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## Adapting Trade Rules for the Age of Big Data

MIRA BURRI

### Introduction

Laws need to adapt to societal changes, including those triggered by technological advances.<sup>1</sup> It is often said that the transformations brought about by digital technologies are particularly far-reaching and demand changes in all fields of law, including in the area of international economic law.<sup>2</sup> The chapter seeks to explore the validity of these demands by looking first at some of the discrete technological developments in the broader context of digitization. While such an analysis cannot be comprehensive, as the scope of changes is vast and the fluidity of the environment high, we seek to give at least a sense of the trajectory of digital transformations and a sense of the depth of disruptive changes that matter for trade law and policies. In order to understand what needs to be changed in existing foreign trade policy, we also need to know what we have in terms of existing regulatory frameworks – both at the international and at the regional and bilateral levels. It is the objective of the chapter's second part to attend to this need. Here, in particular, an understanding of the new templates for electronic commerce is essential and this chapter will convey this knowledge by focusing on the most

<sup>1</sup> See, e.g., John Gerard Ruggie, 'International Responses to Technology: Concepts and Trends', *International Organization* 29 (1975), 557–583; Thomas Cottier, 'The Impact of New Technologies on Multilateral Trade Regulation and Governance', *Chicago-Kent Law Review* 72 (1996), 415–436; Roger Brownsword and Karen Yeung (eds), *Regulating Technologies: Legal Futures, Regulatory Frames and Technological Fixes*, Oxford: Hart, 2008; Daniel Gervais, 'The Regulation of Inchoate Technologies', *Houston Law Review* 47 (2010), 665–705.

<sup>2</sup> See, e.g., Kauffman Taskforce on Law, *Innovation and Growth, Rules for Growth: Promoting Innovation and Growth through Legal Reform*, Kansas City, MO: Kauffman Foundation, 2011; Mira Burri and Thomas Cottier, 'Digital Technologies and International Economic Regulation: An Introduction', in Mira Burri and Thomas Cottier (eds), *Trade Governance in the Digital Age*, Cambridge: Cambridge University Press, 2012, pp. 1–14.

advanced model so far – that of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The chapter goes on to contextualize and assess the impact of the existing legal framework, as shaped in recent times almost predominantly by preferential trade agreements. In its last part, the chapter ultimately asks whether there are better ways to address the challenges of the data-driven economy and what the essential elements of a working regulatory model should be. It suggests a return to the multilateral forum of the WTO and briefly sketches viable paths to do so.

### *Understanding Digitally Fuelled Transformations*

Digitization is the ability to express all information (be it audio, text, still or moving images) as binary digits; it frees information from the tangible medium and makes it networkable and easy to manipulate.<sup>3</sup> Digitization has allowed computers to talk a common language and has led to the emergence of the Internet as a network of networks that share bits of data through a common protocol.<sup>4</sup> As of the 1980s, on top of these technological foundations, a range of new information processing and transmission technologies developed rapidly.<sup>5</sup> The Internet was created as an end-to-end, generative platform that allows ‘permissionless innovation’.<sup>6</sup> As a consequence, we have witnessed in the past decades ‘an explosion of goods and services in the IT industry’, an amazing amount of new applications, new forms of content creation and communication.<sup>7</sup> There are multiple sources of data gathered over different periods of time that show the different beneficial effects of the global digital platform – for instance, through an increase in consumer welfare, as consumers are now able to search, compare and buy products and services

<sup>3</sup> See, e.g., Terry Flew, *New Media: An Introduction*, 2nd ed., Oxford: Oxford University Press, 2014.

<sup>4</sup> For an excellent, not too technical, explanation of all the underlying technologies, see James Grimmelmann, *Internet Law*, Oregon City, OR: Semaphore Press, 2016, chapter 1.

<sup>5</sup> Metcalfe’s Law states that the value of a network to society is proportional to the square of the number of users of the network. For a great analysis of all these changes, see Constantijn van Oranje-Nassau et al., *Responding to Convergence, Prepared for the Dutch Independent Telecommunications and Post Regulator*, Oxford: RAND Corporation, 2008, pp. 6–7.

<sup>6</sup> This is a phrase attributed to Vint Cerf, the father of the Internet. See Henry Chesbrough and Marshall Van Alstyne, ‘Permissionless Innovation’, *Communications of the ACM* 58 (2015), 24–26.

<sup>7</sup> Jonathan L. Zittrain, *The Future of the Internet – and How to Stop It*, New Haven: Yale University Press, 2008.

on a global scale from a much greater variety of offerings. Other positive accounts relate to the inclusiveness of the platform, as the Internet has allowed not only big companies but also small and medium-sized enterprises (SMEs), as well as developing countries, to engage in global trade, because of the lower thresholds for participation and the real economic gains to be reaped.<sup>8</sup> This chapter cannot capture all these experiences but seeks to elaborate on those aspects of the digital economy that matter for trade and trade policy, and contemplates how this innovation environment can be sustained and fostered. For this purpose, we highlight here three aspects of the digital evolution that have triggered different regulatory challenges. We look in turn at (i) the process of convergence; (ii) the emergence and application of great amounts of data, and at (iii) the Internet of Things.

### Convergence

We begin with one of the early regulatory dilemmas that digitization brought about that has to do with the process of *convergence*. The technological advances that drove digitization, such as increased transmission speed and storage capacity, allowed, already in the early years of digitization somewhere in the 1990s, for a single or similar set of services (such as TV, phone and Internet access) to be offered over different platforms – over cable, satellite or telecommunication networks, as well as enabled the bundling of distinct services onto a single platform.<sup>9</sup> This naturally triggered the erosion of the previously distinct boundaries between the media, the telecommunications and the IT sectors, ultimately leading to a convergence of their products, services and companies. Companies like Google, Facebook or Yahoo! are good examples in this context that not only transcend the conventional sectoral boundaries but also clearly illustrate the power of the few.<sup>10</sup>

<sup>8</sup> For more examples see, e.g., Joshua P. Meltzer, 'Maximizing the Opportunities of the Internet for International Trade', *E15 Expert Group on the Digital Economy – Policy Options Paper* (2016). Facebook estimates that 50 million SMEs are on its platform, up from 25 million in 2013. To put this number in perspective, consider that the World Bank estimated there were 125 million SMEs worldwide in 2010. For small businesses in the developing world, digital platforms are a way to overcome constraints in their local markets. See James Manyika et al., *Digital Globalization: The New Era of Global Flows*, Washington, DC: McKinsey Global Institute, 2016, p. 7. See also Part II of this volume.

<sup>9</sup> van Oranje-Nassau et al. (2008).

<sup>10</sup> See, e.g., Anupam Chander, 'Facebookistan', *North Carolina Law Review* 90 (2012), 1807–1842.

Convergence is problematic from a regulatory perspective because it makes the existing legal frameworks for telecom and media outdated, especially if they are based upon technology-based classifications. Convergence also poses serious questions about appropriate regulatory design that is capable of reconciling the very different regulatory rationales, histories, rules and actors that these previously distinct sectors had. The reason we have media regulation is not the same reason that we have telecom rules.<sup>11</sup> At the same time, many new services – such as the so-called ‘over-the-top’ services – like Skype, YouTube or Netflix – do not fall under any of the existing regulatory categories, yet effectively serve the same consumer needs and compete in the same markets. The regulator has thus to make important decisions as to the regulatory burden to be imposed on new (and old) companies, on the degree of competition and the safeguarding of essential societal objectives, such as freedom of speech and access to high-quality information.<sup>12</sup> We have seen regulatory reforms unfold due to convergence effects – the European Union, for instance, has twice adopted such reform packages and is now in the process of undergoing a third reform as part of its Digital Single Market Strategy.<sup>13</sup> At the international level however, there have not been any deliberate regulatory responses and, as a result, there is a mismatch between the rules framework and the market reality.

### Data and Big Data

In contrast to convergence, data and big data appear as relatively new buzzwords in the contemporary debates of digitally driven economic growth and innovation.<sup>14</sup> Enabled by a new generation of digital

<sup>11</sup> Broadcasting often had a strong public service rationale, driven by concerns about free speech, diversity of supply, decency, protection of minors, etc. Telecommunications markets were mostly ruled by economic and technical issues, including network access. See van Oranje-Nassau et al. (2008).

<sup>12</sup> See, e.g., van Oranje-Nassau et al. (2008); also Mira Burri, *Public Service Broadcasting 3.0: Legal Design for the Digital Present*, Abingdon: Routledge, 2015.

<sup>13</sup> See generally European Commission, ‘A Digital Single Market Strategy for Europe’, COM (2015) 192 final, 6 May 2015.

<sup>14</sup> Although there were some debates on data flows in the 1980s. See, e.g. Christopher Kuner, ‘Regulation of Transborder Data Flows under Data Protection and Privacy Law: Past, Present and Future’, *OECD Digital Economy Paper 187* (2011); Susan 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; also William J. Drake, Background Paper for the workshop on Data Localization and Barriers to Transborder Data Flows, 14–15 September 2016, World Economic Forum, Geneva.

technologies and because of their deep embeddedness in all facets of societal life, companies increasingly capture vast amounts of information about their customers, suppliers and operations. Millions of networked sensors are now implanted in the physical world in devices, such as mobile phones and cars, extracting, creating and communicating data. Multimedia and individuals with smartphones and on social networking sites only fuel this exponential growth of data and ultimately lead to accumulation of 'big datasets'.<sup>15</sup> Data have become so essential to economic processes that they are said to be the 'new oil'.<sup>16</sup> Like other factors of production, such as natural resources and human capital, it is increasingly the case that much of modern economic activity, innovation and growth cannot occur without data.<sup>17</sup> A plethora of studies and expert reports point at the vast potential of data as a trigger for more efficient business operations, highly innovative societal solutions, and ultimately better policy choices.<sup>18</sup> The transformative potential is great and refers not only to new 'digital native' areas, such as search or social networking, but also to 'brick-and-mortar' businesses. The data gathered, for instance in manufacturing, can help improve processes, anticipate risks and prevent accidents; public sector administration can also be better structured, made more efficient and more citizen-oriented.<sup>19</sup>

The implications of big data and big data analytics are multiple and some of them far-reaching.<sup>20</sup> At a micro-level, for instance, the value of

<sup>15</sup> James Manyika et al., *Big Data: The Next Frontier for Innovation, Competition, and Productivity*, Washington, DC: McKinsey Global Institute, 2011. There are no clear definitions of small versus big data. Definitions vary and scholars seem to agree that the term of big data is generalized and slightly imprecise. One common identification of big data is through its characteristics of volume, velocity, and variety, also referred to as the '3-Vs'. Increasingly, experts add a fourth 'V' that relates to the veracity or reliability of the underlying data. See Viktor Mayer-Schönberger and Kenneth Cukier, *Big Data: A Revolution That Will Transform How We Live, Work, and Think*, New York: Eamon Dolan/Houghton Mifflin Harcourt, 2013, p. 13.

<sup>16</sup> *The Economist*, 'The World's Most Valuable Resource Is No Longer Oil, but Data', print edition, 6 May 2017.

<sup>17</sup> Manyika et al. (2011).

<sup>18</sup> See, e.g. Manyika et al. (2011); Mayer-Schönberger and Cukier (2013); Nicolaus Henke et al., *The Age of Analytics: Competing in a Data-Driven World*, Washington, DC: McKinsey Global Institute, 2016.

<sup>19</sup> See, e.g., Manyika (2011).

<sup>20</sup> Mayer-Schönberger and Cukier (2013). For a brief introduction on Big Data applications and review of the literature, see Mira Burri, 'Understanding the Implications of Big Data and Big Data Analytics for Competition Law: An Attempt for a Primer', in Klaus Mathis and Avishalom Tor (eds), *New Developments in Competition Behavioural Law and Economics*, Berlin: Springer, 2019.

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 services in order to obtain it. [...] To maintain an edge in consumer data, user acquisition and user interaction are both critical'.<sup>21</sup> Data become, also, absolutely essential in terms of competition and market power. Some firms, like Apple, Google, Amazon, Facebook, Microsoft, General Electric or Baidu, have had a sizeable first-mover advantage in the field and have become 'analytics leaders', while at the same time establishing themselves as some of the most valuable companies in the world.<sup>22</sup> These companies have differentiated themselves through unique data sources, analytics talent and investment in data infrastructure. The same trend can be seen among younger companies, 'the next wave of disruptors' – that tend to be firms with business models predicated on data analytics, such as Uber, Flipkart, Airbnb, Snapchat, Pinterest or Spotify.<sup>23</sup> It should be noted that the capacity to handle data increasingly also turns into a competitive advantage for countries and plays 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 is 40 times more powerful than the fastest computer of 2010.<sup>24</sup> Overall, companies as well as governments are encouraged to use the potential of data and to mobilize their resources aptly, so as to make the data-driven economy real.<sup>25</sup>

In the context of trade and trade policies, the growing importance of data for the digital economy has one crucial implication: Data *must* flow across borders. Many of the economic innovations based on digital technologies do rely on global data flows. Things like the app economy, the outsourcing of many services, the provision of digital products and streaming services, many cloud computing applications

<sup>21</sup> Henke et al. (2016), at 26.

<sup>22</sup> Henke et al. (2016), at 26.

<sup>23</sup> Henke et al. (2016), at 26.

<sup>24</sup> See [www.top500.org/list/2016/06/](http://www.top500.org/list/2016/06/).

<sup>25</sup> See, e.g., Manyika et al. (2011); Henke et al. (2016); Jacques Bughin et al., *Digital Europe: Pushing the Frontier, Capturing the Benefits*, Washington, DC: McKinsey Global Institute, 2016.

or the Internet of Things, would not function under restrictions on the cross-border flow of data.<sup>26</sup>

### The Internet of Things

Our last example of the applications of digitization, and very much also in the sense of illustrating the far-reaching effects of big data, is the Internet of Things. We use it in particular to underline that although typically when we talk about the digital revolution, we mean intangibles, this should not always be the case. Indeed, increasingly, the connected world includes physical objects. Machinery, shipments, infrastructure and devices are equipped with networked sensors that enable them to monitor their environment, report their status, receive instructions and even take action based on the information received. This is what we understand as ‘the Internet of Things’ and it can be used in many ways to improve productivity, and enable new types of products and services – in health care, infrastructure and in the public sector.<sup>27</sup>

The Internet of Things is one of the disruptive technologies that is also said to hold vast future potential. More than 9 billion devices around the world are currently connected to the Internet, including computers and smartphones, but this number is expected to increase dramatically within the next decade, with estimates ranging from 50 billion devices to one trillion. The potential for economic impact is equally astounding and ranges from USD 2.7 trillion to USD 6.2 trillion annually by 2025.<sup>28</sup> For this chapter’s discussion, the importance of the Internet of Things for future digital innovation reminds us that we cannot simply concentrate on services regulation when we conceive of a regulatory framework for digital trade, but must include adequate rules for trade in goods as well.<sup>29</sup>

<sup>26</sup> See Anupam Chander, ‘National Data Governance in a Global Economy’, *UC Davis Legal Studies Research Paper* 495 (2016), at 2.

<sup>27</sup> Henke et al. (2016), 51–60.

<sup>28</sup> Henke et al. (2016), 51–60.

<sup>29</sup> 3D printing is another pertinent example in this context. 3D printing belongs to a class of techniques known as additive manufacturing. Additive processes build objects layer-by-layer rather than through moulding or subtractive techniques. 3D printing can create objects from a variety of materials, including plastic, metal, ceramics, glass, paper and even living cells. With some techniques, a single object can be printed in multiple materials and colours, and a single print job can even produce interconnected moving parts (such as hinges or mesh). Current limitations of 3D printing include relatively slow build speed, limited object size, limited object detail or high materials cost. See Manyika et al. (2011), pp. 105–113; Kommerskollegium, *Trade Regulation in a 3D Printed World*, Stockholm: Swedish National Board of Trade, 2016; also Kommerskollegium, *No*

### Interim Conclusion

Global digital trade is hard to stop at the border. It appears to be an essential element of many of the applications of the new digital economy that data must cross borders – often in a manner that is unrelated to a distinct service or business transaction, often crossing multiple times and residing in multiple jurisdictions. At the same time, digital content and applications have profound effects on individuals in a certain country as well as on its society as a whole. They may induce certain behavioural patterns, affect the conditions for diversity, social cohesion and democratic practice; they may influence consumer protection, financial stability and safety; they may impact on national security. Overall, digital trade can affect the capacity of domestic regulators to achieve their regulatory aims in many aspects and in many different areas. The increased centrality of data and the importance of cross-border data flows have brought about a new set of concerns. The sheer volume and the personal nature of the information collected and used can be in itself worrying.<sup>30</sup> Big data methods provide a new and powerful means to sort, combine and analyse data. The inherent ability of such technologies to capture sensitive details from information that, to the average customer, might seem mundane or meaningless, is astounding.<sup>31</sup> Furthermore the practices behind big data are often not transparent and, as mentioned above, they are under the control of a few gatekeepers, such as Google, Facebook or Amazon.<sup>32</sup> Privacy policy reports in the US, as well as in the EU, point out that conventional methods of protecting users and their private sphere, such as anonymization and de-identification, are no longer effective.<sup>33</sup> The related concerns, such as discrimination or control over individuals'

*Transfer, No Production: Report on Cross-border Data Transfers, Global Value Chains, and the Production of Goods*, Stockholm: Swedish Board of Trade, 2015.

<sup>30</sup> Urs Gasser, 'Perspectives on the Future of Digital Privacy', *Zeitschrift für Schweizerisches Recht* 135 (2015), 335–448, at 349; also Urs Gasser, 'Recoding Privacy Law: Reflections on the Future Relationship Among Law, Technology, and Privacy', *Harvard Law Review* 130:2 (2016), 61–70.

<sup>31</sup> Gasser (2015); Daniel J. Solove, 'A Taxonomy of Privacy', *University of Pennsylvania Law Review* 154 (2006), 477–560, at 506.

<sup>32</sup> Gasser (2015), at 343–350; also See, e.g., Ariel Ezrachi and Maurice E. Stucke, *Virtual Competition: The Promise and Perils of the Algorithm-driven Economy*, Cambridge, MA: Harvard University Press, 2016.

<sup>33</sup> See US President's Advisory Council on Science and Technology, *Big Data and Privacy: A Technological Perspective*, Washington, DC, 2014; European Union Agency for Network and Information Security (ENISA), *Privacy and Data Protection by Design – from Policy to Engineering*, Brussels, 2014.

future activities, are multiple. The possible permanence of personal data also means that it can be potentially reused in the future for unanticipated purposes.<sup>34</sup> Privacy, which is a fundamental right under international human rights law and under the constitutions of many countries, as well as the EU Charter of Fundamental Rights, may be seriously endangered.<sup>35</sup>

Tensions between domestic and global rules in general, and between privacy and free data flows in particular, are bound to increase and policy-makers will need to find appropriate frameworks to balance the trade-offs between these.<sup>36</sup> This may be particularly hard, as the approaches of the US and the EU<sup>37</sup> towards the protection of privacy are at this stage hardly reconcilable.<sup>38</sup>

## Trade Policy Responses to the Digital Transformation

### *The Existing Regulatory Framework for Digital Trade*

Digitization and digital trade do not happen in a regulatory vacuum. Despite the fact that they may call for adjustments of different kinds and depths, there are existing rules at the international level that they can be

<sup>34</sup> Gasser (2015), at 353.

<sup>35</sup> See, e.g., Gasser (2015, 2016); Colin J. Bennett and Robin M. Bayley, 'Privacy Protection in the Era of 'Big Data': Regulatory Challenges and Social Assessments', in Bart van der Sloot, Dennis Broeders, and Erik Schrijvers (eds), *Exploring the Boundaries of Big Data*, Amsterdam: University of Amsterdam Press, 2016, 205–227.

<sup>36</sup> See, e.g., Mira Burri and Rahel Schär, 'The Reform of the EU Data Protection Framework: Outlining Key Changes and Assessing Their Fitness for a Data-Driven Economy', *Journal of Information Policy* 6 (2016), 479–511.

<sup>37</sup> The EU only strengthened the rules on personal data protection as of May 2018 by increasing the standards of protection, the scope of the covered addressees and the sanctions. See Regulation 2016/680 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data by competent authorities for the purposes of the prevention, investigation, detection or prosecution of criminal offences or the execution of criminal penalties, and on the free movement of such data, and repealing Council Framework Decision 2008/977/JHA, OJ L [2016] 119/89 [GDPR].

<sup>38</sup> See C-362/14, Maximilian Schrems v. Data Protection Commissioner, judgment of 6 October 2015, ECLI:EU:C:2015:650; Irish High Court, *Data Protection Commissioner v. Facebook Ireland Limited and Maximilian Schrems (Schrems II)*, 2016 No 4809 P., judgment of 3 October 2017 (the case has been referred to the CJEU). See also Paul M. Schwartz, 'The EU-US Privacy Collision: A Turn to Institutions and Procedures', *Harvard Law Review* 126 (2013), 1966–2009; Paul M. Schwartz and Daniel J. Solove, 'Reconciling Personal Information in the United States and European Union', *California Law Review* 102 (2014), 877–916.

subsumed under. The law of the World Trade Organization (WTO) is at the core of this framework, which has been over time complemented by a number of bilateral and regional trade deals of preferential nature. We discuss these rules in turn and try to briefly explain what their relevance for the contemporary digital economy is, where legal adaptation has failed and where countries have managed to formulate some new rules as a response to the digital challenge.

### The Law of the World Trade Organization

The WTO Agreements were negotiated and adopted during the Uruguay Round (1986–1994).<sup>39</sup> Despite a few updates – such as the Information Technology Agreement (ITA) – the WTO rules have so far not reacted in a forward-looking manner to the various changes triggered by digitization. Nonetheless, WTO law does regulate digital trade in many ways – and this as a matter of ‘hard’ law, agreed upon by the now 164 Members and enforceable through the mechanisms of the WTO’s dispute settlement.

The WTO endorses far-reaching principles of non-discrimination: the *most-favoured nation* (MFN) and the *national treatment* (NT) obligations. They ban countries from discriminating between products and services coming from different WTO Members (MFN) and from discriminating between foreign and domestic products and services (NT). They therewith created constraints on national regimes are substantial. Next to these general rules of the WTO architecture, specific WTO Agreements regulating trade in goods, trade in services, the protection of intellectual property rights, the provisions on subsidies, standards, government procurement or trade facilitation, include many rules that matter for the digital economy – either by endorsing and detailing the application of the non-discrimination principles or by specifically addressing certain issues.<sup>40</sup>

<sup>39</sup> The WTO Agreements comprise the Marrakesh Agreement Establishing the World Trade Organization and the, annexed to it, General Agreement on Tariffs and Trade [GATT]; General Agreement on Trade in Services [GATS]; and the Agreement on Trade-Related Aspects of Intellectual Property Rights [TRIPS].

<sup>40</sup> For a detailed analysis, see Mira Burri, ‘The International Economic Law Framework for Digital Trade’, *Zeitschrift für Schweizerisches Recht* 135 (2015a), 10–72; Mira Burri, ‘The Regulation of Data Flows in Trade Agreements’, *Georgetown Journal of International Law* 48 (2017), 408–448; Mira Burri and Thomas Cottier (eds), *Trade Governance in the Digital Age*, Cambridge: Cambridge University Press, 2012.

With regard to trade in IT products, the WTO secures one of the *most accommodating conditions for free trade*. In addition to the far-reaching framework of the GATT for trade in goods, the ITA provides for a special regime for trade in IT products and ensures that trade in communication equipment is duty free. The ITA was adopted after the completion of the Uruguay Round at the Singapore Ministerial Conference in 1996,<sup>41</sup> largely as a result of the pressure applied by the US IT industry. The proclaimed objective of the ITA is to ‘achieve maximum freedom of world trade in information technology products’.<sup>42</sup> To this effect, the ITA signatories pledged to provide *zero tariffs* for selected IT products, such as computers, semi-conductors, semi-conductor manufacturing equipment, telecommunication apparatus, data-storage media and software.<sup>43</sup> Although only a plurilateral agreement, the ITA has been successful in creating a ‘critical mass’ and attracting the major stakeholders in both the developed and the developing world. Originally signed by 29 countries, the ITA currently lists 82 WTO Members. Together, these Members account for more than 97 per cent of global trade in IT products.<sup>44</sup> In 2015, 50 WTO Members agreed on the expansion of the ITA to cover an additional 201 product lines that have been valued at over USD 1.3 trillion per year.<sup>45</sup> Overall and despite some flaws, the ITA can be deemed as truly successful and has made a real difference in trade practice. It ultimately provided for a very liberal regime for trade in IT-related hardware, which spurred competition and benefited consumers.<sup>46</sup> Together with the far-reaching commitments in the telecommunication services sector, the ITA boosted the emergence of global value chains for IT trade and substantially facilitated the worldwide spread and adoption of technological advances and the emergence of the data economy. It is one of the good examples that vividly shows how regulation matters for shaping innovation.<sup>47</sup> It is also a case that illustrates how some WTO

<sup>41</sup> WTO, Ministerial Declaration on Trade in Information Technology Products, WT/MIN (96)/16 (1996).

<sup>42</sup> *Id.*, at Preamble and para. 1.

<sup>43</sup> See WTO, *15 Years of the Information Technology Agreement: Trade, Innovation and Global Production Networks*, Geneva: World Trade Organization, 2012.

<sup>44</sup> WTO, *Id.*

<sup>45</sup> As reported by the WTO on the occasion of the expansion of the ITA (see WTO, available at [www.wto.org/english/tratop\\_e/inftec\\_e/inftec\\_e.htm](http://www.wto.org/english/tratop_e/inftec_e/inftec_e.htm)).

<sup>46</sup> Copenhagen Economics, *Expanding the Information Technology Agreement (ITA): Economic and Trade Impacts*, Final Report for the European Commission, 2010.

<sup>47</sup> Anupam Chander, ‘How Law Made Silicon Valley’, *Emory Law Journal* 63 (2014), 639–694.

Members can move forward on issues that are important to them without having the support of the entire WTO membership.

The effects of the WTO are also palpable in the field of digital services. The GATS, similarly to the GATT, aims at protecting the equality of competitive opportunities for companies regardless of their origin and the origin of their services, and at facilitating the progressive liberalization of services markets. Its legal design is however different and allows for flexibility in committing through the so-called *specific* commitments accepted by individual WTO Members and listed in their 'Schedules of Specific Commitments'. These schedules show the positive obligations of a Member with regard to *national treatment* and *market access*.<sup>48</sup> The fairly flexible regime of the GATS allows for the opening of services markets but also for keeping them protected, partially or completely.

In terms of services sectors that are pertinent for the digital economy, one commonly reviews the telecommunications, the computer and related, and the audiovisual as well as the financial services sectors. The level of openness of these sectors varies substantially. One can maintain generally that while the regime for digital infrastructure and applications is liberal under the WTO, content-related services are almost uncommitted for.<sup>49</sup>

A deep intervention, which may substantially limit the regulatory space available domestically comes from the GATS rules on *computer and related services*. For computer and related services, which was a fairly new sector at the time of the Uruguay Round and thus largely devoid of either domestic regulation or trade barriers, a great number of WTO Members have made far-reaching commitments for both market access and national treatment. The EU has, for instance, committed for all the listed subsectors: (a) consultancy services related to the installation of computer hardware; (b) software implementation services; (c) data processing services; (d) database services; maintenance and repair; and (e) other computer services.<sup>50</sup> The implications of these commitments are real and the wiggle-room available for domestic regulators is severely

<sup>48</sup> 'Market access' is articulated in Article XVI GATS and addresses quantitative restrictions to services trade. The 'national treatment' obligation, specified in Article XVII GATS, is of a broader, qualitative nature and bans discrimination between domestic and foreign suppliers.

<sup>49</sup> Burri (2015a); Rolf H. Weber and Mira Burri, *Classification of Services in the Digital Economy*, Bern: Stämpfli, 2012.

<sup>50</sup> The EU has listed no limitations for the first three modes of supply (cross-border, consumption abroad and commercial presence) and remains unbound only for the presence of natural persons (mode 4). See WTO, European Communities and their

constrained. If we imagine a situation where the EU would like to install new measures with regard to search engines that somehow limit the market access or discriminate against foreign companies and their services, this may implicate a violation of WTO law – because search engines can be subsumed under ‘data processing services’<sup>51</sup> and because the EU is fully committed to those. Localization requirements would be also GATS-inconsistent in the sectors where there are specific commitments made.<sup>52</sup> Yet, at least so far, such situations have not been tested before a WTO panel.

The EU and other WTO Members have often looked for an ‘escape’ in this context by relying on one argument that has to do with the technical issue of services classification. Whenever they want to preserve policy space, WTO Members would argue that such digital services should be classified as ‘audiovisual services’,<sup>53</sup> because of their inherent function as content platforms.<sup>54</sup> There is arguably room for interpretation and Members make use of the lack of clear distinctions in the existing classification schemes, which is exacerbated by their pre-Internet origin. In the sector of audiovisual services, almost no WTO Members have made commitments and thus remain relatively free to sustain discriminatory measures and adopt new ones.<sup>55</sup> This is the result of a pronounced and politically charged contention between trade and cultural interests that unfolded during the Uruguay Round of negotiations. It was associated with a rupture between the key negotiating parties – the EU and the US – on the question of how to regulate cultural matters and whether to make them subject to the rules of the WTO – the so-called ‘exception

Member States, Schedule of Specific Commitments, Trade in Services, Supplement 3, GATS/SC/31/Suppl. 3 (1997).

<sup>51</sup> See Henry Gao, ‘Googling for the Trade—Human Rights Nexus in China: Can the WTO Help?’, in Mira Burri and Thomas Cottier (eds), *Trade Governance in the Digital Age*, Cambridge: Cambridge University Press, 2012, pp. 247–275; also Weber and Burri (2012), at 115.

<sup>52</sup> See, e.g., Cathleen Cimino et al., ‘A Proposed Code to Discipline Local Content Requirements’, *Peterson Institute of International Economics Policy Brief* 4 (2014); Holger P. Hestermeyer and Laura Nielsen, ‘The Legality of Local Content Measures under WTO Law’, *Journal of World Trade* 48 (2014), 553–592.

<sup>53</sup> ‘Audiovisual services’ include motion picture and videotape production and distribution services; motion picture projection service; radio and television services; radio and television transmission services and sound recording.

<sup>54</sup> See, e.g., WTO, Work Programme on Electronic Commerce, Submission by the European Communities WT/GC/W/497 (2003), at para. 7.

<sup>55</sup> WTO, Council for Trade in Services, Audiovisual Services, Background note by the Secretariat, S/C/W/310 (2010).

Culturelle’ debate.<sup>56</sup> The current round of trade negotiations – the Doha Development Agenda – is unlikely to change things in the audiovisual services sector.<sup>57</sup> Despite the recognition, widely shared by key WTO Members, that the audiovisual sector has changed dramatically,<sup>58</sup> in particular in the face of the sweeping transformations caused by the Internet, there is little agreement on the way forward.<sup>59</sup> This is a major setback for data as content and undermines the very liberal regime that the WTO has established with regard to infrastructure and some services sectors like telecom and computer and related services.

It may also be worth keeping in mind this specific case of juxtaposing trade and culture and how the distributional conflict between the US and the EU has played out. This situation may very well be replicated in the area of free data flows versus data protection, where the positions of the two key stakeholders also diverge profoundly.

Overall, while the WTO Agreements have fairly comprehensive rules and digital trade can be subsumed under the law of the GATT and the GATS, it is evident that legal adaptation under the auspices of the WTO has not progressed, at least so far. Despite the utility of the WTO’s dispute settlement, illustrated in a number of Internet-related cases, such as *US–Gambling* and *China–Audiovisual Products*,<sup>60</sup> judicial

<sup>56</sup> See, e.g., Mira Burri, ‘Trade versus Culture in the Digital Environment: An Old Conflict in Need of a New Definition’, *Journal of International Economic Law* 12 (2009), 17–62; Mira Burri, ‘The EU, the WTO and Cultural Diversity’, in Evangelia Psychogiopoulou (ed.), *Cultural Governance and the European Union: Protecting and Promoting Cultural Diversity in Europe*, Basingstoke: Palgrave Macmillan, 2015b, pp. 195–204.

<sup>57</sup> See, e.g., Lee Tuthill and Martin Roy, ‘GATS Classification Issues for Information and Communication Technology Services’, in Mira Burri and Thomas Cottier (eds), *Trade Governance in the Digital Age*, Cambridge: Cambridge University Press, 2012, pp. 157–178.

<sup>58</sup> WTO, Communication from the European Union and the United States: Contribution to the Work Programme on Electronic Commerce, S/C/W/338 (2011).

<sup>59</sup> See, e.g., WTO, Communication from the European Communities and its Member States, Draft consolidated GATS Schedule, S/C/W/273 (2006).

<sup>60</sup> Panel Report, *United States – Measures Affecting the Cross-Border Supply of Gambling and Betting Services (US – Gambling)*, WT/DS285/R, adopted 10 November 2004; Appellate Body Report, *United States – Measures Affecting the Cross-Border Supply of Gambling and Betting Services (US – Gambling)*, WT/DS285/AB/R, adopted 7 April 2005; Panel Report, *China – Measures Affecting Trading Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products (China – Publications and Audiovisual Products)*, WT/DS363/R, adopted 12 August 2009; Appellate Body Report, *China – Measures Affecting Trading Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products (China – Publications and Audiovisual Products)*, WT/DS363/AB/R, adopted 21 December 2009.

transplants cannot replace political consensus on the substance, particularly in a complex and highly technical domain, such as digital trade. Legal certainty has been compromised. The classification dilemma, as often discussed in the field of services regulation and as particularly critical for the legal categorization of data flows, exposes vividly the disconnectedness of trade rules from trade practices and the state of paralysis in the WTO.<sup>61</sup> Many other issues discussed in the framework of the 1998 WTO Work Programme on Electronic Commerce have been left without a solution or even a clarification.<sup>62</sup> There is, for instance, still no agreement on a permanent moratorium on duties on electronic transmissions.<sup>63</sup> 2016 and 2017 were years of reinvigorated interest towards matters of electronic commerce but the statements by the WTO Members did not yet point towards a clear negotiating mandate; instead, they again exposed some of the 'old' divides – between the willingness to create new rules or rather adhere to existing commitments; between the willingness to address trade barriers or rather preserve policy space.<sup>64</sup> The work on e-commerce has continued under the WTO, however, and we are bound to see new developments at some point.<sup>65</sup>

<sup>61</sup> Online games, for instance, as a new type of content platform, could be potentially fitted into the discrete categories of computer and related services, value-added telecommunications services, entertainment or audiovisual services. The classification is not trivial, since it triggers different obligations. See Weber and Burri (2012). With specific regard to the classification of data flows, see Nivedita Sen, 'Understanding the Role of the WTO in International Data Flows: Taking the Liberalization or the Regulatory Path', *Journal of International Economic Law* 21 (2018), 323–348, in particular at 331–335.

<sup>62</sup> Sacha Wunsch-Vincent and Arno Hold, 'Towards Coherent Rules for Digital Trade: Building on Efforts in Multilateral versus Preferential Trade Negotiations', in Mira Burri and Thomas Cottier (eds), *Trade Governance in the Digital Age*, Cambridge: Cambridge University Press, 2012, pp. 179–221, p. 181.

<sup>63</sup> The moratorium has only been temporarily extended several times; the last time for a period of two years following a decision taken during the Buenos Aires Ministerial Conference in 2017, subsequently extended to June 2019 by the WTO General Council in 2019.

<sup>64</sup> See, e.g., WTO Work Programme on E-Commerce, *Non-Paper from the United States*, WTO Doc JOB/GC/94 (2016); WTO Work Programme on E-Commerce, *Non-Paper from Brazil*, WTO Doc JOB/GC/98 (2016); WTO Work Programme on E-Commerce, *Communication from Canada, Chile, Colombia, Côte d'Ivoire, the European Union, the Republic of Korea, Mexico, Paraguay and Singapore, Trade Policy, the WTO and the Digital Economy*, WTO Doc JOB/GC/97/Rev.1 (2016); WTO, *Joint Statement on Electronic Commerce*, Buenos Aires Ministerial Conference 11th Session, WTO/MIN/(17)60 (2017).

<sup>65</sup> For a detailed analysis of the WTO Members' positions, see Sen (2018), at 339–341; see also Henry Gao, 'Digital or Trade? The Contrasting Approaches of China and US to Digital Trade', *Journal of International Economic Law* 21 (2018) 297–321.

The overall lack of progress under the WTO has triggered forum-shopping – through bilateral, regional and plurilateral initiatives. Many of these efforts have also sought answers to the regulatory challenges posed by digital technologies.

### Beyond the WTO: Free Trade Agreements

The regulatory environment for digital trade has been substantially influenced by free trade agreements (FTAs) and in particular by those led by the US. The United States has endorsed and attempted to ensure implementation of its so-called ‘Digital Agenda’<sup>66</sup> through the FTA channel. The agreements reached since 2002 with Australia, Bahrain, Chile, Morocco, Oman, Peru, Singapore, the Central American countries<sup>67</sup> and more recently with Panama, Colombia and South Korea, all contain critical WTO-plus (going above the WTO commitments) and WTO-extra (addressing issues not covered by the WTO) provisions in the broader field of digital trade. The emergent regulatory template on digital issues is not, however, limited to US agreements, but has diffused and can be found in other FTAs as well, such as Singapore–Australia, Thailand–Australia, Thailand–New Zealand, New Zealand–Singapore, India–Singapore, Japan–Singapore and South Korea–Singapore.<sup>68</sup> Australia, Japan, New Zealand and Colombia have been among the major drivers of this diffusion.<sup>69</sup>

Key aspects of digital trade are typically addressed in: (1) specifically dedicated e-commerce chapters; (2) the chapters on cross-border supply of services; and (3) the intellectual property chapters. In this chapter, we look only at the e-commerce chapters, as they contain deliberate responses to digital trade. The electronic commerce chapters have also evolved over time – from less to more binding and from a mere

<sup>66</sup> See Sacha Wunsch-Vincent, ‘The Digital Trade Agenda of the US: Parallel Tracks of Bilateral, Regional and Multilateral Liberalization’, *Aussenwirtschaft* 1 (2003), 7–46.

<sup>67</sup> The DR–CAFTA includes Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and the Dominican Republic.

<sup>68</sup> We have created a database (called TAPED) for all FTAs since 2000. The overall number of coded PTAs since 2000 until June 2019 is 345 (WTO notified 272); number that have e-commerce chapters: 77; number that have e-commerce provisions (including annexes): 182; number that have general data-related provisions: 24; data-related provisions for financial services: 69; for telecommunication services: 64; for data localization: 12. See Mira Burri and Rodrigo Polanco, ‘Digital Trade Provisions in Preferential Trade Agreements: Introducing a New Dataset’, *Journal of International Economic Law* 23:1 (2020).

<sup>69</sup> Based on own data, *Id.*

compensation for the lack of progress in the WTO towards new (and partially innovative) digital rule-making. In the former sense, they have included a clear definition of 'digital products', which treats digital products delivered offline as equal to those delivered online, so that technological neutrality is ensured. The chapters also recognize the applicability of WTO rules to e-commerce and establish a permanent moratorium on imposing duties on the import or export of digital products by electronic transmission. Critically, the e-commerce chapters ensure both MFN and NT for digital products trade; discrimination is banned on the basis that digital products are 'created, produced, published, stored, transmitted, contracted for, commissioned, or first made available on commercial terms outside the country's territory' or 'whose author, performer, producer, developer, or distributor is a person of another party or a non-party'.<sup>70</sup>

The e-commerce chapters also include rules that go beyond the WTO. These cover different issues in the broader IT policy field, such as those for telecommunications policy, IT standards and interoperability, cybersecurity, electronic signatures and payments, paperless trading, self-regulation and e-government projects. More importantly for data flows, they seek to achieve some common ground rules for the digital marketplace, where increasingly inadequate and incompatible national regulations are seen as an important digital trade barrier.

The US–South Korea FTA (KORUS) was first of a kind in this regard. It included 'Principles on Access to and Use of the Internet for Electronic Commerce', which detail rights for the consumers to: (a) access and use services and digital products of their choice; (b) run applications and services of their choice; (c) connect their choice of devices to the Internet; and (d) have the benefit of competition among network providers, application and service providers, and content providers.<sup>71</sup> Next to these fairly solid safeguards against censorship and other types of constrained access and use, the US–South Korea FTA provides for free cross-border information flows and obliges the parties, although in a non-binding

<sup>70</sup> See, e.g., US–Singapore FTA, Article 14.3; US–Australia FTA, Article 16.4. In many FTAs, digital products must not be fully produced and exported through one of the contracting parties of the bilateral FTAs to benefit from the non-discrimination obligations. This is an interesting way to avoid complex rules of origin.

<sup>71</sup> US–South Korea, Article 15.7.

manner, 'to refrain from imposing or maintaining unnecessary barriers to electronic information flows across borders'.<sup>72</sup>

In the following, we look at the follow-up of the KORUS and the most comprehensive model that we have had so far – that of the CPTTP. Interestingly enough, the e-commerce chapter of the CPTTP has survived the TPP negotiations<sup>73</sup> in its entirety and without any change, and still reflects the efforts of the United States in this domain. So, in a sense, we have a far-reaching implementation of the US model, without the US participating in it.

### The CPTTP

The Comprehensive and Progressive Agreement for Transpacific Partnership (CPTTP – also known as the TPP11 or TPP 2.0)<sup>74</sup> was agreed upon in 2017 among 11 countries in the Pacific Rim<sup>75</sup> and entered into force on 30 December 2018. The CPTTP represents 13.4 per cent of the global gross domestic product or USD13.5 trillion, making it the third largest trade agreement after the North American Free Trade Agreement and the single market of the European Union.<sup>76</sup> The CPTTP also, and importantly for us, represents a new level in the evolution of digital trade provisions in FTAs.

The CPTTP chapter on e-commerce is clearly the most comprehensive so far. It comprises 18 articles and includes new features, such as provisions on the domestic electronic transactions framework, personal information protection, Internet interconnection charge sharing, location of computing facilities, unsolicited commercial electronic messages, source code, and dispute settlement.<sup>77</sup> In the following, we look more closely at

<sup>72</sup> US–South Korea, Article 15.8: 'Recognizing the importance of the free flow of information in facilitating trade, and acknowledging the importance of protecting personal information, the Parties shall endeavor to refrain from imposing or maintaining unnecessary barriers to electronic information flows across borders.'

<sup>73</sup> The Trans-Pacific Partnership Agreement, available at <https://ustr.gov/trade-agreements/free-trade-agreements/trans-pacific-partnership/tpp-full-text> [hereinafter TPP].

<sup>74</sup> The Comprehensive and Progressive Agreement for Transpacific Partnership, full text available at <http://international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/cptpp-ptpgp/text-texte/index.aspx?lang=eng>.

<sup>75</sup> Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam.

<sup>76</sup> Zachary Torrey, 'TPP 2.0: The Deal Without the US: What's New about the CPTTP and What Do the Changes Mean?', *The Diplomat*, 3 February 2018, available at <https://thediplomat.com/2018/02/tpp-2-0-the-deal-without-the-us/>.

<sup>77</sup> CPTTP Articles 14.5, 14.8, 14.12, 14.13, 14.14, 14.17 and 14.18, respectively.

the CPTPP provisions and how far they create binding rules for the signatories.

The CPTPP seeks for the first time to explicitly restrict the use of data localization measures. Article 14.13(2) prohibits the parties from requiring a 'covered person to use or locate computing facilities in that Party's territory as a condition for conducting business in that territory'. The soft language from KORUS on free data flows is now framed as a hard rule: '[e]ach Party shall allow the cross-border transfer of information by electronic means, including personal information, when this activity is for the conduct of the business of a covered person'.<sup>78</sup> The rule has a broad scope and most data that are transferred over the Internet are likely to be covered, although the word 'for' may suggest the need for some causality between the flow of data and the business of the covered person.

Measures restricting digital flows or localization requirements under Article 14.13 CPTPP are permitted only if they do not amount to 'arbitrary or unjustifiable discrimination or a disguised restriction on trade' and do not 'impose restrictions on transfers of information greater than are required to achieve the objective'.<sup>79</sup> These non-discriminatory conditions are similar to the strict test formulated by the GATS Article XIV and GATT Article XX, a test that is intended to balance trade and non-trade interests, but one that is also extremely hard to pass.<sup>80</sup> The CPTPP test differs from the WTO norms in one significant element: while there is a list of public policy objectives in the GATT and the GATS, the CPTPP provides no such enumeration and simply speaks of a 'legitimate public policy objective'.<sup>81</sup> This permits more regulatory autonomy for the CPTPP signatories. However, it also may lead to abuses and overall legal uncertainty. Further, it should be noted that the ban on localization measures is somewhat softened with regard to financial services and institutions.<sup>82</sup> An annex to the Financial Services chapter has a separate data transfer requirement, whereby certain restrictions on data flows may apply for the protection of privacy or confidentiality of

<sup>78</sup> Article 14.11(2) CPTPP.

<sup>79</sup> Article 14.11(3) CPTPP.

<sup>80</sup> See, e.g., Henrik Andersen, 'Protection of Non-Trade Values in WTO Appellate Body Jurisprudence: Exceptions, Economic Arguments, and Eluding Questions', *Journal of International Economic Law* 18 (2015), 383–405.

<sup>81</sup> Article 14.11(3) CPTPP.

<sup>82</sup> See the definition of 'a covered person' in Article 14.1, which is said to exclude a 'financial institution' and a 'cross-border financial service supplier'.

individual records, or for prudential reasons.<sup>83</sup> Government procurement is also excluded.<sup>84</sup>

Pursuant to Article 14.17, a CPTPP Member may not require the transfer of, or access to, source code of software owned by a person of another party as a condition for the import, distribution, sale or use of such software, or of products containing such software, in its territory. The prohibition applies, however, only to mass-market software or products containing such software.<sup>85</sup> This means that tailor-made products will be excluded, as well as software used for critical infrastructure and those in commercially negotiated contracts.<sup>86</sup> The aim of this provision is to protect software companies and address their concerns about loss of IP or cracks in the security of their proprietary code<sup>87</sup> – its real effect is, however, hard to predict.

These provisions illustrate an interesting development because it is evident that they do not simply entail a clarification of existing bans on discrimination, nor do they merely set higher standards, as is generally anticipated from trade agreements. Rather, they shape the regulatory space domestically and may actually lower certain standards. A commitment to lower standards of protection is particularly palpable in the field of privacy and data protection.

Article 14.8(2) requires every CPTPP party to ‘adopt or maintain a legal framework that provides for the protection of the personal information of the users of electronic commerce’. No standards or benchmarks for the legal framework have been specified, except for a general requirement that CPTPP parties ‘take into account principles or guidelines of relevant international bodies’.<sup>88</sup> A footnote provides some clarification in saying that: ‘[f]or greater certainty, a Party may comply with the obligation in this paragraph by adopting or maintaining measures such as a comprehensive privacy, personal information or personal data protection laws, sector-specific laws covering privacy, or laws that provide for the enforcement of voluntary undertakings by enterprises

<sup>83</sup> The provision reads: ‘Each Party shall allow a financial institution of another Party to transfer information in electronic or other form, into and out of its territory, for data processing if such processing is required in the institution’s ordinary course of business’.

<sup>84</sup> Article 14.8(3) CPTPP.

<sup>85</sup> Article 14.17(2) CPTPP.

<sup>86</sup> Article 14.17(2) CPTPP.

<sup>87</sup> It is interesting to note that China does demand access to source code from software producers selling in its market, so this provision may be interpreted as a reaction to this.

<sup>88</sup> Article 14.8(2) CPTPP.

relating to privacy'.<sup>89</sup> Parties are also invited to promote compatibility between their data protection regimes, by essentially treating lower standards as equivalent.<sup>90</sup> Overall, the goal seems to be to prioritize trade over privacy rights. This commitment had been pushed by the US, which subscribes to a relatively weak and patchy protection of privacy. Timewise, this insertion was a consequence of the judgment of the Court of Justice of the European Union (CJEU) that struck down the EU-US Safe Harbor Agreement.<sup>91</sup>

While the attention is often exclusively focused on data protection, it should be noted that the CPTPP also has provisions on consumer protection<sup>92</sup> and spam control,<sup>93</sup> although they are fairly weak. The same is true for the newly introduced rules on cybersecurity. Article 14.16 is non-binding and identifies a relatively limited scope of activities for cooperation, in situations of 'malicious intrusions' or 'dissemination of malicious code', and capacity building of governmental bodies dealing with cybersecurity incidents.

Net neutrality is another important digital economy topic that has been given specific attention in the CPTPP, although the created rules are of non-binding nature. Article 14.10 states that

[s]ubject to applicable policies, laws and regulations, the Parties recognize the benefits of consumers in their territories having the ability to: (a) access and use services and applications of a consumer's choice available on the Internet, subject to reasonable network management; (b) connect the end-user devices of a consumer's choice to the Internet, provided that such devices do not harm the network; and (c) access information on the network management practices of a consumer's Internet access service supplier.

While it is commendable that net neutrality is endorsed, this comes with many reservations, as evidenced from the above provision, from the

<sup>89</sup> Article 14.8(2) CPTPP, footnote 6.

<sup>90</sup> Article 14.8(5) CPTPP.

<sup>91</sup> C-362/14, *Schrems*. Maximillian Schrems is an Austrian citizen, who filed a suit against the Irish supervisory authority (the Data Protection Commissioner), after it rejected his complaint over Facebook's practice of storing user data in the United States. The plaintiff claimed that his data was not adequately protected in light of the recent NSA revelations and this, despite the existing agreement between the EU and the US – the so-called 'safe harbour' scheme – that expressly sought to ensure that the United States provides for an adequate level of protection of the transferred personal data.

<sup>92</sup> Article 14.17 CPTPP.

<sup>93</sup> Article 14.14 CPTPP.

domestic laws of CPTPP countries; from undefined situations that call for ‘reasonable network management’;<sup>94</sup> or from exclusive services. The obligations are ultimately not linked to legal remedies for situations, such as blocking or filtering content, and are unlikely to lead to a uniform approach across CPTPP countries.

### The USMCA

After the withdrawal of the United States from the TPP, there was some uncertainty as to the direction the United States would follow in its trade deals in general and on matters of digital trade in particular. The renegotiated North American Free Trade Agreement (NAFTA), which is now called the United States–Mexico–Canada Agreement, or USMCA, casts the doubts aside. The USMCA has a comprehensive electronic commerce chapter, which is now also properly titled ‘Digital Trade’ and follows all critical lines of the CPTPP in ensuring the free flow of data through a clear ban on data localization (Article 19.12), providing a non-discrimination regime for digital products (Article 19.4) and a hard rule on free information flows (Article 19.11). The USMCA appears particularly interesting in two aspects. The first is that it keeps the clause on exceptions that permits the pursuit of certain non-economic objectives. Article 19.11 specifies, very much in the sense of the CPTPP, that parties can adopt or maintain a measure inconsistent with the free flow of data provision if this is necessary to achieve a legitimate public policy objective, provided that the measure: (a) is not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on trade; and (b) does not impose restrictions on transfers of information greater than are necessary to achieve the objective.<sup>95</sup> Furthermore and departing from the standard US approach, the USMCA signals an acceptance of some data protection principles. While Article 19.8 remains soft on prescribing domestic regimes on personal data protection, it recognizes principles and guidelines of relevant international bodies, such as the APEC Privacy Framework and the OECD Recommendation of the Council concerning

<sup>94</sup> Article 14.10(a) CPTPP. Footnote 6 to this paragraph specifies that: ‘The Parties recognise that an Internet access service supplier that offers its subscribers certain content on an exclusive basis would not be acting contrary to this principle.’

<sup>95</sup> Article 19.11(2). There is a footnote attached, which clarifies: ‘A measure does not meet the conditions of this paragraph if it accords different treatment to data transfers solely on the basis that they are cross-border in a manner that modifies the conditions of competition to the detriment of service suppliers of another Party.’

Guidelines governing the Protection of Privacy and Transborder Flows of Personal Data (2013).<sup>96</sup> The parties also recognize that these key principles include: limitation on collection; choice; data quality; purpose specification; use limitation; security safeguards; transparency; individual participation; and accountability,<sup>97</sup> and aim to provide remedies for any violations.<sup>98</sup> This is interesting because it goes beyond what the US may have in its national laws on data protection and also because it reflects some of the principles the European Union has advocated in the domain of the protection of privacy.

*Deliberate Responses to the Digital Challenge: An Appraisal  
of the State of Affairs*

Against the backdrop of failing legal adaptation under the auspices of the WTO, much has happened in preferential trade venues. Although not in a manner of a revolutionary change, there is a new emergent regime for digital trade. It includes a number of WTO-plus commitments and clarifies some issues that the WTO Members could not agree on, such as a duty-free regime for electronic transactions. The FTAs also, and perhaps more importantly, tackle certain 'non-trade' or 'WTO-extra' issues, such as consumer protection, privacy and safeguards for the free flow of data. The CPTPP stands out with regard to digital trade, not only due to its high standards but also because of the breadth of issues covered that matter more or less immediately for the digital economy. The clear ban on localization measures and the subscription to a binding norm on free data flows with a potentially broad scope of application are unprecedented. It should also be noted that the CPTPP appears to take a first, although somewhat vague and insecure, step towards reconciling economic and non-economic interests as part of the e-commerce chapter, as it attempts some sort of a balance between free data flows and other public interests.

Overall, FTA partners do benefit from swifter solutions, from the deeper, as well as often clearer, provisions. It appears that FTAs work better, although not always, for reconciling diverging interests – on longstanding trade topics, such as classification, and in politically charged domains, such as audiovisual services. FTAs are also in a good

<sup>96</sup> Article 19.8(2) USMCA.

<sup>97</sup> Article 19.8(3) USMCA.

<sup>98</sup> Article 19.8(4) and (5) USMCA.

position to address the new generation of trade barriers, such as localization measures, which are distorting digital innovation and which may lead to balkanization of the global digital space.<sup>99</sup>

FTAs' benefits may, however, be offset by the fact that a patchwork of multiple and overlapping agreements exacerbates the world's asymmetric wealth distribution and rule fragmentation, and does not contribute to the free cross-border flow of information on a global scale. It must be underscored in this context that although we concentrated here on the advanced template of the US and the follow-up CPTPP, many other countries, even developed ones like the members of the European Free Trade Association (EFTA), do not have a digital strategy and have not entered into any substantial WTO-extra commitments in their FTAs. In addition, it should be noted that FTAs may be undermining the value and impact of multilateral venues and the role of international law in general. Without engaging in the debate of preferentialism versus multilateralism, purely from the perspective of digital trade and its demands on seamlessness and interoperability,<sup>100</sup> the multilateral forum appears to be a more sensible solution.<sup>101</sup>

<sup>99</sup> Digital trade has also been associated with a new palette of measures that inhibit digital trade. A number of studies in the last five years have tried to compile and analyse information on these new digital trade barriers. Some of them can be grouped under the so-called 'digital trade localization measures'. Others are not strictly trade measures and encompass issues relating to censorship, divergent approaches to data privacy and IP protection that different countries have adopted, that in different ways disrupt digital trade, increase the cost of doing business and hinder innovation. See United States International Trade Commission (USITC), *Digital Trade in the US and Global Economies, Part 1*, Investigation No 332-531 (Washington, DC: USITC, 2013); USITC, *Digital Trade in the US and Global Economies, Part 2*, Investigation No 332-540 (Washington, DC: USITC, 2014); For a detailed study of localization measures, see also OECD, *Emerging Policy Issues: Localisation Barriers to Trade*, TAD/TC/WP (2014)17/FINAL, 12 May 2015. For a country survey, see Anupam Chander and Uy n P. L , 'Data Nationalism', *Emory Law Journal* 64 (2015), 677-739. For a dynamic database, see the Digital Trade Estimates Project, available at <http://ecipe.org/dte/>.

<sup>100</sup> Urs Gasser and John Palfrey, 'Fostering Innovation and Trade in the Global Information Society: The Different Facets and Roles of Interoperability', in Mira Burri and Thomas Cottier (eds), *Trade Governance in the Digital Age* (Cambridge: Cambridge University Press, 2012), 123-153.

<sup>101</sup> One can, however, also point at the deficiencies of the WTO as a brick-and-mortar forum based on state-centric, top-down paradigm of rule-making. See in particular Sungjoon Cho and Claire R. Kelly, 'Are World Trading Rules Pass ?', *Virginia Journal of International Law* 53 (2013), 623-666; also Mira Burri, 'The Governance of Data and Data Flows in Trade Agreements: The Pitfalls of Legal Adaptation', *UC Davies Law Review* 51 (2017a), 65-132, at 129-132.

### Concluding Remarks

Beyond the narrow question of the suitability of FTAs to address digital trade, there is a broader one on appropriate legal design. To be sure, the novel design that is needed is not of the type of rules that were discussed during the 1998 E-Commerce Work Programme of the WTO – it is less about ensuring market access but more about interfacing domestic regimes so as to provide interoperability and legal certainty. As noted earlier, digital trade has dramatically changed in the last 10 or so years. It is all about data and data flows now<sup>102</sup> and this radically changes the perspective on state sovereignty and international cooperation in the domain of trade governance.

While governments do have the right and the responsibility to protect interests and values important to their citizens, they also have a variety of tools available to achieve these goals and many of them can be congruent with the functional nature of the Internet and with the fostering of an open and innovative data economy.<sup>103</sup> Two issues appear paramount in this context and may be important for allowing a smart solution for digital trade rules that is also politically feasible. The first such avenue is to address cross-border data issues in trade agreements horizontally, and not in a manner directly related to a discrete service or a discrete transaction. There are various ways to do this – for instance, as part of the horizontal commitments of the services schedules; in the form of a Reference Paper attached to the schedules as an additional commitment under Article XVIII GATS; as part of a plurilateral trade in services agreement or more radically, as part of a dedicated digital trade agreement – which can either work on a MFN basis (like the ITA) or benefit only the signatories on a non-MFN basis (like the Government Procurement Agreement). Another important element of the solution will be to provide working mechanisms that may counterbalance the free flow of data and the non-economic concerns that the cross-border transfer of data raises. Personal data protection is likely to be critical here. It has been suggested in this context that it may be apt to differentiate between types of data, such as business, personal or sensitive data.<sup>104</sup> While such an exercise may allow for a special treatment and higher

<sup>102</sup> The rhetoric of data flows is not necessarily new but now very present in trade discussions. For a historical account, see Drake (2016).

<sup>103</sup> Chander and Lê (2015), pp. 677–739; also Zittrain (2008).

<sup>104</sup> For a suggested taxonomy in this sense, see Sen (2018), pp. 343–347.

levels of protection of personal data and more liberal treatment of the rest, the exercise does come with many pitfalls. As noted earlier, big data can be incredibly miscellaneous and include a great amount of information of different types and from different sources. While not all this information is personal (i.e. data such as name, gender, personal preferences, location, email or IP addresses) and identifies a person or permits such identification,<sup>105</sup> it needs to be acknowledged that with the accumulation of data and with the affordances of big data analytics, much of this data can be ‘turned’ into personal information. Indeed, big data puts into question the very distinction between personal and non-personal data.<sup>106</sup>

Yet, we should not forget that trade law has over the years provided flexible and well-working mechanisms to reconcile different values. Article XX GATT and Article XIV GATS are great examples in this context. We may have also seen certain steps that pave the way in this direction. The CPTPP and now the USMCA are undoubtedly such stepping stones, as we showed above. It is also observable that states have increasingly realized the value of data and the critical importance of cross-border data flows. Even the most sceptical and cautious of parties, such as the EU, have been under pressure and have been rethinking their positions with regard to digital trade. For instance, the recent EU–Japan Free Trade Agreement says under the title ‘Free Flow of Data’ that: ‘The Parties shall reassess the need for inclusion of an article on the free flow of data within three years of the entry into

<sup>105</sup> The GDPR provides the following definition of personal data: ‘personal data means any information relating to an identified or identifiable natural person (‘data subject’); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person’.

<sup>106</sup> ‘As techniques like data fusion make big data analytics more powerful, the challenges to current expectations of privacy grow more serious. When data is initially linked to an individual or device, some privacy-protective technology seeks to remove this linkage, or ‘de-identify’ personally identifiable information – but equally effective techniques exist to pull the pieces back together through ‘re-identification’. Similarly, integrating diverse data can lead to what some analysts call the ‘mosaic effect’, whereby personally identifiable information can be derived or inferred from datasets that do not even include personal identifiers, bringing into focus a picture of who an individual is and what he or she likes. Many technologists are of the view that de-identification of data as a means of protecting individual privacy is, at best, a limited proposition.’ See The White House, *Big Data: Seizing Opportunities, Preserving Values*, Executive Office of the President, May 2014, at 14.

force of this Agreement.<sup>107</sup> This is novel and signals that the topic of free data flows has been intensely discussed between the two partners. It also shows, more generally, that the discourse on data flows is evolving and that we are bound to see more deliberate actions and commitments in future trade agreements, as also signalled by one of the recent communications of the European Commission.<sup>108</sup> Overall, there is a profound need to better understand the implications of the data economy for trade governance. Curbing ‘digital protectionism’ should be addressed as a priority in policy agendas, so as to enable a sustainable regulatory environment for the age of big data.

### Bibliography

- Aaronson, S., ‘Why Trade Agreements Are Not Setting Information Free: The Lost History and Reinvigorated Debate over Cross-Border Data Flows, Human Rights and National Security’ (2015), *World Trade Review* 14: 671–700.
- Andersen, H., ‘Protection of Non-Trade Values in WTO Appellate Body Jurisprudence: Exceptions, Economic Arguments, and Eluding Questions’ (2015), *Journal of International Economic Law* 18: 383–405.
- Bennett, C. J. and Bayley, R. M., ‘Privacy Protection in the Era of ‘Big Data’: Regulatory Challenges and Social Assessments’, in B. van der Sloot, D. Broeders and E. Schrijvers (eds), *Exploring the Boundaries of Big Data*, Amsterdam: University of Amsterdam Press, 2016, pp. 205–220.
- Brownsword, R. and Yeung, K. (eds), *Regulating Technologies: Legal Futures, Regulatory Frames and Technological Fixes*, Oxford: Hart, 2008.
- Bughin, J., Hazan, E., Labaye, E., Manyika, J., Dahlström, P., Ramaswamy, S. and Cochin de Billy, C., *Digital Europe: Pushing the Frontier, Capturing the Benefits*, Washington, DC: McKinsey Global Institute, 2016.
- Burri, M., ‘Trade versus Culture in the Digital Environment: An Old Conflict in Need of a New Definition’ (2009), *Journal of International Economic Law* 12: 17–62.
- Burri, M., *Public Service Broadcasting 3.0: Legal Design for the Digital Present*, Abingdon: Routledge, 2015.
- Burri, M., ‘The International Economic Law Framework for Digital Trade’ (2015a), *Zeitschrift für Schweizerisches Recht* 135: 10–72.

<sup>107</sup> Article 8.81 EU–Japan FTA.

<sup>108</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Mid-Term Review on the Implementation of the Digital Single Market Strategy A Connected Digital Single Market for All, COM(2017) 228 final, 10 May 2017, at 22–23.

- Burri, M., 'The EU, the WTO and Cultural Diversity', in E. Psychogiopoulou (ed.), *Cultural Governance and the European Union: Protecting and Promoting Cultural Diversity in Europe*, Basingstoke: Palgrave Macmillan, 2015b, pp. 195–204.
- Burri, M., 'The Regulation of Data Flows in Trade Agreements' (2017), *Georgetown Journal of International Law* 48: 408–448.
- Burri, M., 'The Governance of Data and Data Flows in Trade Agreements: The Pitfalls of Legal Adaptation' (2017a), *UC Davies Law Review* 51: 65–132.
- Burri, M., '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, pp. 241–263.
- Burri, M. and Cottier, T., 'Digital Technologies and International Economic Regulation: An Introduction', in M. Burri and T. Cottier (eds), *Trade Governance in the Digital Age*, Cambridge: Cambridge University Press, 2012, pp. 1–14.
- Burri, M. and Polanco, R., 'Digital Trade Provisions in Preferential Trade Agreements: Introducing a New Dataset' (2020), *Journal of International Economic Law* 23: 1.
- Burri, M. and Schär, R., 'The Reform of the EU Data Protection Framework: Outlining Key Changes and Assessing Their Fitness for a Data-Driven Economy' (2016), *Journal of Information Policy* 6: 479–511.
- Chander, A., 'Facebookistan' (2012), *North Carolina Law Review* 90: 1807–1842.
- Chander, A., 'How Law Made Silicon Valley' (2014), *Emory Law Journal* 63: 639–694.
- Chander, A., 2016: 'National Data Governance in a Global Economy' (2016), *UC Davis Legal Studies Research Paper* 495.
- Chander, A. and Lê, U. P., 'Data Nationalism' (2015), *Emory Law Journal* 64: 677–739.
- Chesbrough, H. and Van Alstyne, M., 'Permissionless Innovation' (2015), *Communications of the ACM* 58: 24–26.
- Cho, S. and Kelly, C. R., 'Are World Trading Rules Passé?' (2013), *Virginia Journal of International Law* 53: 623–666.
- Cimino, C., Hufbauer, G. C. and Schott, J. J., 'A Proposed Code to Discipline Local Content Requirements' (2014), *Peterson Institute of International Economics Policy Brief* 4: 553–592.
- Copenhagen Economics, *Expanding the Information Technology Agreement (ITA): Economic and Trade Impacts*, Final Report for the European Commission, 2010.
- Cottier, T., 'The Impact of New Technologies on Multilateral Trade Regulation and Governance' (1996), *Chicago-Kent Law Review* 72: 415–436.

- Drake, W. J., *Background Paper for the workshop on Data Localization and Barriers to Transborder Data Flows, 14–15 September 2016*, Geneva: World Economic Forum, 2016.
- European Commission, 'A Digital Single Market Strategy for Europe', COM (2015) 192 final, 6 May 2015.
- European Commission, 'Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Mid-Term Review on the Implementation of the Digital Single Market Strategy A Connected Digital Single Market for All', COM(2017) 228 final, 10 May 2017.
- European Union Agency for Network and Information Security (ENISA), *Privacy and Data Protection by Design – from Policy to Engineering*, Brussels, 2014.
- Ezrachi, A., and Stucke, M. E., *Virtual Competition: The Promise and Perils of the Algorithm-driven Economy*, Cambridge, MA: Harvard University Press 2016.
- Flew, Terry, *New Media: An Introduction*, 2nd ed., Oxford: Oxford University Press, 2014.
- Gao, H., 'Googling for the Trade–Human Rights Nexus in China: Can the WTO Help?', in M. Burri, M. and T. Cottier (eds), *Trade Governance in the Digital Age*, Cambridge: Cambridge University Press, 2012, pp. 247–275.
- Gao, H., 'Digital or Trade? The Contrasting Approaches of China and US to Digital Trade' (2018), *Journal of International Economic Law* 21: 297–321.
- Gasser, U., 'Perspectives on the Future of Digital Privacy' (2015), *Zeitschrift für Schweizerisches Recht* 135: 335–448.
- Gasser, U., 'Recoding Privacy Law: Reflections on the Future Relationship Among Law, Technology, and Privacy' (2016), *Harvard Law Review* 130, 2: 61–70.
- Gasser, U. and Palfrey, J., 'Fostering Innovation and Trade in the Global Information Society: The Different Facets and Roles of Interoperability', in M. Burri and T. Cottier (eds), *Trade Governance in the Digital Age*, Cambridge: Cambridge University Press, 2012, pp. 123–153.
- Gervais, D., 'The Regulation of Inchoate Technologies' (2010), *Houston Law Review* 47: 665–705.
- Grimmelmann, J., *Internet Law*, Oregon City, OR: Semaphore Press, 2016.
- Flew, T., *New Media: An Introduction*, 2nd ed. Oxford: Oxford University Press, 2014.
- Henke, Nicolaus, et al., *The Age of Analytics: Competing in a Data-Driven World*, Washington, DC: McKinsey Global Institute, 2016.
- Hestermeyer, H. P. and Nielsen, L., 'The Legality of Local Content Measures under WTO Law' (2014), *Journal of World Trade* 48: 553–592.

- Kauffman Taskforce on Law, Innovation and Growth, *Rules for Growth: Promoting Innovation and Growth through Legal Reform*, Kansas City, MO: Kauffman Foundation, 2011.
- Kommerskollegium, *No Transfer, No Production: Report on Cross-border Data Transfers, Global Value Chains, and the Production of Goods*, Stockholm: Swedish Board of Trade, 2015.
- Kommerskollegium, *Trade Regulation in a 3D Printed World*, Stockholm: Swedish National Board of Trade, 2016.
- Kuner, C., 'Regulation of Transborder Data Flows under Data Protection and Privacy Law: Past, Present and Future' (2011), *OECD Digital Economy Paper* 187.
- Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C. and Hung Byers, A., *Big Data: The Next Frontier for Innovation, Competition, and Productivity*, Washington, DC: McKinsey Global Institute, 2011.
- Manyika, J., Henke, N., Bughin, J., Chui, M., Saleh, T., Wiseman, B. and Sethupathy, G., *The Age of Analytics: Competing in a Data-Driven World*, Washington, DC: McKinsey Global Institute, 2016.
- Manyika, J., Lund, S., Bughin, J., Woetzel, J., Stamenov, K. and Dhingra, D., *Digital Globalization: The New Era of Global Flows*, Washington, DC: McKinsey Global Institute, 2016.
- Mayer-Schönberger, V. and Cukier, K., *Big Data: A Revolution That Will Transform How We Live, Work, and Think*, New York: Eamon Dolan/Houghton Mifflin Harcourt, 2013.
- Meltzer, J. P., 'Maximizing the Opportunities of the Internet for International Trade', E15 Expert Group on the Digital Economy – Policy Options Paper, 2016.
- Organization for Economic Co-Operation and Development (OECD), *Emerging Policy Issues: Localisation Barriers to Trade*, TAD/TC/WP(2014)17/FINAL, 2015.
- Ruggie, J. G., 'International Responses to Technology: Concepts and Trends' (1975), *International Organization* 29: 557–583.
- Schwartz, P. M., 'The EU-US Privacy Collision: A Turn to Institutions and Procedures' (2013), *Harvard Law Review* 126: 1966–2009.
- Schwartz, P. M. and Solove, D. J., 'Reconciling Personal Information in the United States and European Union' (2014), *California Law Review* 102: 877–916.
- Sen, N., 'Understanding the Role of the WTO in International Data Flows: Taking the Liberalization or the Regulatory Path' (2018), *Journal of International Economic Law* 21: 323–348.
- Solove, D. J., 'A Taxonomy of Privacy' (2006), *University of Pennsylvania Law Review* 154: 477–560.
- The Economist*, 'The World's Most Valuable Resource Is No Longer Oil, but Data', print edition, 6 May 2017.

- The White House, *Big Data: Seizing Opportunities, Preserving Values*, Washington, DC: Executive Office of the President, 2014.
- Torrey, Z., 'TPP 2.0: The Deal Without the US: What's New about the CPTPP and What Do the Changes Mean?', *The Diplomat*, 3 February 2018, available at <https://thediplomat.com/2018/02/tpp-2-0-the-deal-without-the-us/>.
- Tuthill, L. and Martin, R., 'GATS Classification Issues for Information and Communication Technology Services', in M. Burri and T. Cottier, (eds), *Trade Governance in the Digital Age*, Cambridge: Cambridge University Press, 2012, pp. 157–178.
- United States International Trade Commission (USITC), *Digital Trade in the US and Global Economies, Part 1*, Investigation No. 332–531, Washington, DC: USITC, 2013.
- United States International Trade Commission (USITC), *Digital Trade in the US and Global Economies, Part 2*, Investigation No. 332–540, Washington, DC: USITC, 2014.
- United States President's Advisory Council on Science and Technology, *Big Data and Privacy: A Technological Perspective*, Washington, DC, 2014.
- van Oranje-Nassau, C., Cave, J., Van, M., Mandele, D., Schindler, R. and Hong, S. Y., *Responding to Convergence, Prepared for the Dutch Independent Telecommunications and Post Regulator*, Oxford: RAND Corporation, 2008.
- Weber, R. H. and Burri, M., *Classification of Services in the Digital Economy*, Bern: Stämpfli, 2012.
- World Trade Organization (WTO), *15 Years of the Information Technology Agreement: Trade, Innovation and Global Production Networks*, Geneva: World Trade Organization, 2012.
- Wunsch-Vincent, S., 'The Digital Trade Agenda of the US: Parallel Tracks of Bilateral, Regional and Multilateral Liberalization' (2003), *Aussenwirtschaft* 1: 7–46.
- Wunsch-Vincent, S. and Hold, A., 'Towards Coherent Rules for Digital Trade: Building on Efforts in Multilateral versus Preferential Trade Negotiations', in M. Burri and T. Cottier (eds), *Trade Governance in the Digital Age*, Cambridge: Cambridge University Press, 2012, pp. 179–221.
- Zittrain, J. L., *The Future of the Internet – and How to Stop It*, New Haven: Yale University Press, 2008.