

Introduction

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Data has been conceptualized as the ‘new oil’¹ and although this is a flawed statement, it catches well the high value attached to data as a driver of economic growth and innovation, and as a force of change in all facets of societal life.² The implications of data and data analytics are multiple and some of them can be far-reaching.³ At a micro level, for instance, the value of data changes the traditional relationship between consumers and producers. While in the past, companies sold products to their customers in return for money and some negligible data, ‘[t]oday, transactions – and indeed every interaction with a consumer – produce valuable information. Sometimes the data itself is so valuable that companies such as *Facebook*, *LinkedIn*, *Pinterest*, *Twitter*, and many others are willing to offer free

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For the guidance of the reader, all websites, unless otherwise noted, have been last accessed on 1 July 2020. The book does not address the Covid-19 pandemic.

¹ *The Economist*, ‘The World’s Most Valuable Resource Is No Longer Oil, But Data’, *print edition*, 6 May 2017.

² J. Manyika et al., *Big Data: The Next Frontier for Innovation, Competition, and Productivity* (Washington, DC: McKinsey Global Institute, 2011); J. Manyika et al., *Digital Globalization: The New Era of Global Flows* (Washington, DC: McKinsey Global Institute, 2016); V. Mayer-Schönberger and K. Cukier, *Big Data: A Revolution That Will Transform How We Live, Work, and Think* (New York: Eamon Dolan/Houghton Mifflin Harcourt, 2013).

³ For a brief introduction on big data applications and review of the literature, see M. Burri, ‘Understanding the Implications of Big Data and Big Data Analytics for Competition Law: An Attempt for a Primer’, in K. Mathis and A. Tor (eds), *New Developments in Competition Behavioural Law and Economics* (Berlin: Springer, 2019), 241–263.

services in order to obtain it'.⁴ Data has also become essential in terms of competition and market power. Some firms – like Apple, Google, Amazon, Facebook, Microsoft or Baidu – have had a sizeable first-mover advantage in the field and become 'analytics leaders', while at the same time establishing themselves as some of the most valuable companies in the world, as they benefit from double-sided markets.⁵ The capacity to handle data has increasingly turned into a competitive advantage not only for companies but also for countries and plays out as a power move in the global political economy. For instance, China unveiled in 2016 that it is in possession of the world's fastest supercomputer, which was forty times more powerful than the fastest computer of 2010, only to be overcome by the United States in the following years by two IBM-built supercomputers.⁶ The ongoing battle between China and the US with regard to 5G dominance is equally revealing.⁷ Overall, companies as well as governments are increasingly encouraged to use the potential of data and to mobilize their resources aptly, so as to make the data-driven economy real.⁸

Accordingly, data has emerged as an important topic in contemporary law and policy – on the one hand, because it is critical to understand whether and how different societal areas have been affected by digital transformations, including by recent and disruptive phenomena like big data and artificial intelligence (AI), and on the other hand, because governance toolkits, including legal rules, need to adapt to reflect these implications. Despite the urgency attached to both these tasks and the intensified mobilization of research and policy efforts to address them, the topic of data-driven transformation has been explored in a fragmented manner and with a different depth of enquiry by different social sciences. This is somewhat understandable, as the regulation of data cannot be neatly contained in one policy domain but is affected by multiple, often non-hierarchically organized, regimes of both soft and hard legal nature, in both national and international contexts. The difficulty of pinpointing the regulatory subject matter of 'big data'⁹ and of 'AI'¹⁰ adds another

⁴ N. Henke et al., *The Age of Analytics: Competing in a Data-Driven World* (Washington, DC: McKinsey Global Institute, 2016), at 26.

⁵ Ibid. See Burri, note 3, for reference on double-sided markets.

⁶ www.top500.org/list/2016/06/ and www.top500.org/lists/2019/11/.

⁷ See, e.g., H. Sender, 'US-China Contest Centres on Race for 5G Domination', *Financial Times*, 25 January 2019.

⁸ See, e.g., Manyika et al. (2016), note 2; Henke et al., note 4; J. Bughin et al., *Digital Europe: Pushing the Frontier, Capturing the Benefits* (Washington, DC: McKinsey Global Institute, 2016).

⁹ See, e.g., Mayer-Schönberger and Cukier, note 2; B. van der Sloot, D. Broeders, and E. Schrijvers (eds), *Exploring the Boundaries of Big Data* (Amsterdam: University of Amsterdam Press, 2016).

¹⁰ See, e.g., High-Level Expert Group on Artificial Intelligence, *A Definition of AI: Main Capabilities and Scientific Disciplines* (Brussels: European Commission, 2019). J. Fjeld et al., *Principled Artificial Intelligence: Mapping Consensus in Ethical and Rights-Based Approaches to Principles for AI* (Cambridge, MA: Berkman Klein Center for Internet and Society, 2020);

level of complexity and requires a deep understanding of the existing rules, which often, on their face, do not explicitly refer to data, and even less so to big data or AI, and may often stem from much older regulatory contexts and rationales.

One area of law and policy, which has so far been only marginally explored and has been particularly slow in reacting to digital transformation is trade law. At this juncture, neither do we have a full understanding of the implications of digitization for the entire body of global trade rules, nor do we know how the current set of rules impacts on the conditions for data-driven innovation and on data governance in general. At the same time and crucially, we have not seen any radical legal adaptation, and whatever changes have occurred can be categorized as incremental and limited in their impact, as stemming exclusively from bilateral or regional trade deals. The rules under the multilateral forum of the World Trade Organization (WTO) are still in their state of 1994 and accordingly tailored to regulate trade in tangible goods and brick-and-mortar businesses. To put it plainly, despite living in times of the ‘Fourth Industrial Revolution’, which epitomizes the deep impact of data across all sectors of the economy and the disruptive character of digitization,¹¹ we have trade rules grounded at 1.0.

The increased dependence on data has also brought about a new set of concerns. The impact of data collection and data use upon privacy has been particularly widely acknowledged by scholars and policymakers alike.¹² The risks have only been augmented in the era of big data and AI, which presents certain distinct challenges to the protection of personal data. While the tensions around data and privacy protection have in the beginning been exclusively thematized at the national level, the discourse has gradually received an international¹³ as well as an international

The White House, Draft Memorandum to the Heads of Executive Departments and Agencies: Guidance for Regulation of Artificial Intelligence Applications, Executive Office of the President, 2020; T. Wischmeyer and T. Rademacher (eds), *Regulating Artificial Intelligence* (Berlin: Springer, 2020).

¹¹ L. Floridi, *The Fourth Revolution: How the Infosphere Is Reshaping Human Reality* (Oxford: Oxford University Press, 2014); K. Schwab, *The Fourth Industrial Revolution* (New York: Portfolio, 2017).

¹² See, e.g., P. M. Schwartz and D. J. Solove, ‘The PII Problem: Privacy and a New Concept of Personally Identifiable Information’, *New York University Law Review* 86 (2011), 1814–1894; O. Tene and J. Polonetsky, ‘Big Data for All: Privacy and User Control in the Age of Analytics’, *Northwestern Journal of Technology and Intellectual Property* 11 (2013), 239–273; The White House, *Big Data: Seizing Opportunities, Preserving Values* (Washington, DC: Executive Office of the President, 2014); U. Gasser, ‘Recoding Privacy Law: Reflections on the Future Relationship among Law, Technology, and Privacy’, *Harvard Law Review* 130 (2016), 61–70; S. B. Pan, ‘Get to Know Me: Protecting Privacy and Autonomy under Big Data’s Penetrating Gaze’, *Harvard Journal of Law and Technology* 30 (2016), 239–261.

¹³ See, e.g., C. Kuner, ‘Data Nationalism and Its Discontents’, *Emory Law Journal* 64 (2015), 2089–2098; S. J. Deckelboim, ‘Consumer Privacy on an International Scale: Conflicting Viewpoints Underlying the EU–US Privacy Shield Framework and How the Framework Will Impact Privacy Advocates, National Security, and Businesses’, *Georgetown Journal of International Law* 48 (2017), 263–296.

trade aspect.¹⁴ The reason for this is twofold: first, it has become increasingly evident that cross-border data flows are absolutely essential, particularly in the age of big data, and this is true not only for digital enterprises but also for more conventional businesses like logistics or manufacturing companies.¹⁵ The development of AI is also critically dependent on data inputs¹⁶ and the realization of the data-driven economy, which is high on the agenda of governments around the world, can otherwise be hindered.¹⁷ At the same time, it is a fact that the national regulation of data, with regard to privacy, national security or intellectual property protection, may constitute a significant barrier to trade.¹⁸ ‘Data protectionism’ seems to be on the rise, especially as, post Snowden, states find it necessary to localize different elements of data flows so as to ensure jurisdictional control and enforceability of national rules.¹⁹

Despite the well-founded centrality of the data protection–trade topic, it should be noted that it constitutes merely one piece of the puzzle of data governance²⁰ and

¹⁴ See, e.g., S. A. Aaronson, ‘Why Trade Agreements Are Not Setting Information Free: The Lost History and Reinvigorated Debate over Cross-border Data Flows, Human Rights and National Security’, *World Trade Review* 14 (2015), 671–700; S. Yakovleva, ‘Should Fundamental Rights to Privacy and Data Protection Be a Part of EU’s International Trade “Deals”?’ *World Trade Review* 17 (2018), 477–508; M. Burri, ‘Privacy and Data Protection’, in D. Bethlehem et al. (eds), *The Oxford Handbook on International Trade Law*, 2nd edn (Oxford: Oxford University Press, forthcoming 2021); S. Yakovleva, ‘Privacy Protection(ism): The Latest Wave of Trade Constraints on Regulatory Autonomy’, *University of Miami Law Review* 74 (2020), 416–519.

¹⁵ See, e.g., Manyika et al. (2011), note 2.

¹⁶ See, e.g., K. Irion and J. Williams, *Prospective Policy Study on Artificial Intelligence and EU Trade Policy* (Amsterdam: Institute for Information Law, 2019); A. Goldfarb and D. Trefler, ‘Artificial Intelligence and International Trade’, in A. Agrawal, J. Gans, and A. Goldfarb (eds), *The Economics of Artificial Intelligence: An Agenda* (Chicago: The University of Chicago Press, 2019), 463–492.

¹⁷ Centre for International Governance Innovation (CIGI), *Special Report: Data Governance in the Digital Age* (Waterloo: CIGI, 2018); European Commission, Artificial Intelligence for Europe, COM(2018) 237 final, 25 April 2018.

¹⁸ United States International Trade Commission, *Digital Trade in the US and Global Economies*, Part 1, Investigation No 332–531 (Washington, DC: USITC, 2013); United States International Trade Commission, *Digital Trade in the US and Global Economies*, Part 2, Investigation No 332–540 (Washington, DC: USITC, 2014); World Economic Forum, ‘Exploring International Data Flow Governance: Platform for Shaping the Future of Trade and Global Economic Interdependence’, *WEF White Paper*, 2019.

¹⁹ M. Bauer et al., *The Economic Importance of Getting Data Protection Right: Protecting Privacy, Transmitting Data, Moving Commerce* (Brussels: ECIPE, 2013); E. van der Marel, H. Lee-Makiyama, and M. Bauer, ‘The Costs of Data Localisation: Friendly Fire on Economic Recovery’, *ECIPE Occasional Paper* 3 (2014); Kuner, note 13; A. Chander and U. P. Lê, ‘Data Nationalism’, *Emory Law Journal* 64 (2015), 677–739; World Economic Forum, note 18.

²⁰ I. Brown and C. T. Marsden, *Regulating Code* (Cambridge, MA: MIT Press, 2013); R. H. Weber, *Realizing a New Global Cyberspace Framework* (Zurich: Schulthess, 2014); A. Agrawal, J. Gans, and A. Goldfarb (eds), *The Economics of Artificial Intelligence: An Agenda* (Chicago: The University of Chicago Press, 2019); Irion and Williams, note 16; L. DeNardis, *The Internet in Everything: Freedom and Security in a World with No Off Switch* (New Haven, CT: Yale University Press, 2020).

there are various other tensions, such as those in the area of other fundamental rights and key public interests, that have become exposed and need regulatory attention.²¹ Overall, there is a distinct need to identify apposite and workable mechanisms in global trade law that can manage the trade-offs and reconcile the economic and non-economic interests that states pursue and can ensure the proper safeguarding of vital societal values.

It should be underscored in this context that whereas it is evident that digital technologies have had an impact on the economy as well as on social and cultural practices, they have at least equally strongly affected the law and patterns of governance in general. Governance models have in general become less state centred, and there is a proliferation of regulatory forms that involve multiple stakeholders, with varied types of supervisory and controlling functions entrusted to the state.²² Trade law venues need to take into account this evolution and become permeable to multi-stakeholder involvement framed within a transparent framework,²³ which may reduce the general skepticism as to the appropriateness of trade forums and effectively tackle their deficiencies as to democratic participation and accountability.²⁴ Analogies to Internet governance processes may be useful in this regard;²⁵ the recent discourse on AI technologies clearly demands such public engagement and seeks to endorse respect for human autonomy, prevention of harm, fairness and explainability.²⁶ As data governance is intrinsically linked to the

²¹ See, e.g., P. Margulies, 'Dynamic Surveillance: Evolving Procedures in Metadata and Content Collection after Snowden', *Hastings Law Journal* 66 (2014), 1–76; S. I. Vladeck, 'Big Data before and after Snowden', *Journal of National Security Law and Policy* 7 (2014), 333–339; Aaronson, note 14; S.-Y. Peng, 'Cybersecurity Threats and the WTO National Security Exceptions', *Journal of International Economic Law* 18 (2015), 449–478. N. Zhang, 'Trade Commitments and Data Flows: The National Security Wildcard Reconciling Name Record Transfer Agreements and European GATS Obligations', *World Trade Review* 18 (2019), 49–62.

²² See, e.g., V. Mayer-Schönberger, 'The Shape of Governance: Analyzing the World of Internet Regulation', *Virginia Journal of International Law* 43 (2003), 605–673; O. Lobel, 'The Renew Deal: The Fall of Regulation and the Rise of Governance in Contemporary Legal Thought', *Minnesota Law Review* 89 (2004), 262–390; C. T. Marsden, *Internet Co-regulation: European Law, Regulatory Governance and Legitimacy in Cyberspace* (Cambridge: Cambridge University Press, 2011); M. Latzer, N. Just, and F. Saurwein, 'Self- and Co-regulation: Evidence, Legitimacy and Governance', in M. Price and S. Verhulst (eds), *Handbook of Media Law* (Abingdon: Routledge, 2012), 373–397; U. Pagallo, P. Casanovas, and R. Madelin, 'The Middle-Out Approach: Assessing Models of Legal Governance in Data Protection, Artificial Intelligence, and the Web of Data', *The Theory and Practice of Legislation* 7 (2019), 1–25.

²³ See, e.g., World Economic Forum, note 18.

²⁴ M. Burri, 'The Governance of Data and Data Flows in Trade Agreements: The Pitfalls of Legal Adaptation', *UC Davis Law Review* 51 (2017), 65–132; also S. Cho and C. R. Kelly, 'Are World Trading Rules Passé?', *Vanderbilt Journal of International Law* 53 (2013), 623–666.

²⁵ See, e.g., N. Mishra, 'Building Bridges: International Trade Law, Internet Governance, and the Regulation of Data Flows', *Vanderbilt Journal of Transnational Law* 52 (2019), 463–509.

²⁶ See, e.g., Irion and Williams, note 16; High-Level Expert Group on Artificial Intelligence, note 10; Fjeld et al., note 10.

functioning of the Internet as a generative end-to-end platform,²⁷ it may also be important to consider, and where possible integrate, its underlying and complementary principles of Internet openness, security and privacy,²⁸ as well as to contemplate the use of middle-out approaches of governance that combine top-down and bottom-up regulation.²⁹ While the WTO has been so far unresponsive to such governance shifts, preferential trade agreements (PTAs) may offer suitable venues, with more open and flexible procedural frameworks and participatory and co-regulatory elements, as the recent Digital Economy Partnership Agreement (DEPA) between Chile, New Zealand and Singapore at least partially suggests.

The book is set against this backdrop and under the title 'Big Data and Global Trade Law' seeks to explore the relevance of global trade law for data, big data and cross-border data flows. It analyzes how the regulatory landscape is evolving by tracing developments at the WTO and in preferential trade venues and asks what future-oriented models for data governance are available and viable in the area of trade law and policy. To befit this ambitious objective, the book collects contributions by renowned scholars that have worked in the area of trade, law and technological change for quite some time now and who were asked to reflect on the 'big switch' from analogue to digital and on the future of global trade law under the conditions of the data-driven economy. Equally critical for the value of the book is its cautious selection of topics, which aims to provide both a broader picture of the interaction between digital technologies and trade regulation and the therewith triggered governance challenges, as well as to look at discrete problems and issues in different domains of global data governance.

The book is structured along four thematic parts. Part I seeks to properly set the scene for the book's discussion and the individual enquiries. In an attempt to provide a good understanding of the phenomenon of big data and its interface with trade law, Chapter 1 (Burri) explores the regulation of data flows in global trade law, in particular by tracing the critical developments in PTAs over the course of the last two decades. The chapter is based on extensive empirical research reflected in author's own dataset, which analyzes more than 340 PTAs across 90 different criteria that may impact data governance. Chapter 2 (Elsig and Klotz) complements this legal analysis by offering an insight from the perspective of international relations and political science and explains the diffusion of different models of data flow regulation and the role of different factors, such as notably power, that may be driving this diffusion. Chapter 3, written by an economist and trade policy expert (Ferracane), looks at the costs of data protectionism – a phenomenon which is on

²⁷ See, e.g., R. S. Whitt, 'A Deference to Protocol: Fashioning a Three-Dimensional Public Policy Framework for the Internet Age', *Cardozo Arts and Entertainment Law Journal* 31 (2013), 689–768, at 717–729. J. L. Zittrain, *The Future of the Internet – and How to Stop It* (New Haven, CT: Yale University Press, 2008).

²⁸ Mishra, note 25.

²⁹ Latzer et al., note 22; Pagallo et al., note 22.

the rise in recent years as many states seek to keep data within their borders. Chapter 4, the final chapter within this introductory part, by Andrew Mitchell and Neha Mishra, explores the potential of the multilateral forum of the WTO to tackle key elements of data governance, such as ensuring technological neutrality or the protection of fundamental interests and values, such as privacy.

Part II moves on to explore the newer phenomena of the data-driven economy, as the practical reality of trade is certainly no longer about plain e-commerce (as in buying things online) but about digital trade. Anupam Chander kicks off the discussions with a visionary piece on AI and trade. The discourse is continued by Emmanuelle Ganne, who explores blockchain's practical implications for global trade and its regulation, and highlights the many opportunities that blockchain could offer, if properly embedded and governed. The following chapters charter the unknown territories in intellectual property (IP) law with regard to AI – first, in terms of mapping the IP interfaces with the different underlying AI technologies, such as data mining or algorithms (Gervais) under the regime of the WTO Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), and second, by again highlighting the challenges as well as the opportunities before legal adaptation in terms of border enforcement of intellectual property rights (Seuba).

Part III looks at the contestations within the broad topic of data governance by exposing, on the one hand, some of the constraints of global trade law, as naturally centred on economic rationales, and by exploring, on the other hand, the complex rights' and interests' clashes in the age of big data. Chapter 9 (Gasser) reflects on the protection of privacy in a data-driven world and the future relationship between law and technology, asking us to 'reimagine' the law–tech interface in full consideration of the affordances of the digital medium. Yakovleva and van Hoboken look at the triangle of data protection, AI and trade and explore the concept of algorithmic learning deficit, whereby a sole focus on privacy protection may not suffice. Kristina Irion pushes the debate further and offers the European perspective on how to ensure individual rights and freedoms in a world in which everything flows.

Part IV seeks to bundle different global perspectives on big data and trade and provides thoughtful enquiries on how different countries have positioned themselves in the area of digital trade governance. Chapter 12 (Gao) offers a unique and in-depth study of China's distinct approach towards data regulation, which can also help understand (and accommodate) China's stance on these issues on the international scene. Polanco continues the comparative analyses by adding the perspective of Latin America on digital trade governance and asking where, to what extent and why certain levels of regulatory convergence can be observed, and to what extent international commitments may be constraining domestic policy space, in particular with regard to data protection. Leblond takes the latter discussion a step further and seeks to expose the tensions between global trade deals and the national level by looking at the challenges two important trade treaties, the Comprehensive and Progressive Agreement on Trans-Pacific Partnership (CPTPP) and the United

States–Mexico–Canada Agreement (USMCA), pose to Canadian data regulation. Chapter 15 (Thouvenin and Tamò-Larrieux) challenges key approaches to data governance by looking at the concepts of data ownership and data access rights and by asking whether and how they can be useful tools for promoting the European Union's Digital Single Market. The book ends with a provocative short piece by Susan Aaronson, who tells us that 'data is different' and urges policymakers to think differently about its governance and citizens to take an active part in the decision-making about their data.

Overall, the book offers a collection of expertise and viewpoints that address both the micro and macro level of global trade governance in the era of big data. While the answers given and recommendations made may differ, all contributors agree that both swift responses and apt regulatory design are needed to meet the challenge of rapid technological changes and make global trade law fit for the new data-driven economy. The changes demanded seem to go beyond mere adjustments in services classification or market access commitments (although these are needed too), and go in a bolder direction of rethinking, or as Gasser calls it,³⁰ 'reimaging', the relationship between law and technology, as to attain a legal design that balances between national and international domains, economic and non-economic interests and the different stakeholders' positions. There is some 'down-to-earth' WTO legal interpretation involved, as well as some 'blue sky' thinking, which also begs us to pay attention to the quality of rules and their potential impact, and may also trigger a rethinking of structures and processes of international rule-making in the interest of preserving legitimacy and of protecting global public goods in an interdependent world, while taking into account the pervasive as well as the enabling role of technology.

The timing of the book is critical as well as opportune, as issues of data governance are central to regulatory agendas and there are initiatives to advance different forms of international cooperation, as evidenced by the reinvigorated efforts under the WTO and other forums, and innovative agreements, such as the DEPA. It is our hope that this publication can not only contribute but help shape these discussions beyond biased stakeholders' opinions and persisting scholarly and policy disconnect.

³⁰ See Chapter 9 in this volume.