C. Salop, *Invigorating Vertical Merger Enforcement*, 127 Yale L.J. 1962 (2018), and *see generally*, U.S. DEP'T OF JUSTICE, *Merger Guidelines* § 4.0 (1984) ("Although non horizontal mergers are less likely than horizontal mergers to create competitive problems, they are not invariably innocuous.").

and technological capabilities are shown to increasingly impact competition across the digital and data economy.[8]

Business models have evolved to harness data to customize the marketing and distribution of products and services to consumers.[9] And many large merging firms collect (or have access to) vast amounts of data on their customers as part of their respective business models. Moreover, many seek to acquire data-rich firms such as data aggregators, with a view to deepening or expanding consumer data pools across sectors and segments, leading to more non-horizontal mergers.

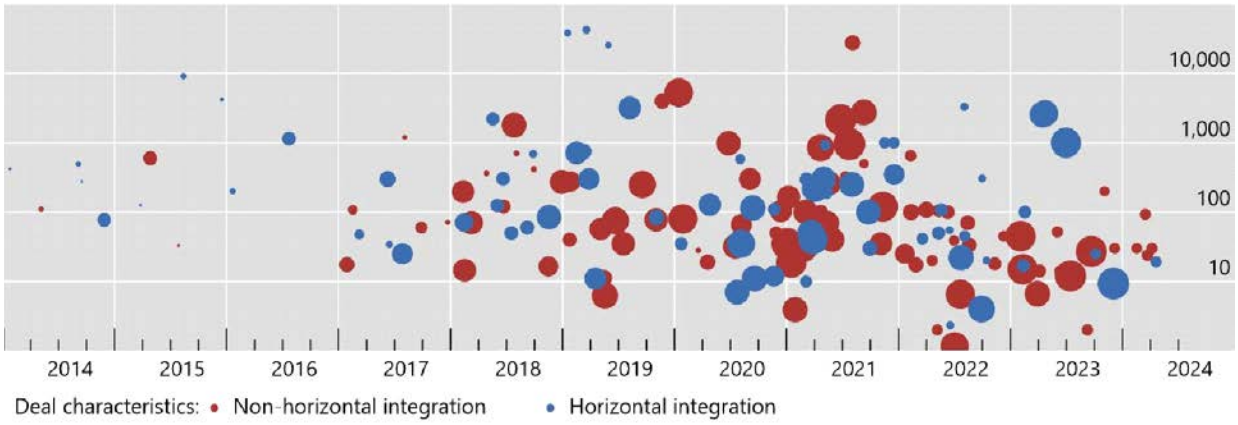
To get a sense as to the rise of data-driven non-horizontal mergers, it is instructive to consider payments sector merger transactions over the last decade (Graph 1). During this period, the largest mergers (by purchase price) have been horizontal (i.e., deals in which a direct competitor is acquired in the same market) (blue dots). Yet non-horizontal mergers (red dots) increased significantly in frequency, size, as well as value of the acquirer. Moreover, non-horizontal mergers included the very largest acquirers (dot size). We thus see that there is an uptick in non-horizontal mergers between payment and non-payment firms.

[8] UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT, Assessment of Dominance or Significant Market Power, U.N. Doc. UNCTAD/DITC/CPLP/54 (2021), https://unctad.org/system/files/official-document/ciclpd54_en.pdf

[9] Indeed, such is the market power that can be derived from data access that, in some jurisdictions, policy measures have been promulgated to mandate, with the express consent of consumers, the flow of certain types of data from the original holder to a potential competitor. 'Open banking' initiatives are one such example, to facilitate the flow of payment accounts and other data from banks to third party firms – typically financial technology firms (fintechs). The aim is often to reduce switching costs and enhance competition. *See* BASEL COMMITTEE ON BANKING SUPERVISION, *Sound Practices: Implications of fintech developments for banks and bank supervisors* (Bank for International Settlements, Feb. 2018), https://www.bis.org/bcbs/publ/d431.pdf and Paul Adams, Stefan Hunt, Christopher Palmer and Redis Zaliauskas, *Testing the effectiveness of consumer financial disclosure: Experimental evidence from savings accounts*, 141 J. FIN. ECON. 1 (2021).

Graph 1. Merger Transactions in the Payments Sector Have Proliferated

Purchase price in millions of US dollars, logarithmic scale



Data up to 30 May 2024.

Each dot represents a merger transaction by Ant Financial, Fidelity National Information Services (FIS), FISERV, Global Payments, Mastercard, PayPal, Block (formerly Square) or Visa as collected by PitchBook and Refinitiv Eikon. This excludes divestitures and intra-firm operations.

Merger transactions are classified as "non-horizontal" when the acquiring firm and the target firm operate at different stages along the same payment chain, as determined by firm reports. In "horizontal" mergers, the acquiring and target firms are direct competitors in at least one key business line.

The height of dots refers to the purchase price, and the size of dots to the value of the acquiring firm. The size of each dot is proportional to the acquiring firm's market capitalization on the day of the deal or, in the case of Ant Financial, the valuation of Ant Financial as of end-2018, multiplied by changes in the market capitalization of Alibaba Holdings relative to end-2018. Sources: BIS; PitchBook Data, Inc.; Refinitiv Eikon; authors' elaboration.

Importantly, non-horizontal mergers in the payments sector are not inherently problematic. In some instances, they can drive efficiency, innovation, and even better consumer services.[10] For example, in some circumstances mergers might allow firms to offer financial services in ways that are better integrated, and which offer seamless user experience and lower costs. This is especially the case where mergers combine complementary capabilities, such as payment processing and data analytics. Meanwhile, in other cases, mergers might heighten financial inclusion by enabling firms to leverage more diverse data sources to understand and serve clients hailing from traditionally excluded segments of the population.[11]

But non-horizontal mergers (whether in the payments sector or otherwise) may not always contribute positively to society or markets—and in some cases, they can cause anti-

[10] *See* Merger Guidelines, *supra* note 7, § 4.0.

[11] *See* BASEL COMMITTEE ON BANKING SUPERVISION, *supra* note 9, and Karen Croxson, Jon Frost, Leonardo Gambacorta & Tommaso Valletti, *Platform-Based Business Models and Financial Inclusion: Policy Trade-Offs and Approaches*, 19 J. COMPETITION L. & ECON 75 (2023).

competitive effects. As we discuss in more detail below, mergers enable highly targeted marketing, price discrimination, and predictive analytics that rivals without access to similar data cannot match. Consumer data can grant a unique competitive advantage that can lead to anti-competitive outcomes, as the merged entity might prevent other firms from accessing necessary data, limiting innovation and raising barriers for market entry.[12]

Regulators are already anticipating these challenges by directing regulatory rulemaking towards unlocking data portability and promoting open banking.[13] In many jurisdictions, competition and financial regulatory authorities viewed the age-old bank practice of keeping customer data to themselves as a hindrance against competition.[14] To increase competition in the banking sector, many jurisdictions now require banks to share customer data with external parties when the customer has given permission. However, in this paper, we look more broadly to consider the potential competitive effects of data access via mergers and offer potential metrics to enhance how these effects can be assessed and mitigated.

The paper is organized as follows. Part II examines the ways in which data aggregation influences market power, highlighting how access to consumer data can enhance

[12] *See* OECD Glossary, *supra* note 5.

[13] *See generally* OPEN BANKING (Linda Jeng ed., 2022). The European Union (and the United Kingdom, a former Member State of the EU) have implemented the Revised Payment Services Directive (PSD2) which aims to increase competition in the payments sector and improve consumer protection by, among other things, establishing a new framework to facilitate access to payment accounts data. *See* EU's Directive 2015/2366 of the European Parliament and of the Council of 25 November 2015 on Payment Services in the Internal Market, 2015 O.J. (L 337) 35 and the UK's Payment Services Regulations 2017, SI 2017/752 (UK). In the EU, a new legislative proposal to facilitate the sharing of certain other types of financial data (Proposal for a Regulation of the European Parliament and of the Council on a framework for Financial Data Access and amending Regulations (EU) No 1093/2010, (EU) No 1094/2010, (EU) No 1095/2010 and (EU) 2022/2554 COM/2023/360 final (FIDA)) was announced by the European Commission in June 2023. The United States recently joined the ranks of jurisdictions requiring data-sharing by banks. On October 22, 2024, the Consumer Financial Protection Bureau finalized its Personal Financial Data Rights Rule. *See* Consumer Financial Protection Bureau, Final Rule, Required Rulemaking on Personal Financial Data Rights, 89 Fed. Reg. 90838 (Nov. 18, 2024) (to be codified at 12 C.F.R. pts. 1001, 1033), and the Press Release, Consumer Fin. Prot. Bureau, CFPB Finalizes Personal Financial Data Rights Rule to Boost Competition, Protect Privacy, and Give Families More Choice in Financial Services (Oct. 22, 2024), https://www.consumerfinance.gov/about-us/newsroom/cfpb-finalizes-personal-financial-data-rights-rule-to-boost-competition-protect-privacy-and-give-families-more-choice-in-financial-services/.

[14] For instance, in 2016 the United Kingdom Competition and Markets Authority (CMA) published a market investigation report entitled *Retail Banking market investigation: Final report*, which concluded, among others, that in order to address adverse effects on competition within the lending industry in Great Britain and Northern Ireland an integrated package of remedies should be imposed in which a set of measures targeted at enhancing small-medium enterprises access to information would be provided. *See* COMPETITION & MARKETS AUTHORITY, *Retail Banking Market Investigation*: Final Report (Aug. 9, 2016) https://assets.publishing.service.gov.uk/media/57ac9667e5274a0f6c00007a/retail-banking-market-investigation-full-final-report.pdf and CMA, The Retail Banking Market Investigation Order 2017 (Feb. 2, 2017), https://assets.publishing.service.gov.uk/media/5893063bed915d06e1000000/retail-banking-market-investigation-order-2017.pdf.

competitive positioning through personalized offerings, price discrimination and innovation. Part III provides examples of current approaches to the assessment of data-driven mergers and data-based theories of harm by citing mergers reviewed by competition authorities in the United States (US) and European Union (EU). Part IV proposes new metrics to assist regulators better assess whether merged data sets could lead to anti-competitive practices and consumer harm, and highlights measures of data complementarity, population coverage, and consumer overlap. Part V then concludes by offering recommendations for future research and policy development.

II. Potential Impact of Data Access on Competition

To understand how data-driven mergers potentially reshape competition, it is crucial to examine the unique economic features of data. In this part, we summarize these features and explore several ways in which data can impact competition considerations. Unlike traditional assets, data are non-rival. In other words, as long as the data remain valid, they can be reused and recombined without losing value.[15] This flexibility, combined with advancements in data analytics and artificial intelligence (AI), enables firms to extract new, valuable insights that can drive market advantage. Recognizing these economic features of data explains why data are such a powerful asset and why the role of data in non-horizontal mergers warrants greater scrutiny.[16]

a. Economic Features of Data

Data are a critical economic input. They enable firms to derive insights into market dynamics, optimize operations, and innovate. Their centrality stems from their particular qualitative features, alongside the technological advancements that have made them increasingly accessible and valuable.[17] Among them, over recent decades, the availability of data has exploded as the product of technological trends. First, the costs of collecting and storing data, facilitating the digitization of everyday economic and social activities

[15] Charles I. Jones & Christopher Tonetti, Nonrivalry and the Economics of Data, 110 Am. Econ. Rev. 2819 (2020). Of course, the notion that data are non-rival had been discussed previously. For one example, see Hal Varian, *Artificial Intelligence, Economics, and Industrial Organization*, in Ajay K. Agrawal, Joshua Gans, and Avi Goldfarb (eds), *The Economics of Artificial Intelligence*: An Agenda, University of Chicago Press (2018).

[16] For a discussion of how firms use data in today's economies to create value and compete, see Directorate-General for Competition, EC, *Protecting Competition in a Changing World – Evidence on the Evolution of Competition in the EU During the Past 25 Years: COMP.PA01 – Ex-Post Economic Evaluation of Competition Policy,* (Jul. 1, 2024), https://op.europa.eu/en/publication-detail/-/publication/c03374f1-3833-11ef-b441-01aa75ed71a1.

[17] For an overview, *see generally,* Joseph E. Stiglitz, *Information and the Change in the Paradigm in Economics*, 92 AM. ECON. REV. 460 (2002). *See also* Yan Carriere-Swallow & Vikram Haksar, *The Economics and Implications of Data: An Integrated Perspective* (International Monetary Fund Departmental Paper No. 2019/013, Sept. 2019), https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2019/09/20/The-Economics-and-Implications-of-Data-An-Integrated-Perspective-48596.

have fallen significantly as technology more generally has advanced.[18] Second, advances in artificial intelligence and machine learning (AI/ML) are making it easier to quickly process large amounts of data to extract greater value.[19] These technological advancements have driven many of the most valuable publicly-traded firms to include data collection and processing as key components of their highly profitable business models.[20]

The economic features of data further amplify their value. Non-rivalry distinguishes data from traditional inputs like labor, capital, or natural resources, which are inherently rival.[21] Moreover, data are inherently decomposable and possess recombinant properties: they can be combined with other datasets to create entirely new datasets with different economic value, offering unparalleled opportunities for innovation.[22]

There is extensive literature on the economics of information and the importance of information access in competition.[23] The sharing of information (or lack thereof) determines which parties have access to information and which do not.[24] These information asymmetries can provide market advantages. Thus, reducing information asymmetries can lead to greater competition and market efficiency.[25] Moreover, the economic value of data can grow. This economic value is derived from two primary economic functions of data – as inputs into the production of a good or service and as information shifters across economic agents.[26]

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[18] Maryam Farboodi, Roxana Mihet, Thomas Philippon & Laura Veldkamp, *Big Data and Firm Dynamics* (Jan. 14, 2019) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3334064. They authors emphasize that marginal costs of data collection are very low where data are generated as a byproduct of economic activity.

[19] *See generally* Ajay Agrawal, Joshua Gans & Avi Goldfarb, PREDICTION MACHINES: THE SIMPLE ECONOMICS OF ARTIFICIAL INTELLIGENCE (2018). For a consideration of AI in mergers, see Directorate-General for Competition, EC, *Competition in generative AI and virtual worlds* (Klaus Kowalski, Cristina Volpin & Zsolt Zombori eds., Sept. 23, 2024), https://op.europa.eu/en/publication-detail/-/publication/5530c8ca-7a1f-11ef-bbbe-01aa75ed71a1/language-en.

[20] In their October 2020 quarterly report filed with the U. S. Securities and Exchange Commission, Alphabet (the parent firm for Google Inc.) reported advertising revenues of $37.1 billion—generated by the firm's data-driven ad targeting services—making up about 80% of total revenues. *See* Press Release, Alphabet, Inc., Alphabet Announces Second Quarter 2020 Results (July 30, 2021), https://www.sec.gov/Archives/edgar/data/1652044/000165204420000031/googexhibit991q22020.htm.

[21] Jones & Tonetti, *supra* note 15.

[22] Carriere-Swallow & Haksar, *supra* note 17.

[23] *See generally,* Stiglitz*, supra* note 17 and Carriere-Swallow & Haksar, *supra* note 17.

[24] Data sharing can be particularly complex in the case of platforms that match two distinct groups of customers in so-called two-sided markets. Here, information from one side of the market (e.g., users) may be quite relevant to the other side (e.g., merchants). *See* Jean-Charles Rochet & Jean Tirole, *Two-Sided Markets: A Progress Report*, 37 RAND J. ECON. 645 (2006).

[25] Juliane Begenau, Maryam Farboodi & Laura Veldkamp, *Big Data in Finance and the Growth of Large Firms*, 97 J. MONETARY ECON. 71 (2018) and see also Rochet & Tirole, supra note 24.

[26] Carriere-Swallow & Haksar, *supra* note 17.

b. Potential Competition Effects of Data Sharing

The utility of data for any given firm or data user will not be universal. Instead, it will be context-dependent and vary by industry, especially in the case of non-horizontal mergers.[27] Based on a general survey of economic literature, we identify four potential effects that data access may have on competition. This list is not exhaustive but illustrates how data access and data aggregation can affect market power and competition.

i. Improved Services and Products

Mergers of data-rich firms that enhance the pooling of data can create useful opportunities to enhance efficiency and social welfare.[28] For example, greater access to data about a client may allow a firm to offer more convenient, personalized products that meet the client's needs more effectively. Moreover, the use of merged sets of complementary consumer data may enable extremely accurate predictions of consumer financial behavior. Such predictions may allow the post-merger entity to offer new, more tailored, and better priced financial products and services to consumers, such as investment advice. This may then facilitate better availability of products and services, and choice for consumers.

As a further example, improved data access from different sources may facilitate more accurate assessments of creditworthiness, potentially enabling the better servicing of traditionally underserved market segments.[29] This may result in greater differentiation of credit pricing, which would benefit borrowers with low credit risk, while meaning higher rates for riskier borrowers. Frost et al (2019) show that an Argentine big tech lender can

[27] For instance, in some markets, data brokers collect information from alternative sources to create outputs for clients, such as digital consumer profiles for ad targeting. Neumann et al (2019) show that, despite the sophistication of the methods used these, can be quite inaccurate and economically unattractive. *See* Nico Neumann, Catherine E. Tucker & Timothy Whitfield, *Frontiers: How Effective Is Third-Party Consumer Profiling? Evidence from Field Studies*, 38 Mktg. Sci. 6 (2019). Conversely, for consumer credit, Jagtiani and Lemieux (2019) find that the use of alternative data from non-traditional sources helps to predict loan default. The use of such data allowed some borrowers to obtain lower priced credit. How the combination of different datasets will work in practice thus depends on specificities of the industry and dataset in question. *See* Julapa Jagtiani & Catherine Lemieux, *The Roles of Alternative Data and Machine Learning in FinTech Lending: Evidence from the LendingClub Consumer Platform*, 48 Fin. Mgmt. 1009, 1009–29 (2019), https://doi.org/10.1111/fima.12295.

[28] Indeed, in view of these potential benefits, some jurisdictions, such as the EU and the UK, have brought forward specific policy measures to facilitate the sharing of personal data at the request of customers (i.e., open banking). These measures have helped to open up the financial services sector to new entrants, including fintechs and big techs. These new entrants are now competing with banks all along the financial services value chain, notably payments. *See* BASEL COMMITTEE ON BANKING SUPERVISION, *supra* note 9.

[29] Zhiguo He, Jing Huang & Jidong Zhou, *Open Banking: Credit Market Competition When Borrowers Own the Data* (NBER Working Paper No. w28118, 2020), https://ssrn.com/abstract=3735686.

use data from its e-commerce platform to more accurately predict default and serve borrowers who were excluded from bank credit.[30]

ii. Market Dominance and Price Discrimination

Despite these possible advantages, mergers of data involve classic concerns of concentrations of economic power. As economies become increasingly data-driven, there is growing research establishing how the aggregation of new combinations of consumer data (potentially via new data sharing policies and practices) can convey competitive advantage.[31] Data aggregation does not in itself lead to more market power; the type of data aggregated must be considered in the context of the relevant market, which – in itself – can be ill-defined.[32] Yet features of a market, such as differential access to technological capabilities and network effects, combined with data access, may result in enhanced market power. There is also research on how open finance and data protection regulations can shape competition because these regulations dictate what personal data can and cannot be shared and under what conditions.[33]

Crémer, de Montjoye, and Schweitzer (2019) argue that access to data is a crucial competitive factor in the modern digital economy.[34] Accordingly, they raise the question: is data access being implemented in a way that supports sufficient competition? Recent research indicates that in markets that are already highly concentrated, mergers can lead to greater data concentration, which can lead to greater price discrimination.[35] Firms with data that are not available to competitors can have a strategic advantage. In particular, a firm with a dominant market position that acquires consumers' personal data can use this information advantage to implement differential pricing strategies that extract consumer surplus.[36] For instance, firms can charge customers different prices for the same product

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[30] Jon Frost, Leonardo Gambacorta, Yi Huang, Hyun Song Shin & Pablo Zbinden, *BigTech and the changing structure of financial intermediation*, 34 ECON. POL. 100 (2019).

[31] *See* Jens Prüfer & Christoph Schottmüller, *Competing with Big Data*, 69 J. INDUSTRIAL ECON. 4 (2021); Jan Eeckhout & Laura Veldkamp, *Data and Market Power* (NBER Working Paper, May 2022), https://www.nber.org/papers/w30022.

[32] *See* Jacques Crémer, Yves-Alexandre de Montjoye & Heike Schweitzer, *Competition Policy for the digital era* (EC Report, 2019), https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf. *See also* Carriere-Swallow & Haksar, *supra* note 17; Croxson et al., *supra* note 11.

[33] Garrett A. Johnson, Scott K. Shriver & Samuel G. Goldberg, *Privacy & Market Concentration: Intended & Unintended Consequences of the GDPR* (Working Paper, Nov. 14, 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3477686; and Crémer et al., *supra* note at [27].

[34] Crémer et al., *supra* note at [27].

[35] *See generally* Ariel Ezrachi & Maurice E. Stucke, *The Rise of Behavioural Discrimination*, 37 EUR. COMPETITION L. REV. 484 (2016); Oren Bar-Gill, *Algorithmic Price Discrimination: When Demand Is a Function of Both Preferences and (Mis)Perceptions*, 86 U. CHI. L. REV. 217 (2019).

[36] *See* Ezrachi & Stucke, *supra* note 35. They argue that data-based "behavioral discrimination" has the potential to complement perfect price discrimination strategies by using personalized emotional cues to influence consumer preferences.

based on the customers' different levels of willingness to pay. Access to big data can help firms to better understand the preferences of their customers and to better price risk (including credit risk).[37]

Generally, greater insights into user preferences can enhance efficiency and allow for better tailoring of financial products to consumers and businesses. However, it can be a double-edged sword, as this information can also help firms to extract rents from their clients.[38] This is well known in other sectors. Comparison websites for air travel may charge customers different prices depending on various data points that correlate with their willingness to pay.[39] For instance, Orbitz, a popular flight comparison website was found to charge higher prices to Mac users who tend to have higher incomes than PC users.[40] Airlines in lower-income countries, such as Peru and Nepal, have histories of charging higher-priced fares to foreign consumers who are likely to be richer and more willing to pay.[41] Of course, one can argue that charging consumers from higher-income countries more than consumers from lower-income countries allows for more inclusive access to the product. But it undoubtedly means greater profits for such firms, and the ability to expand further.

Turning to the financial data, firms could leverage data access to refine charges prices for financial services, such as loans or insurance policies, so that they are close to the reservation price of consumers (i.e., the highest fee at which consumers would be willing to buy the service, or the highest interest rate they are likely to accept). This would erode consumer surplus. And in financial sectors that already have concentrated market structures, this could allow incumbent firms to grow larger.

iii. Foreclosure

A data access advantage may also deny rival firms access to the new combined data, and thus the ability to enter or compete in markets (i.e., foreclosure). Indeed, firms in finance with big data technologies have been increasing in size relative to their peers.[42] If they can use their market power to limit data access, they can make markets less contestable.

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[37] *Id*.
[38] *See* Oren Bar-Gill, *Algorithmic Price Discrimination: When Demand Is a Function of Both Preferences and (Mis)Perceptions*, 86 U. CHI. L. REV. 217 (2019).
[39] For current and past examples, *see* Rick Vecchio, *LATAM abandons discriminatory fare policy for foreign visitors to Peru*, PERU TRAVEL BLOG (August 25, 2023), https://www.fertur-travel.com/blog/2017/latam-reportedly-abandoning-discriminatory-fare-policy-for-foreign-visitors-to-peru/13372/; Rastriya Samachar Samiti, *Agreement inked for equal airfare for foreigners as Nepali*, HIMALAYAN TIMES (Feb. 23, 2022), https://thehimalayantimes.com/nepal/agreement-inked-for-equal-airfare-for-foreigners-as-nepali.
[40] *See* Dana Mattioli, *On Orbitz, Mac Users Steered to Pricier Hotels*, WALL ST. J. (Aug. 23, 2012), https://www.wsj.com/articles/SB10001424052702304458604577488822667325882.
[41] *See* Vecchio *supra* note 39 and Samachar Samiti *supra* note 39.
[42] Begenau et al., *supra* note 25.

As an example, the mergers of Mastercard/Finicity and American Express/Kabbage involved financial data aggregators.[43] These non-horizontal mergers illustrate the potential data scaling effects from cross-sector mergers. Typically, credit card networks do not have access to their customers' bank account data, but they are rich in customer transaction data. Meanwhile, data aggregators have direct access to customers' bank accounts.[44] As already noted, combining these two highly complementary types of data can yield a more complete understanding of customers' financial lives when both data sets are about the same customers, and can be applied to strengthen market positions. After such mergers, they may also have an incentive not to make such information available to competitors in any of the (merged) firm's business lines.

iv. Impediments to Innovation

Access to combined complementary data sets can raise concerns around impediments to innovation. Several recent merger cases involving data in different industries underscore how regulators may frown on such developments. While combined consumer health data may enable the development of more accurate diagnostic tools, merged entities may want to prevent competitors from accessing such data. They may thus restrict access to data relative to the pre-merger situation. For instance, in Google/Fitbit (technology and health data), the EC found that, post-merger, Google would have the ability and potential incentive to restrict access by third-party healthcare players to Fitbit's web-based application programming interface (API). Notwithstanding that "in general terms, user health data [were] available from a number of data sources, the user data of Fitbit's users [were] only available through the Web API." Therefore, potential restrictions or limitations could negatively affect providers of apps and websites that had capitalized on (even small amounts of) Fitbit users' data to compete. Losing access to such data can prevent these providers from innovating and diversifying digital healthcare data.[45]

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[43] Data that were previously held only by banks are now shared with fintechs, which are later acquired by other incumbent non-banks. These post-merger entities now have access to consumer data collected from different industries. Visa also attempted to acquire a data aggregator, but the transaction was abandoned after the DOJ filed a lawsuit to block it. The DOJ had evidence of anticompetitive behavior, including the CEO of Visa calling the acquisition an "insurance policy" to block a "threat to our important U.S. debit business." *U.S. sues Visa to block its acquisition of Plaid*, REUTERS (Nov. 5, 2020), https://www.reuters.com/article/us-visa-lawsuit-plaid-idINKBN27L26S.

[44] For instance, credit card firms collect granular data on all credit card transactions, including the purchaser, merchant, item purchased, point of sale and timestamp, etc. On the other hand, financial data aggregators collect different but also granular data about customers' bank accounts and any account linked to their bank accounts, including savings accounts, investment accounts, children's accounts, etc. Data aggregators have views of amounts in each financial institution account, bank account routing numbers, and transactions involving the account.

[45] *See* Google/Fitbit, Case M.9660 (2020).

A merged entity with access to combined data sets—and innovation capabilities—that are incomparable to those available to other market participants, may also diminish and potentially foreclose the ability of other market participants to develop new products and services. For example, an incumbent may acquire a startup's data set to prevent the data from being used by the startup or others. This risk is less about leveraging data aggregation for increased market power and more about foreclosing competition by eliminating access to data. A decline in innovation has been a particular concern of the US Federal Trade Commission (FTC) in the biopharma industry, which saw a wave of "mega buyouts." The FTC has since announced a sweeping review of its approach to biopharma mergers.[46] The concern is that that these mergers may be "killer acquisitions," where the acquirer buys a target to prevent it from becoming a competitive threat. Studies have found that the research and development (R&D) output of the combined firms decreases post-merger even though 70% of new drugs still come from small firms.[47]

Taking an example from the financial sector, a large incumbent financial institution may acquire new fintech entrants to block or stifle these firms' activities.[48] This was underlined in the failed acquisition of Plaid by Visa in 2020. The U.S. Department of Justice (DOJ), in its civil suit to block the acquisition, argued that Visa was attempting to acquire Plaid, a fintech startup, because it was challenging its monopoly in online debit services.[49] Central to the DOJ's challenge were statements made by Visa's CEO on the threat Plaid posed to Visa's US online debit business—or at least the threat that Visa thought Plaid posed to its business.[50] Although Visa had planned to maintain Plaid as an independent firm,[51] its CEO's statements were incriminating, and the parties terminated the agreement in the face of a likely loss in court.[52] [53]

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[46] Eric Sagonowsky, *In wake of biopharma mega buyouts, FTC kicks off review of industry's deal-making*, FIERCE PHARMA (Mar. 16, 2021), https://www.fiercepharma.com/pharma/wake-biopharma-megabuyouts-ftc-kicks-off-review-industry-s-dealmaking.

[47] *Id*.

[48] *See* Colleen Cunningham, Florian Ederer, and Song Ma, *Killer Acquisitions*, 129 J. POL. ECON. 649 (2021).

[49] Press Release, U.S. Dep't of Justice, Justice Department Sues to Block Visa's Proposed Acquisition of Plaid (Nov. 5, 2020), https://www.justice.gov/opa/pr/justice-department-sues-block-visas-proposed-acquisition-plaid.

[50] *Id*. ("Visa's CEO justified the deal to Visa's Board of Directors as a 'strategic, not financial' move, and noted that in part because 'our US debit business i[s] critical and we must always do what it takes to protect this business.' Unless acquired, Visa feared that Plaid 'on their own or owned by a competitor [was] going to create some threat' with a 'potential downside risk of $300-500M in our US debit business' by 2024. If Plaid remained free to develop its competing payment platform, then 'Visa may be forced to accept lower margins or not have a competitive offering.'").

[51] Benjamin Pimentel, *The failed Visa merger was a lucky break for Plaid*, PROTOCOL (Jan. 19, 2021), https://www.protocol.com/plaid-visa-deal.

[52] For examples of "killer acquisitions' in the EU, see Marc Ivaldi, Nicolas Petit and Selcukhan Ünekba, *Killler Acquisitions: Evidence from EU Merger Cases in Digital Industries*, Working Paper 1420 Toulouse School of Economics (March 2023).

[53] Note that the DOJ filed another civil antitrust lawsuit against Visa on September 24, 2024, for monopolizing US debit markets. According to the DOJ's complaint, "more than 60% of debit transactions run on Visa's debit network, allowing it to charge over $7 billion in fees each year for processing those

Alternatively, competition could be stifled in a situation where the incumbent firm forgoes developing its own innovation because of its new business acquisition.[54] An illustrative example can be seen in the European Commission's (EC) statement of objections to Adobe regarding the proposed acquisition of Figma, where Adobe was anticipated to discontinue its interactive product design tool (and possible future iterations) in view of that provided by Figma.[55] This proposed merger was ultimately abandoned.

c. Privacy Externalities

Although beyond the scope of traditional competition policy, many economists have argued that the benefits of data access should be weighed against privacy externalities.[56] The combination of such data sets may allow for deep and intrusive insights into

transactions... Visa debit is core to its North American business, where Visa enjoys operating margins of 83%." U.S. Dep't of Justice Complaint, In the Matter of Visa, Inc. (Sept. 24, 2024), https://www.justice.gov/opa/media/1370421/dl. In the DOJ's press release, Principal Deputy Assistant Attorney General Doha Mekki, commented that "Visa abuses its power over its customers and buys off would-be rivals at the expense of American consumers, merchants, banks, and the competitive process itself. Today's lawsuit holds Visa accountable for its conduct in a market that forms the backbone of American commerce." Press Release, U.S. Dep't of Justice, Justice Department Sues Visa for Monopolizing Debit Markets (Sept. 24, 2024), https://www.justice.gov/opa/pr/justice-department-sues-visa-monopolizing-debit-markets.

[54] *See, e.g.,* Gregory Crawford, Tommaso Valletti & Cristina Caffarra, *'How tech rolls': Potential competition and 'reverse' killer acquisitions*, CEPR BLOG (May 11, 2020), https://cepr.org/voxeu/blogs-and-reviews/how-tech-rolls-potential-competition-and-reverse-killer-acquisitions.

[55] Press Release EC, Commission sends Adobe Statement of Objections over proposed acquisition of Figma (Nov. 16, 2023), https://ec.europa.eu/commission/presscorner/detail/en/ip_23_5778.

[56] A rich literature on the economics of privacy has studied the theory and empirics of individual preferences for privacy. For an overview, *see* Alessandro Acquisti, Curtis Taylor & Liad Wagman, *The Economics of Privacy*, 54 J. ECON. LITERATURE 442 (2016). Together with health data, personal financial data are amongst the most sensitive categories of personal data. This is why, in many cases, such data are subject to specific legal and regulatory treatment. For example, in the US, financial data protections are governed primarily by the Gramm-Leach-Bliley Act, 15 U.S.C. §§ 6801 et seq., which requires financial institutions to explain how they share data and provide the customer with a right to opt-out (please note that in 2024, the US Consumer Financial Protection Bureau finalized its Personal Financial Data Right rule (also known informally as the open banking rule). *See* fn. [11]). In the EU, the use of personal data is subject to strict controls under the General Data Protection Regulation (GDPR), Regulation (EU) 2016/679. Moreover, consumer financial data are becoming increasingly central to the digital economy, driving many economic activities. Consumer financial data can include very granular information on behavior, relationships, locations, and preferences. The generation of such consumer financial data is prolific and ubiquitous, but consumers may want their data to be used only for specified purposes. There may be substantial costs and damage to consumers if private information is either not properly protected or is used beyond the consumer's original consent.

consumers' personal lives which can give rise to data privacy concerns.[57] As such, privacy considerations are not entirely outside the purview of competition authorities.[58]

As seen in the tech sector, access to personal data on users from several different business lines (search, social media, e-commerce, advertising) and advanced data analytics techniques can erode privacy.[59] Firms such as Microsoft, Google, Meta (formerly Facebook), X (formerly Twitter), YouTube (acquired by Google in 2006), and others, can accurately predict which types of news articles or commercial products an individual wants to see and to promote them accordingly. Such capabilities can provide customized services and products to customers, which improve economic benefits. But these insights may be relevant not only to the individuals who share the data, but also to other consumers (e.g. contacts on social media, or individuals whose interests or behaviors are similar). This creates an externality, as the choice of one user to share data can thus affect the privacy of other users. It can enable the data holder (the BigTech) to learn from these insights and entrench its market power.[60]

III. Approaches to Considering Consumer Data in Merger Assessments: An Overview of the United States and the European Union

In light of the increasing relevance of data-based considerations in mergers, competition authorities are adapting their approaches and, in some cases, enhancing their scrutiny of mergers involving data-rich firms. Here, we provide an overview of the approaches to date in two major legal jurisdictions: the US and the EU.

a. US – Approaches of the Federal Trade Commission & the Department of Justice

Responsibility for enforcing federal antitrust and competition laws in the US is generally shared by the FTC and DOJ (collectively, "the US Agencies").[61] Either of the two US Agencies can take legal action to block transactions whose effect, in the agency's view,

[57] Note that addressing privacy externalities is about more than simply limiting the collection and use of personal data. It is also about being intentional in determining which types of data can be used, shared with whom, and for what purposes. This paper does not go into depth on these issues, which would warrant a separate paper.

[58] See, e.g., EC, *Competition Policy Brief* (Apr. 2024), https://competition-policy.ec.europa.eu/document/download/b0042baf-a258-4c31-b31a-6331cb8d54a2_en?filename=kdak24001enn_competition_policy_brief_non-price_merger-control.pdf.

[59] Gregory Vial, Julien Crowe & Patrick Mesana, *Managing Data Privacy Risk in Advanced Analytics*, MIT Sloan Mgmt. Rev. (June 11, 2024), https://sloanreview.mit.edu/article/managing-data-privacy-risk-in-advanced-analytics/.

[60] *See* Daron Acemoglu, *Harms of AI* (NBER Working Paper 29247, Sept. 2021), https://www.nber.org/papers/w29247; Daron Acemoglu, Ali Makhdoumi, Azarakhsh Malekian & Asuman Ozdaglar, *Too Much Data: Prices and Inefficiencies in Data Markets*, 14 AM. ECON. REV. MICROECONOMICS 218 (2022).

[61] *See* 15 U.S.C. § 18a (Hart-Scott-Rodino Act).

"may be substantially to lessen competition."[62] Although the US Agencies have overlapping jurisdictions, they have developed expertise in different segments of the economy. For example, the FTC focuses on "health care, pharmaceuticals, professional services, food, energy, and certain high-tech industries like computer technology and Internet services."[63] The DOJ, in turn, generally focuses on banking, savings and loan institutions, airlines and telecommunications.[64]

Concerns around the use of data have come up in several cases.[65] For example, in 2011, the DOJ cleared Google's acquisition of airfare software firm ITA,[66] subject to several conditions.[67] The DOJ was concerned about the potential harm to competition for airfare comparison and booking websites. It raised questions about the continued ability of websites using ITA's software to compete against any airfare website that Google might introduce. Especially relevant here was the concern that Google, through the acquisition of ITA, would have access to competitors' proprietary data and deny them access to ITA's software. Note that the DOJ did not explicitly mention that this proprietary data included *consumer data*, such as flights purchased, etc.

In 2014, the FTC challenged the merger of the insurance analytics firm Verisk and the aerial imaging firm EagleView. The deal was ultimately abandoned.[68] The data at the heart of the FTC's complaint were aerial images of consumer homes, which could be combined with insurance information about the same consumers. The FTC's concern was that Verisk could use the data to overcome barriers to entry in the relevant market.[69]

More recently, in 2022, the DOJ along with state attorneys general of New York and Minnesota sued to block the acquisition of Change Healthcare, a healthcare technology

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[62] *See* 15 U.S.C. § 18 (Section 7 of the Clayton Act).
[63] *See The Enforcers*, FTC.GOV, https://www.ftc.gov/advice-guidance/competition-guidance/guide-antitrust-laws/enforcers.
[64] *See* U.S. Gov't Accountability Office, *DOJ and FTC Jurisdictions Overlap, but Conflicts Are Infrequent*, at 7-8 (Jan. 2023), https://www.gao.gov/assets/gao-23-105790.pdf.
[65] *See, e.g.,* United States v. CVS Health Corp., 407 F. Supp. 3d 45 (D.D.C. 2019); FTC Decision and Order, In the Matter of CoreLogic, Inc., (May 20, 2014), http://www.ftc.gov/system/files/documents/cases/140521corelogicdo.pdf.
[66] Final Judgment, United States v. Google, Inc. and ITA Software, Inc., No. 1:11-cv-00688 (D.D.C. Oct. 5, 2011), https://www.justice.gov/d9/atr/case-documents/attachments/2011/10/05/275897.pdf.
[67] The conditions included requiring Google to develop and license travel software, continue software R&D, submit to mandatory arbitration under certain circumstances, provide for a formal reporting mechanism for complainants if Google acts in an unfair manner, and establish internal firewalls. *Id.* at 13-32.
[68] FTC Order Dismissing Complaint, In the Matter of Verisk/EagleView (Dec. 19, 2014), https://www.ftc.gov/system/files/documents/cases/141219veriskeaglevieworder.pdf.
[69] FTC Administrative Complaint, In the Matter of Verisk/EagleView (Dec. 16, 2014), https://www.ftc.gov/system/files/documents/cases/141216veriskcmpt.pdf.

firm, by Optum, a subsidiary of the healthcare conglomerate UnitedHealth Group.[70] They alleged the acquisition would give UnitedHealth Group (UHG), which owned the largest health insurer in the country, UnitedHealth, access to its competitor insurers' healthcare claims data and, thus, give the merged entity an unfair advantage in health insurance markets.[71] The court dismissed this theory, holding UHG already had at least some access to data of its competitors that were customers of UHG's subsidiary Optum.[72] The court also held that UHG had incentives not to abuse its competitors' data, stating that UHG "would have to uproot its entire business strategy and corporate culture; intentionally violate or repeal longstanding firewall policies; flout existing contractual commitments; and sacrifice significant financial and reputational interests."[73] Further, the court opined that the DOJ had provided no "real-world evidence that UHG's rivals are likely to innovate less out of fear that UHG will misuse their data" and, in fact, "all the payer witnesses," which included employees from competitors Aetna, Cigna, and Anthem, "testified to just the opposite."[74]

The court concluded that the DOJ's theory "rest[ed] on speculation rather than real-world evidence." It dismissed the DOJ's argument given that "[g]overning law requires the Court to 'mak[e] a prediction about the future'" and that "that prediction must be informed by 'record evidence' and a 'fact-specific showing' as to the proposed merger's likely effect on competition."[75, 76]

[70] United States v. UnitedHealth Grp. Inc., 630 F. Supp. 3d 118 (D.D.C. 2022), *dismissed*, No. 22-5301, 2023 WL 2717667 (D.C. Cir. Mar. 27, 2023). Note that this discussion focuses only on the vertical theories of harm presented in this case.
[71] *UnitedHealth*, 630 F. Supp. 3d at 131.
[72] *See id.* at 141-52.
[73] *Id.* at 141.
[74] *See id.* at 141, 151.
[75] *Id.* at 141 (quoting United States v. AT&T, Inc., 310 F. Supp. 3d 161, 190-92 (D.D.C. 2018)).
[76] Less relevant to the described vertical theories of harm but interesting to note: Change Healthcare after becoming part of Optum, suffered a major data breach in February 2024 – the largest cyberattack so far on the US healthcare sector. As a provider of eligibility verifications, pharmacy operations, claims transmittals, payment services, etc., Change Healthcare was processing 15 billion health care transactions annually, touching 1 in every 3 patient records, for 900,000 physicians, 33,000 pharmacies, 5,500 hospitals and 600 laboratories. In its survey of over 1000 hospitals, the American Hospital Association found that 94% of hospital surveyed responded that they were financially impacted (many of which struggled to make even payroll obligations). 74% reported direct impact on patient care, including delays in authorizations for medically necessary care. *See* American Hospital Association, Letter to the Honorable Jason Smith and Honorable Richard Neal (March 19, 2024); https://www.aha.org/lettercomment/2024-03-20-congress-urged-help-hospitals-impacted-change-healthcare-cyberattack. This data breach has led to a number of federal investigations and class action lawsuits. *See*, Brendan Pierson, *Class action lawsuits pile up over UnitedHealth data breach*, Reuters (March 13, 2024); https://www.reuters.com/legal/class-action-lawsuits-pile-up-over-unitedhealth-data-breach-2024-03-13/.

Meanwhile, the US Agencies had adopted the Horizontal Merger Guidelines in 2010 ("2010 HMG")[77] and the Vertical Merger Guidelines in 2020 ("2020 VMG").[78] However, in September 2021, the FTC voted to withdraw from the 2020 VMG, arguing that the 2020 VMG reflected a "flawed approach."[79] In response, the DOJ issued a statement that it had "identified several aspects of the guidelines that deserve close scrutiny" and that it would "work closely with the FTC to update" the guidelines.[80] In July 2023, the US Agencies released for public consultation a draft of their new Merger Guidelines,[81] which were finalized in December 2023.[82] The new Merger Guidelines replaced both the 2010 HMG and 2020 VMG in their entirety.

While data are discussed in various parts of the Merger Guidelines, the US Agencies do not specify methodologies to assess the potential effects of post-merger data combinations on market power and consumer welfare. Data are mentioned in several parts in Section 4 on "analytical, economic, and evidentiary tools" that the US Agencies will "follow… as they apply the factors and frameworks discussed" in the substantive part of the Guidelines but there is no reference to consumer data.[83] Data are not discussed beyond Section 4, but Guideline 9 does mention platforms.[84]

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[77] U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, *Horizontal Merger Guidelines* (2010).

[78] U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, *Vertical Merger Guidelines* (2020).

[79] Press Release, Federal Trade Comm'n, Federal Trade Commission Withdraws Vertical Merger Guidelines and Commentary (Sept. 15, 2021), https://www.ftc.gov/news-events/news/press-releases/2021/09/federal-trade-commission-withdraws-vertical-merger-guidelines-commentary. *But see* Carl Shapiro & Herbert Hovenkamp, *How Will the FTC Evaluate Vertical Mergers?*, PROMARKET (Sept. 23, 2021), https://www.promarket.org/2021/09/23/ftc-vertical-mergers-antitrust-shapiro-hovenkamp/. They argue that the economic analysis in the FTC statement and in Chair Khan's separate statement ignores or improperly dismisses some fundamental principles of economics.

[80] Press Release, U.S. Dep't of Justice, Justice Department Issues Statement on the Vertical Merger Guidelines (Sept. 15, 2021), https://www.justice.gov/opa/pr/justice-department-issues-statement-vertical-merger-guidelines.

[81] More specifically, the Draft Merger Guidelines proposes to depart from the traditional "market dominance" tests to different tests of "lessening competition." Press Release, Fed. Trade Comm'n, FTC and DOJ Seek Comment on Draft Merger Guidelines (July 19, 2023), https://www.ftc.gov/news-events/news/press-releases/2023/07/ftc-doj-seek-comment-draft-merger-guidelines; Press Release, U.S. Dep't of Justice, Justice Department and FTC Seek Comment on Draft Merger Guidelines (July 19, 2023), https://www.justice.gov/opa/pr/justice-department-and-ftc-seek-comment-draft-merger-guidelines.

[82] U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, *Merger Guidelines* (2023).

[83] *See* U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, *Merger Guidelines* 35-51 (2023).

[84] Note that when a merger involves a multi-sided platform, "the Agencies consider competition *between* platforms, competition *on* a platform, and competition to *displace* the platform." Under Guideline 9, the Agencies state that, amongst other things, they "protect competition between platforms by preventing the acquisition or exclusion of other platform operators that may substantially lessen competition or tend to create a monopoly, a "scenario" which "can arise from various types of mergers," including: "Mergers that involve firms that provide other important inputs to platform services can enable the platform operator to deny rivals the benefits of those inputs. For example, acquiring data that helps facilitate matching, sorting, or prediction services may enable the platform to weaken rival platforms by denying them that data." U.S. DEP'T OF JUSTICE & FED. TRADE COMM'N, *Merger Guidelines* 25 (2023).

b. European Union – Approach of the European Commission

In the EU, the basis for competition policy is Articles 101 and 102 of the Treaty on the Functioning of the European Union (TFEU).[85] Competition policy can be enforced by the national competition authorities in the Member States and by the EC.[86] The majority of enforcement cases are brought by national authorities,[87] with the EC focusing on more complex novel and strategic issues and industries, including those in digital markets.[88]

In the context of merger assessments, the EC will consider any relevant potential sources of competitive harm,[89] including on innovation.[90] Regarding data, the EC will assess not only the potential use to which a merged entity may put combined data, but also what data access other market participants would or would not have to compare their competitive positions. The EC will consider the positive and negative impacts of a merger on competition.[91] An assessment will be carried out on a case-by-case basis to determine: (i) whether the merged entity would have the *ability* to access or deny access to, or to use that data, in a way that could cause competitive harm (i.e. input foreclosure) or do other things that would cause competitive harm, and (ii) whether the merged entity would have any *incentive* to take actions that would cause competitive harm. If both (i) ability and (ii)

[85] Consolidated Version of the Treaty on the Functioning of the European Union arts. 101-02, 2012 O.J. (C 326) 47.
[86] *See* Council Regulation (EC) 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty (now TFEU, arts. 101-02).
[87] Wouter P.J. Wils, *Ten Years of Regulation 1/2003: A Retrospective*, 4 J. EUR. COMPETITION L. & PRAC. 293 (2013). More generally, an evaluation of Regulation 1/2003 is set out in EC, *Staff Working Document, Evaluations of Regulations 1/2003 and 773/2004* (SWD 2024 216 FINAL), https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13431-EU-antitrust-procedural-rules-evaluation_en.
[88] For a discussion of the practices and sectors to which the EC has devoted resources, *see* PABLO IBÁÑEZ COLOMO, THE NEW EU COMPETITION LAW (2023).
[89] Mergers are assessed by the EC in accordance with the EU Merger Regulation (Regulation (EC) No 139/2004). More specifically, the EC is required to assess whether a (resulting) market concentration would significantly impede effective competition as a result of the creation or strengthening of a dominant position in the common market or a substantial part of it. Council Regulation (EEC) No 4064/89 defines a dominant position as "situation where one or more undertakings wield economic power which would enable them to prevent effective competition from being maintained in the relevant market by giving them the opportunity to act to a considerable extent independently of their competitors, their customers and, ultimately, of consumers." The EC has issued guidance on how it approaches the assessment of horizontal and non-horizontal mergers: Guidelines on the assessment of horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2004/C 31/03); Guidelines on the assessment of non-horizontal mergers under the Council Regulation on the control of concentrations between undertakings (2008/C 265/07). In both cases, the EC assessment normally entails: (a) the definition of the relevant product and geographic markets; and (b) the competitive assessment of the merger.
[90] *See, e.g.*, EC, *Commission Notice on the definition of the relevant market for the purposes of Union competition law (Revised Market Definition Notice)*, C/2024/1645, pars 15, 23, 27, 30, 48, 50), https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:C_202401645.
[91] Crémer et al., supra note at [27].

incentive are demonstrated, the EC may decide to clear the merger subject to conditions, or otherwise block the merger.

One illustration of the EC's approach to data in mergers is its assessment of the acquisition of WhatsApp by Facebook in 2014.[92] A key question was whether Facebook would use WhatsApp user data to strengthen Facebook's advertising business. The EC cleared the merger unconditionally on the basis that: (i) it would be technically difficult to match the data sets, (ii) there were strong competitors in online advertising, (iii) the privacy policy of WhatsApp would need to change, and (iv) users could switch to competitors. Similarly, in its Microsoft/LinkedIn decision in 2016,[93] the EC took into account the impact of data pooling and found no foreclosure concern because data were available to competitors that could be used for relevant purposes, such as advertising.

In 2020, the EC approved the Google/Fitbit transaction,[94] with specific conditions and commitments, including requiring third-party data access through an API. Interestingly, the EC took a long view on the potential for anti-competitive impacts in the nascent market for digital healthcare that could comprise many different products and services. It assessed that preserving the potential for data access by third parties was important to protect the potential for innovation in this sector. It stated at paragraph 529 of its decision that "the restriction or interruption of third-party access to the [API] would negatively affect providers of apps and websites across the digital healthcare spectrum, including start-ups and small players that, under current access conditions, would capitalise even on relatively small amounts of Fitbit users' data to compete and contribute to innovation and diversification of the digital healthcare sector."

The EC also followed this approach in its Meta/Kustomer decision of 2022, as a result of which Meta committed to ensure rivals continue to have free and comparable access to messaging channels.[95] The EC distinguished the situation from Microsoft/LinkedIn, observing at paragraph 451 of its decision that, among other factors, "… the potential foreclosure of LinkedIn data for rivals of Microsoft … would only, if at all, [have been] relevant for two sub-segments … that together accounted for less than 30% of the entire [Customer Relationship Management (CRM)] software market. In the present case, foreclosure could harm the entire market for customer service and support CRM software

[92] Facebook/WhatsApp, Case M.7217 (2014).
[93] Microsoft/LinkedIn, Case M.8124 (2016).
[94] Google/Fitbit, Case M.9660 (2020).
[95] Meta/Kustomer, Case M.10262 (2022). For an overview of the EC's recent merger control cases as a contribution to digital transition and a strong and resilient Single Markets, see EC, *Report on Competition Policy, 2022*, § 4.1, COM/2023/184, https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:52023DC0184.

… due to the disproportionately important role of small CRM providers in driving innovation on the market."

Typically, the EC has considered the impact of data aggregation in one market and not beyond that specific market. But more dynamic approaches to possible foreclosure effects can be increasingly observed. Indeed, so-called "ecosystem"[96] or "leveraging" theories of harm are being increasingly discussed by the EC and national competition authorities in the EU.[97] For example, in the acquisition of LinkedIn by Microsoft,[98] there was concern that Microsoft may use its position in operating Windows and in providing productivity software (e.g., MS Office, Word, Outlook, PowerPoint, etc.) to strengthen LinkedIn's position in professional social networks—i.e., in multiple product markets.[99] This theory of harm demands an assessment of complementarity of data to assess the capacity to cause anti-competitive harms across different product markets. A similar approach was adopted in the EC's assessment of the Booking/eTraveli transaction, which illustrates that, in today's digital economy, fewer transactions are purely horizontal, vertical, or conglomerate in nature.[100]

Notwithstanding the increasingly proactive approach in both the EU[101] and the US towards examining the value of data in mergers, and the imposition of conditions or remedies to address issues,[102] data-based theories of harm remain an underdeveloped area globally. In particular, the consideration of the value of data across product markets, and the emergence of "ecosystem"-based theories of harm – i.e., theories that, at their core, concern mergers

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[96] Cristina Caffarra, Matthew Elliott & Andrea Galeotti, *'Ecosystem' Theories of Harm in Digital Mergers: New Insights from Network Economics, Part 1*, VOXEU (June 5, 2023), https://cepr.org/voxeu/columns/ecosystem-theories-harm-digital-mergers-new-insights-network-economics-part-1 and Cristina Caffarra, Matthew Elliott & Andrea Galeotti, *'Ecosystem' Theories of Harm in Digital Mergers: New Insights from Network Economics, Part 2*, VOXEU (June 6, 2023), https://cepr.org/voxeu/columns/ecosystem-theories-harm-digital-mergers-new-insights-network-economics-part-2.

[97] *See, e.g.,* Bundeskartellamt, *Merger Control in the Digital Age – Challenges and Development Perspectives* (Background Paper, Sept. 29, 2022), https://www.bundeskartellamt.de/SharedDocs/Publikation/EN/Diskussions_Hintergrundpapiere/2022/Working_Group_on_Competition_Law_2022.pdf.

[98] Microsoft/LinkedIn, *supra* note 93.

[99] *See Id.*

[100] For a summary see EC, *Competition Merger Brief* (Nov. 2024), https://competition-policy.ec.europa.eu/document/download/6650bd11-bab7-43e4-bb38-6696ab4a730a_en?filename=kd0124010enn_mergers-brief_2024-4.pdf (discussion of Booking/eTraveli (M.10615)).

[101] For further information on the EC's assessment of data in merger investigations, *see* EC, *Merger Enforcement in Digital and Tech Markets: an Overview of the European Commission's Practice* (Competition Policy Brief, Issue 02/2022, § 1.3.).

[102] For instance, regarding data segregation, data access, APIs and interoperability, data portability and, as a last resort, divestitures. For a discussion of the proportionality of remedies, *see* Herbert Hovenkamp, *Structural Antitrust Relief Against Digital Platforms* (U. of Penn, Inst. for Law & Econ. Rsch. Paper No. 23-44, 2024), https://ssrn.com/abstract=4616175.

involving ecosystems not just specific markets – are still relatively nascent[103, 104] and competition authorities may lack formal metrics to assess the complementarity of data in merger reviews. Moreover, the need for, and capabilities of, competition authorities to focus on the impact of mergers on innovation capacity is subject to increasing focus in some jurisdictions.[105]

IV. Proposed Metrics to Assess Complementarity of Data Sets in Non-Horizontal Mergers

In grappling with data aggregation considerations, competition authorities typically lack formal metrics to assess the complementarity of data sets in merger reviews. Creating heuristics can be fraught with challenges. Currently, competition authorities rely on a series of metrics to assess the market shares and pricing of merging firms. They use these tools to judge whether a merger would hinder effective competition in a relevant market. These metrics can be broadly categorized into: (i) market share-based approaches, (ii) price-based approaches, and (iii) alternative approaches (see the Annex for an overview of metrics). These existing metrics, especially Herfindahl-Hirschman Index (HHI), were mostly developed for horizontal mergers and are not as well-suited for assessing non-horizontal mergers where market shares and prices refer to different markets and are hence not directly comparable.[106]

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[103] *See* Croxson et al., *supra* note 11. For an interesting discussion of the challenges in assessing foreclosure theories of harm in complex algorithmic and digital markets, *see* EC, *Competition Merger Brief* (Sept. 2024), https://data.europa.eu/doi/10.2763/7278586 (discussion of Amazon/iRobot (M.10920)).

[104] Ecosystems can have interconnections across multiple product and service lines that may help to entrench the position and strength of certain merger participants. For an example of where ecosystem impacts were considered in competition assessments, see, the 2019 decision of the Bundeskartellamt which considered extensively Facebook's terms of use, arguing that they could lead to exploitative abuse of users via the 'take it or leave it' approach to consent to data collection and use by Facebook in return for access to social media services. *See generally* Bundeskartellamt, *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. On 4 July 2023, the EU Court of Justice issued its judgment in Case C-252/21, *Meta Platforms and Others*, upholding the German Federal Cartel Office's decision and confirming that national competition authorities can review whether data processing is in accordance with applicable law (in this case, the GDPR), in establishing if an abuse of a dominant position had taken place. The EU Court of Justice underscored the need for consultation and sincere cooperation between different national authorities in sharing information that may be relevant to their respective spheres of competence.

[105] *See,* for example, Mario Draghi, *The future of European competitiveness,* (Sept. 2024), https://commission.europa.eu/topics/strengthening-european-competitiveness/eu-competitiveness-looking-ahead_en. The report highlights at Part B, Section 2, Chapter 4, that "[arts. 101 and 102 of] the Treaty are already worded broadly enough to allow the Commission to account for innovation and future competition in its decisions, what is needed is a change in operating practices and updated guidelines … [including to] explain how the authority assesses the impact of competition on the incentive to innovate.".

[106] *See* the Annex for an overview of existing metrics available to competition authorities. For more reading about the development of metrics, one can start with: Herbert J. Hovenkamp, *Competitive Harm from Vertical Mergers* (Working Paper, 2020), https://scholarship.law.upenn.edu/faculty_scholarship/2218https://scholarship.law.upenn.edu/faculty_schol

Moreover, these existing metrics do not apply easily in assessing the value of consumer financial data and other data when two large data sets are combined. Consumer financial data can include very granular and sensitive information on individuals' behavior, relationships, locations, and preferences. For example, a full record of an individual's digital transactions, including both income and spending, can allow for highly accurate prediction of where the individual lives and works, where they are likely to spend money, how price-sensitive they are when buying specific products, their relationships with family members, and much more.

As discussed above, when a credit card network acquires a fintech firm that specializes in data aggregation, the merged entity may enjoy the market power to increase prices (e.g., merchant discount rates for merchants accepting payments). But this may not be the most important anti-competitive effect of the merger. More important could be the ability to combine data sets to better assess a consumer's creditworthiness, to market financial products in line with their tastes and past purchases, or even to sell them non-financial products and services (i.e., ecosystem effects). Strictly speaking, this effect may not be anti-competitive but stems from value extraction from the data (potentially to the detriment of the consumer).

This particular market outcome would be most evident where both firms possess data on large and overlapping portions of the same population, thereby giving the new entity an unmatched ability to analyze, predict, and influence consumer behavior. In and of itself, this may not be anticompetitive—and could even enhance services for customers—but it could create an unbreachable barrier disadvantaging other firms without similar data access.

Additionally, data can be monetized in novel ways that may not be clear to authorities or even to the firms themselves at the time that a merger deal is announced, raising any number of policy questions. Impacts may be felt within and beyond the original market.

Assessing the value or significance of proprietary (personal) data held by firms can thus constitute an important step in merger reviews, and methodologies relating to how to do so are increasing. A recent study by Veldkamp (2022) distinguishes between six broad approaches to valuing data.[107] These are summarized in Table 1. While data assets are not explicitly included on firms' balance sheets or financial reporting, there are a range of

arship/2218/; and with: Toby Roberts, *When Bigger is Better: A Critique of the Herfindahl-Hirschman Index's Use to Evaluate Mergers in Network Industries*, 34 Pace L. Rev. 894 (2014); available at: https://digitalcommons.pace.edu/plr/vol34/iss2/8/.

[107] *See* Laura Veldkamp, *Data Policy and Data Measurement*, *in* TECHNOLOGY AND FINANCE 53 (Darrell Duffie, Thierry Foucault, Laura Veldkamp, and Xavier Vives eds., 2022).

measures to assess how much a certain data set (for instance, customer financial data) is worth to a firm.

According to Veldkamp (2022), at the most basic level, one can (in some cases) observe how much a firm paid for a data set ("cost approaches"). Yet this may not capture the value of data generated by ongoing business activities (such as offering credit cards or engaging in screen-scraping to access a consumer's banking data). Other approaches include assessing how revenues change after acquiring the data ("revenue approaches"), or how certain firm actions are decided after a data set is acquired ("choice covariance"). Public job posting or wage data can allow researchers to look at firms' "revealed preferences," i.e., how much value they attach to having workers who can perform important data processing tasks. Finally, one can assess changes in the value of the firm (such as Tobin's Q —the ratio between market and book value of a firm) or in other outcomes after data are acquired ("intangible capital approaches").[108] In the financial sector, such outcomes could include forecast errors, returns, or the price impact of trades ("financial data approaches"). However, competition authorities typically lack direct policy guidance on how to take account of data-based considerations in merger assessment.

[108] Nicolas Crouzet, Janice C. Eberly, Andrea L. Eisfeldt & Dimitris Papanikolaou, *The Economics of Intangible Capital*, 36 J. ECON. PERSPECTIVES 29, 29 ("Intangible capital is generally defined by what it lacks—that is, as productive capital that lacks a physical presence. Familiar and important examples include patents, software and databases, trademarks, customer lists, franchise agreements, and organization capital and firm-specific human capital.")

Table 1: Overview of Metrics to Assess the Value of Data

Metric	Description	Required data
Cost approaches	The cost of data purchased by firms from other firms likely underestimates the value of data generated as a by-product of business activities	Expenditures on data by firms
Revenue approaches	The additional revenue that a firm can generate by using certain data	Revenues of firms
Choice covariance approaches	The ability of actors to choose actions that co-vary with desired outcomes or measures of success	Firm actions and outcomes
Revealed preference approaches	Indicators of the share of wages paid to data workers, or to workers versus data owners	Job postings and wages
Intangible capital approaches	Indicators of the value of data as an intangible asset on the balance sheet of a firm, e.g., the change in Tobin's Q after data are acquired	Equity and book values of firms
Financial data approaches	Indicators of the value of data sets to financial firms, e.g., to reduce forecast errors, increase returns or reduce the price impact of trades	Forecast errors, returns, price impact of trades

Source: Veldkamp (2022).[109]

a. Data on the Same Consumers

i. *Metric: Measuring Complementarity*

Once the value of data sets is estimated—ideally both individually and aggregated—authorities can better assess whether proprietary data sets are *complementary*, and whether combining them proves to have anticompetitive effects. Indeed, the value of an acquiring firm may rise after a merger deal, and some of this may reflect an additional competitive advantage derived from combined consumer financial data sets. Although firms may

[109] *See* Laura Veldkamp, *Data Policy and Data Measurement*, *in* TECHNOLOGY AND FINANCE 53 (Darrell Duffie, Thierry Foucault, Laura Veldkamp, and Xavier Vives eds., 2022).

emphasize "synergies", "creat[ing] more value for consumers and businesses" or an "easy and efficient way" to transact "digitally in one place,"[110] aggregated user data sets could indeed contribute to higher markups and competitive advantages over competitors that do not have access to similar data resources.

For the purposes of this proposed metric, proprietary data sets are complementary if the value of the combined data sets is greater than the sum of the value of the two data sets held separately. Formally, this can be expressed as:

$$V_C > V_A + V_B$$

where V_A is the (dollar) value of the data held at firm *A* (an acquiring firm), V_B is the value of data at firm *B* (the acquired firm), and V_C is the value of data when held jointly, by one firm without any restrictions on the use of data.

Such complementarity is particularly likely when personal data are collected about the same individuals. Indeed, if firm A collects information on a specific person and firm B collects other types of data on the same person, firms A and B can share and combine their information for a more comprehensive picture of the subject person. If firms A and B merge, then (depending on the competitive position of other market participants and their respective access to data), the combined entity may be able to use the combined data to gain market dominance, engage in price discrimination, impede innovation or cause other competitive harms. Similar concerns can also arise when data are about different individuals, whose data may help predict the behavior of one another. The next sub-sections consider each in turn.

ii. Metric: Share of the Population Covered by the Data Sets

Competition authorities may be interested in the depth of information about the same individuals as well as the number of individuals in the data sets possessed by merging organizations. Thus, one option is to examine the number of individuals in different proprietary data sets should be identified in a merger transaction and shared with the competition authority for consideration prior to its decision on the merger.

Because the size and breadth of consumer data can significantly amplify a firm's market power, competition authorities could assess the total number of individuals whose data is held by each merging firm. By quantifying the number of unique individuals in each firm's

[110] *See* Press Release, Mastercard, Mastercard Extends Open Banking Efforts with Close of Finicity Acquisition (Nov. 19, 2020), https://www.mastercard.com/news/press/2020/november/mastercard-extends-open-banking-efforts-with-close-of-finicity-acquisition/.

data set, regulators would then gain insight into the potential scope of the combined data pool, which could enable highly personalized targeting and stronger competitive positioning.

If each person is a data generating unit in the digital economy, then the aggregate number of persons covered by the data sets would represent each firm's share of a market. This is different than the traditional sense of a market defined by economic activities and measured by revenue; here, instead, the focus is on consumers as economic units of that market. Formally, each firm (A and B) has a share (S) of users (N) – in the overall population (P) of jurisdiction j – about whom they collect financial information:

$$S_{A,j} = N_{A,j}/P_j$$

$$S_{B,j} = N_{B,j}/P_j$$

Here, $S_{A,j}$ is the share of the population about whom firm A has data in jurisdiction j, based on the number of users $N_{A,j}$. $S_{B,j}$ and $N_{B,j}$ are the same for firm B. These shares of the population could already form one useful metric to assess the importance of the merging firms in a jurisdiction.

iii. Metric: Share of the Same Consumers Covered by Different Data Sets

Beyond these population shares, a useful metric may be the share of users of firm B who are also covered in the proprietary data set of firm A, i.e., the "overlap" (O) of the two firms' data sets. This metric could be defined as:

$$O_{A,B,j} = N_{A,B,j}/N_{B,j}$$

where $O_{A,B,j}$ is the overlap (in percent) of users in data held by firms A and B in jurisdiction j. $N_{A,B,j}$ is the number of users in the data set of firm A that are also in the data set of firm B, and $N_{B,j}$ is again the total number of users in the data set of firm B in that jurisdiction.

With these metrics on shares of the population, and shares of overlapping individuals in the data sets of merging entities, the competition authority can assess the competitive position of these entities in terms of their data collection about individuals. Of course, this would need to be complemented by additional information on the type of consumer financial data and other personal data collected, how it would be combined and its predictive power for different purposes, and the position of competitors. Sometimes, two data points (e.g. age and date of birth) may be redundant and the combination of the two

datasets may not give a competitive advantage.[111] Nonetheless, these metrics would be a first-pass tool to pose questions about the potential competitive impact.

b. Data on Similar Consumers

One can extrapolate this approach to the complementarity of data on groups of similar but not the same persons. Persons who share common characteristics may have similar behavior, so different sets of data on similar persons may be just as valuable as different sets of data on the same persons. For example, similar customers are individuals who share similar features, such as the same age group, income bracket, neighborhood, marital status, family situation, etc. Common characteristics could include those listed in Table 2, which is far from exhaustive.

[111] Even so, similar data points could be complementary in some cases, e.g., if they give the data user more assurance that the info is correct. As an example, if a firm knows that a user is 38 years old, but also that they were born on 1 September 1986, they have more certainty that these two pieces of information are correct,

Table 2. Examples of Common Consumer Characteristics for Determining Similar Persons

Categories	Characteristics
Identity	Gender identification Age / date of birth Race Ethnicity
Geography	Street City State Urban vs. rural Transportation used
Education	Education level
Work	Profession Job status: full time, part time, seasonal, etc. Additional jobs
Financial	Salary Other sources of income
Employment	Employed/unemployed Full time/part time Salary/freelance
Purchasing behavior	Brick & mortar stores Store memberships Online shopping sites Account memberships
Bank account (if any)	Checking Savings
Insurance (if any)	Life insurance Non-life insurance (e.g. home, car) Health insurance (coverage, partial coverage or no coverage) Type of health insurance coverage

Property	House/apartment (owned/rented) Automobile Investments
Family	Members of household (number) Marital/partnership status Children
Device usage	Time spent on devices, including smartphones Phone usage/behavior
Interests	Pets Gym membership Social media interests Club memberships Media subscriptions Podcast subscriptions Political affiliation

The more characteristics in common, the more likely it is that the predictions derived from one data set will have a relevance to individuals in the other data set. In other words, if the pool of individuals in a database significantly increases as a result of a merger, more individuals will be included in the data set, which would expose similarities. These similarities, in turn, will make it more efficient to infer future behavior for similar individuals in cross-markets accessed by the merged entity. Moreover, predictions based on one data set, which may include more consumer data points than the other, may be extended to consumers covered by the other data set. This could enhance the competitive advantage of the merged entity to refine the targeting of products and services across the combined pool of consumers.

These characteristics do not lend themselves easily to the creation of metrics. Moreover, there may be privacy concerns in sharing these characteristics – even in the context of an assessment of a merger deal by public authorities. Still, assessing the similarity of individuals in data sets would be an important additional input to understand the impact of a merger deal.

a. Assessing and Addressing Competitive Impact and Potential Harms

The outputs provided by any one of the proposed data metrics above do not necessarily mean that the complementary data sets would lead to the identified competitive effects or

externalities (described in Part II). However, if the data sets are highly complementary, cover a large population and have a high overlap of the same or similar consumers, then enhanced scrutiny of data-rich mergers should be considered by competition authorities. In particular, competition authorities should determine if the combined data sets have the following four characteristics: inimitable, rare, valuable and non-substitutable.[112] In other words, competition authorities should explicitly consider whether the data that merging firms can access could be attained through other means and how valuable they are for the existing business lines (and potentially new business lines) of the merged entity, and whether competitors have similar access.

As these new data metrics could indicate that additional scrutiny could be warranted, there will be questions concerning what could be done after enhanced scrutiny. In a recent paper, Hovenkamp (2024) argues that strictly structural remedies (i.e., "breakup") should be considered only as a last resort as they can lead to greater collateral damage than benefits and can remove choice. Instead, he recommends courts to look at injunctions first and then "quasi-structural" relief such as interoperability decrees.[113] Aligned with these principles, we identify potential tools for addressing anticompetitive effects described in Part II, especially those stemming from information asymmetries. These tools include:

1. *Data access for competition authorities*: competition authorities should request access to the merging entities' data sets to assess the effects of combined sets of data, subject to strong non-disclosure requirements and guardrails such as strict anonymity for consumer data.[114] Privacy-preserving technologies, such as differential privacy could be useful in facilitating data sharing for researchers and authorities to study the data sets without seeing sensitive information. Careful examination would have the added benefit of helping policymakers and agency staff gain experience assessing these novel issues, enhancing their expertise.

2. *Data segregation at the post-merger entity*: a consent decree could, depending on the transaction, require segregation of data sets in the merged entity or divestitures.

[112] *See* Anja Lambrecht & Catherine A. Tucker, *Can Big Data Protect a Firm from Competition?*, CPI ANTITRUST CHRONICLE (Jan. 2017). For example, if a combined card network and fintech firm were able to use data on customers to rapidly scale up credit provision, this may be a sign of anticompetitive effects of the transaction.

[113] Hovenkamp, *supra* note 102.

[114] Competition authorities generally have far-reaching powers to request information from merging entities. Yet big data sets may be difficult to parse in a short period of time, and data may not be in a format that authorities can access. In some cases, it may be necessary for authorities to specify formats in which they need to receive data, to hire data scientists to aid in their assessment and to develop application programming interfaces (APIs) and other tools for secure data exchange. It may also be necessary to bring in expertise of other authorities, including financial regulators and data protection authorities.

The 2011 Google/ITA consent decree provides a useful illustration of data set segregation.[115]

3. *Data portability for consumers*: competition authorities also could require the post-merger entity to provide data portability rights to consumers. (In some cases, this is already mandated by law, e.g. with the EU's General Data Protection Regulation (GDPR) and Digital Markets Act).[116] Giving consumers the power to take their data with them and share their data with other competitors could help to mitigate anti-competitive effects.[117]

More broadly, competition policies and wider regulations can also impact the ability of a merged entity to use data. For example, in some jurisdictions, as a matter of general law or regulation, entities or groups may be subject to limitations on the use of consumer (or other) data.[118] Additionally, the popularity of ChatGPT demonstrates the ease of access for both individuals and firms to AI tools that can analyze ever larger data sets. The algorithms used in large data analytics tools are nascent and, thus, so are their regulation. In the EU, the AI

[115] The consent decree required Google to: (i) establish an internal firewall to protect competitively sensitive data, (ii) license ITA's software to airfare websites on commercially reasonable terms, (iii) continue to invest in R&D of the ITA's software at levels similar to prior years, (iv) establish a formal process for customer and competitor complaints, and (v) agree to monitoring by the government for five years. *See* Final Judgment, United States v. Google, Inc. and ITA Software, Inc., No. 1:11-cv-00688 (D.D.C. Oct. 5, 2011), https://www.justice.gov/d9/atr/case-documents/attachments/2011/10/05/275897.pdf.

[116] In the EU, the right of data subjects to data portability is enshrined in the Regulation (EU) 2016/679 (the General Data Protection Regulation (GDPR)). The obligation on "gatekeepers" to ensure effective data portability under the Digital Markets Act (Regulation (EU) 2022/1925) complements the right to data portability under the GDPR (see recital (59) and Article 6(9)). *See* Tony Ke & K. Sudhir, *Privacy Rights and Data Security: GDPR and Personal Data Markets* (2022), https://ssrn.com/abstract=3643979.

[117] *See generally* Crémer et al., supra note at [27]. *See also* Zee Kin Yeong & David Roi Hardoon, *Taking Your Data With You: Singapore's Approach to Data Portability*, *in* OPEN BANKING (Linda Jeng ed., 2022).

[118] In the EU, there is a *de facto* data segregation for some firms. Regulation (EU) 2022/1925 (the Digital Markets Act) prohibits "gatekeepers" from combining and using data across business lines (Article 5(2)(b)). Additionally, the Act sets out an extensive list of behavioral prohibitions, including those on the cross-use of personal data acquired in the context of providing core platform services with data acquired in the context of the provision of other services and the use, in competition with business users of the platform, of data available to the gatekeeper relating to business users in their use of the platform or regarding customer interactions with the business users. The Act confers on the EC the task to designate specific firms as "gatekeepers". The EC designated six firms as gatekeepers in September 2023: Alphabet, Amazon, Apple (App Store, Safari, and iOS), ByteDance, Meta, Microsoft. *See* Press Release, EC, Digital Markets Act: Commission designates six gatekeepers (Sept. 6, 2023), https://ec.europa.eu/commission/presscorner/detail/en/ip_23_4328. Apple (in the context of the provision of iPadOS), was designated as a gatekeeper in April 2024. *See* Press Release, EC, Digital Markets Act: Commission designates Apple's iPadOS under the Digital Markets Act, (Apr. 28, 2024), https://ec.europa.eu/commission/presscorner/detail/en/ip_24_2363. In May 2024, Booking was also designated as a gatekeeper with respect to its online intermediation service Booking.com. The list of gatekeepers is maintained on the EC's website: https://digital-markets-act.ec.europa.eu/gatekeepers_en. Other policy measures promulgated by the EU with the express intent of improving competition in digital markets *ex ante* include the Digital Services Act (Regulation (EU) 2022/2065), and the Data Act (Regulation (EU) 2023/2854). The advantages and disadvantages of the *ex-ante* approach are beyond the scope of this paper.

Act classifies AI systems on the basis of risks and defines stringent requirements in relation to "high-risk" AI systems, including in the context of creditworthiness assessments.[119] In the US, the Biden Administration issued the "Blueprint for AI Bill of Rights,"[120] but regulation of AI is still in its infancy with only adjacent laws on privacy, security, and anti-discrimination.[121]

To address competitive harms in this space, authorities will need to adopt a multi-faceted approach that considers data regulation and any future regulation specific to AI.[122] How these algorithms are governed or regulated will affect how useful large, combined data sets will be in mergers.

V. Conclusion

As consumer data continue to proliferate and data storage and processing capabilities continue to improve, it is likely that personal consumer data will become increasingly relevant in assessing the competitive impact of mergers in the financial sector and other sectors. Competition authorities have shown a capability and willingness to tackle customer data-related considerations in their investigations and decision-making. Yet, data-based theories of harm are relatively nascent, typically emerging on an ad hoc basis, absent clear legal or policy guidance. Additionally, the metrics currently used by competition authorities may not effectively accommodate issues relating to large data sets at merging firms, particularly those that may be complementary and used for competitive advantage across multiple business and product lines.

In view of these considerations and the limited research literature to date, there is a need for further interdisciplinary research on big data in mergers in both law and economics to inform potential future revisions to competition policy. Further research can help us to understand the effect of complementary data sets on competition and inform cross-disciplinary policy responses. These, in turn, can help to maintain open, innovative and competitive markets in the digital and data economy.

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[119] Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act).

[120] Office of Science & Technology Policy, *Blueprint for an AI Bill of Rights,* https://www.whitehouse.gov/ostp/ai-bill-of-rights/.

[121] Victor Li, *What could AI regulation in the US look like?*, AM. BAR ASS'N (June 14, 2023), https://www.americanbar.org/groups/journal/podcast/what-could-ai-regulation-in-the-us-look-like/.

[122] In the UK, for instance, the Digital Regulation Cooperation Forum brings together the Competition and Markets Authority (CMA), the Information Commissioner's Office (ICO), the Office of Communication (Ofcom), and the Financial Conduct Authority (FCA) to ensure greater regulatory cooperation, particularly given the unique challenges posed by regulation of online platforms.

ANNEX. Overview of Existing Metrics Used to Assess Competitive Positions

Competition authorities rely on a series of metrics to assess the competitive positions of merging firms. They use them as a tool to judge whether a merger would hinder effective competition in a relevant market. These metrics (described in Table 3) can be broadly categorized into: (i) market share-based approaches (yellow), (ii) price-based approaches (green), and (iii) alternative approaches (blue). Notably, these are mostly relevant ones in the context of horizontal mergers, where the merged firm would have a dominant share or demand excessive prices in one market. As can be observed below, these measures are less relevant for non-horizontal mergers, where market shares and prices refer to different markets and are hence not directly comparable.

Table 3. Existing Metrics for Assessing Competitive Positions[123]

Competition Metric	Description	Required data
Herfindahl–Hirschman Index (HHI)	The sum of squares of market shares (in percent) of all firms in a well-defined market	Market shares of individual firms
Dominance test (DT)	A test assessing whether a single firm is dominant in a well-defined market (single firm dominance) or a number of firms are colluding (collective or joint dominance)	Market shares
Significant impediment to effective competition / significant lessening of competition (SLC)	A test to determine whether a merger would significantly impede effective competition by creating or strengthening a dominant position	Market shares and pricing
Hypothetical monopolist test (HMT)	A test to determine whether a market is properly defined, before determining whether a firm has monopoly power	Market shares and pricing
Upward pricing pressure (UPP)	A measure of the upward pressure on prices resulting from the fact that not all consumers will switch to an alternative (lower-price) firm	Diversion ratio and profit margins

[123] These are typically used in the context of horizontal mergers, although some may also be applied singularly or in combination in the context of non-horizontal mergers.

Gross upward pricing pressure index (GUPPI)	An application of the UPP, measuring how much of a firm's profits from lost sales after raising prices are recaptured through a merger	Diversion ratio and profit margins
Small but significant and non-transitory increase in price (SSNIP) test	A test for a relevant market based on the ability of a hypothetical monopolist to raise prices, often defined as a price increase of 5% for at least 12 months	Prices, sales and variable costs
Critical loss analysis	A decrease in sales triggered by a price increase that is just large enough so that a hypothetical monopolist would not impose a price increase of at least that amount	Prices and sales
Lerner Index	A measure of mark-ups, or the difference between the price and a firm's marginal costs	Prices, marginal costs and proxies
Net interest margins	An indicator in the banking sector gauging the difference between interest received on assets (e.g. loans) vs paid on liabilities (e.g., deposits)	Bank income statements
Residual value	A proposed measure to assess the value of network benefits from a given product	Prices, number of users
"Downward innovation pressure" (DIP)	A proposed measure assessing whether post-merger incentives for innovation are lower than those that would prevail in absence of a merger	Measures of innovation output

Source: Authors' summary.

Yellow = market share-based approaches
Green = price-based approaches
Blue = alternative approaches

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