

October 2017

Trade Rules and the Digital Economy

A White Paper



ABSTRACT

This White Paper examines trends and needs in the global digital economy, and the emerging set of international trade agreement rules currently under negotiation to govern world trade in the digital economy. It seeks to define the needs of the global economy, the requirements to service those needs by the global ICT industry, and the position of Huawei as a leading ICT company operating in over 170 countries and providing goods and services along almost the entire length of the global digital value chain. It recommends that non-discrimination, open markets, and fair competition should be fundamental rules for the global digital economy, whereas any exception to these rules should be adopted subject to the principles of transparency, proportionality, necessity, and multi-stakeholder consultation.

ACKNOWLEDGEMENTS

This White Paper is the result of a major project by the Trade Facilitation and Market Access (TFMA) team within Huawei Technologies, inspired by the vision of James K. Lockett, Vice President of Trade Facilitation and Market Access (TFMA) at Huawei Technologies to stake out Huawei's views on the pivotal issue of the trade rules for the digital economy. With contributions from numerous colleagues, its principal author is Simon Lacey, also at TFMA Huawei Technologies, who researched and prepared an initial and comprehensive draft and has also edited the manuscript through its various stages. Simon's tireless commitment to this complex and evolving topic is reflected from beginning to end in this White Paper. It has been written under the overall supervision and direction of Madame Chen Lifang, President of PACD at Huawei Technologies and Mr. Zhang Jiangang (Victor) and his predecessor Pang Jimin, President of Government Affairs, also at Huawei Technologies. Other members of the TFMA team have also contributed extensive comments and edits, and thanks must go to Alessandro Marongiu, Zhang Shige, Hu Zhengguo and Professor Sheng Jianming for their input and feedback while preparing the initial manuscript and on many procedural and technical issues in the process of bringing the White Paper to fruition. The TFMA team would also like to thank a number of individuals within Huawei who took time out of their busy schedules to sit and share of their valuable insights and experience, including in particular Paul Scanlan, Colin Giles, Tommi Laine-Ylijoki, Joe Kelly, Walter Jennings, Han Feung, Ting Ka Lun (Allen), Sameer Malik, Zou Wenyu (Kitty) and Allan Yap. This White Paper has also benefitted enormously from the many valuable insights and inputs received from Hosuk Lee-Makiyama, Martina Francesca Ferracane, and Erik van der Marel, with whom the TFMA team worked at the end of the process to supplement our research and add some value in terms of economic analysis, case studies as well as with graphical inserts. Hosuk's far-reaching and highly insightful expertise on the subject matter proved extremely valuable. James Lockett and Simon Lacey "field tested" some of our preliminary findings at a number of international symposia throughout the months the White Paper was being prepared and in this context we would like to thank Harsha Singh and Michitaka Nakatomi for comments on an earlier paper for the E-15 initiative which helped our thinking, and we must thank Usman Ahmed from Paypal, Marcos Vaena of the International Trade Center in Geneva and Pierre Sauvé of the World Trade Institute for their valuable contributions as part of our panel session at the 2016 WTO Public Forum which helped our thinking to evolve further on these issues. We would also like to thank the team of Huawei translators who worked on the Chinese version of this White Paper and provided invaluable assistance in also making the English version a much better document. In this regard, it was in particular the skills of Miss Gong Jing that proved invaluable to the whole project. Finally we would like to thank Joy Tan, President of the Corporate Communications Department for her invaluable guidance. As always any shortcomings, errors or omissions in this White Paper are solely those of the lead author.

TABLE OF ABBREVIATIONS

3D	Three dimensional (mostly used in the context of printing tangible objects)
B2B	Business to Business (e-commerce transactions)
B2C	Business to Consumer (e-commerce transactions)
ASEAN	Association of South East Asian Nations
APEC	Asian Pacific Economic Cooperation
AT&T	American Telephone and Telegraph Company
BT	British Telecom (British telecommunications provider)
CD	Compact Disc
CBG	Consumer Business Group (Huawei Technologies Co. Ltd.)
CNBG	Carrier Network Business Group (Huawei Technologies Co. Ltd.)
DDT	Design development and testing
DVD	Digital Video Disk
e-commerce	Electronic commerce
EBG	Enterprise Business Group (Huawei Technologies Co. Ltd.)
ECC	United Nations Convention on the Use of Electronic Communications in International Contracts
ECIPE	European Center for International Political Economy
EMT	Executive Management Team (Huawei Technologies Co. Ltd.)
epub	EPUB is an e-book file format with the extension “.epub” that can be downloaded and read on devices like smartphones, tablets, computers, or e-readers.
EU	European Union
eWTP	Electronic World Trade Platform
fintech	Financial technology
FTA	Free Trade Agreement
G20	An international forum for the governments and central bank governors from 20 major economies
GATT	WTO General Agreement on Tariffs and Trade
GATS	WTO General Agreement on Trade in Services
GDP	Gross Domestic Product
ICT	Information and Communications Technology
IoT	Internet of Things
IP	Intellectual Property
IPRs	Intellectual Property Rights
ISP	Internet Service Providers
ITA	WTO Information Technology Agreement 1995
ITA2	2015 update to the ITA
ITU	International Communications Union
MFN	Most-Favored Nation
M-PESA	Kenyan mobile payments platform

MLEC	1996 UNCITRAL Model Law on Electronic Commerce
MTN	Mobile Telephone Network (South African telecommunications provider)
NTBs	Non-tariff barriers
NTM	Non-tariff measure
OECD	Organization of Economic Cooperation and Development
OS	Operating system
OTT	Over the Top
PACD	Public Affairs and Communications Department (Huawei Technologies Co. Ltd.)
PDF	Portable Document Format
RCEP	Regional Comprehensive Economic Partnership
RGF	Really Good Friends (a negotiating group at the WTO)
SAP	Systems, Applications, Products (German software company)
SDGs	United Nations Sustainable Development Goals
SMEs	Small and Medium-sized Enterprises
TBT	Technical Barriers to Trade
TFMA	Trade Facilitation and Market Access (Huawei Technologies Co. Ltd.)
TiSA	Trade in Services Agreement
TPP	Trans-Pacific Partnership
TRIPS	WTO Agreement on Trade-Related Intellectual Property Rights
TTIP	Trans-Atlantic Trade and Investment Partnership
ULL	Unbundling of the Local Loop
UNCITRAL	The United Nations Commission on International Trade Law
UNCTAD	United Nations Conference on Trade and Development
UNESCAP	United Nations Economic and Social Committee for Asia and the Pacific
UK	United Kingdom
U.S.	United States of America
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

LIST OF FIGURES

- Figure 1.1 First and second level economic impact of investing in connectivity infrastructure
- Figure 1.2 The digital economy: Infrastructure, services, platforms/ecosystems and devices
- Figure 1.3 Innovation and disruption due to digitization and online connectivity
- Figure 1.4 Trade in digital goods as a percentage of global trade, 2000-2016
- Figure 1.5 Growth of cross-border supply of services, 2007-2012
- Figure 1.6 World's offline population by country
- Figure 1.7 Internet Protocol Traffic per month, 1990-2015
- Figure 1.8 Four segments of connectivity infrastructure
- Figure 2.1 Productivity benefits brought forward by the digital economy: EU productivity
- Figure 2.2 Three ways in which digitization revolutionizes productivity
- Figure 2.3 Domestic digital divides among different demographic groups
- Figure 2.4 Huawei's place in the digital economy
- Figure 3.1 Different regulatory objectives and approaches
- Figure 3.2 Number of countries with a national broadband plan
- Figure 3.3 Vulnerability of digital trade: Illustration of potential barriers
- Figure 3.4 Types of discriminatory digital trade measures and number of occurrences in global trade
- Figure 3.5 Value of connectivity used as an input in production
- Figure 3.6 Estimated ICT penetration levels (2016) by region
- Figure 4.1 Original 12 negotiating parties to the TPP
- Figure 4.2 Overlapping trade agreement negotiations in 2016
- Figure 4.3 Geographical coverage of RCEP
- Figure 4.4 Geographical coverage of APEC
- Figure 4.5 Geographical coverage of OECD
- Figure 4.6 Mapping exercise conducted by Canada, Chile, Columbia, Côte d'Ivoire, the EU, Korea, Mexico, Paraguay and Singapore as part of the July 2016 Review of the WTO Work Program on Electronic Commerce.
- Figure 4.7 Rise in data localization measures
- Figure 4.8 Losses from data localization measures
- Figure 4.9 Summary of TPP e-commerce chapter commitments
- Figure 4.10 Regulatory divergence in digital trade across FTAs
- Figure 4.11 Crafting digital trade rules in the service of development
- Figure 5.1 Global imports and Exports of ITA products
- Figure 5.2 Comparison of company patent filings (2014)
- Figure 5.3 Geography of cross-border investments in design development and testing (DDT) within the Global South, 2003–14

Figure 5.4 Estimated online payment transactions in China in USD billions (2016)

TABLE OF CONTENTS

Abstract.....	ii
Acknowledgements.....	ii
Executive Summary.....	1
Chapter One Defining the Digital Economy and Digital trade	3
1. Introductory Remarks.....	4
1.1.1. Rethinking the Scope of the Digital Economy	4
1.1.2. Defining Digital Trade	4
1.1.3. The Digital Economy and Economic Growth	4
1.2. Some Preliminary Insights on the Digital Economy.....	6
1.2.1. Infrastructure.....	6
1.2.2. Services.....	7
1.2.3. Platforms and Ecosystems	8
1.2.4. Devices	11
1.3. Preliminary Insights on Digital Trade	12
1.3.1. How Digitalization is Transforming Trade	12
1.3.2. Trade in Goods in the Digital Economy	15
1.3.3. Trade in Services in the Digital Economy.....	16
1.3.4. Trade-Related Intellectual Property Rights in the Digital Economy.....	17
1.3.5. The End of “Silofication”	17
1.3.6. The Development Dimension.....	19
1.4. Global and Industry Trends in the Face of the Digital Economy	20
1.4.1. Ubiquitous Connectivity and Convergence	20
1.4.2. More Data on More People and Things	20
1.4.3. Known Unknowns and the Future of the Digital Economy	21
1.4.4. Investment in the Pipe for Future Growth and Economic Development.....	22
1.5. Key Points for this Chapter	20
Chapter Two Huawei’s Place in the Digital Economy	25
2.1. The Benefits of Digitization.....	26
2.1.1. Societal and Economic Benefits	26
2.1.2. Digitization, Innovation and Productivity Gains	26
2.1.3. Digitization and Inclusiveness	28
2.2. Huawei’s Interests in the Digital Economy.....	29
2.2.1. Building a Better Connected World: Huawei and the Digital Divide	29
2.2.2. Customer-Centricity as Core Value	29
2.2.3. Huawei’s Guiding Principles and our Approach to International Trade.....	30
2.3. Huawei’s Activities and their Place in the Digital Economy.....	30
2.3.1. The Carrier Network Business Group.....	31
2.3.2. The Enterprise Business Group	32
2.3.3. The Consumer Business Group	32
2.3.4. Other Company Stakeholders	33
2.4. Huawei as an Emerging Global ICT Leader	33
2.4.1. A China-Based Multinational on a Global Stage	33
2.4.2. A Voice Non-Often Heard	33

2.4.3.	An Industry Leader in Waiting.....	34
2.5.	Key Points for this Chapter	34
Chapter Three Emerging Policy and Regulatory Trends		35
3.1.	Different Policy Objectives and Approaches	36
3.1.1.	Light Touch Approaches.....	36
3.1.2.	Interventionist Approaches	38
3.1.3.	Digitization, Economic Policy and Industrial Development	39
3.1.4.	Celebrating Complexity and the Need for an Overarching Digital Strategy	39
3.2.	Different Impacts and Implications of Different Policy Interventions	40
3.2.1.	Vulnerability of Digital Trade to Different Regulatory Interventions.....	40
3.2.2.	The Importance of the Technology Industry as Policy Advocate	42
3.2.3.	The Obvious Benefits of Investment in Communications Networks.....	42
3.2.4.	Giving the Digital Economy the Space It Needs to Foster Innovation.....	44
3.3.	Finding a Consensus on what Works.....	45
3.3.1.	Broad Consensus on Policy Interventions	45
3.3.2.	The Implications of International Rule-Making	46
3.3.3.	Consensus on the Need to Bridge the Digital Divide	46
3.4.	Key Points for this Chapter	48
Chapter Four International Trade Rule Making for the Digital Economy.....		49
4.1.	Existing and Emerging Global and Regional Rules Framework	50
4.1.1.	Existing WTO Rules on Trade in Services.....	50
4.1.2.	New initiatives in the WTO Post-Nairobi and ITA2	51
4.1.3.	Trans-Pacific Partnership Agreement (TPP).....	52
4.1.4.	Trade in Services Agreement and the Transatlantic Trade and Investment Partnership	53
4.1.5.	Regional Comprehensive Economic Partnership (RCEP)	54
4.1.6.	APEC Initiatives on the Digital Economy and Privacy	55
4.1.7.	OECD on Privacy, Trans-border Flow of Personal Data and the Internet Economy	55
4.1.8.	The Future of Digital Trade Rules.....	56
4.1.9.	Trade Policy-Making in an Uncertain Future	57
4.1.10.	The Road to Buenos Aires and MC11	58
4.1.11.	UNCTAD and e-Trade for All.....	61
4.2.	Substantive and Procedural Rules.....	61
4.2.1.	Transparency and Notification Obligations	61
4.2.2.	Elimination of Customs Duties on Digitally Traded Products.....	62
4.2.3.	Obligations on Free Flow of Information	62
4.2.4.	Forced Data Localization.....	63
4.2.5.	Mandatory Disclosure of Source Code.....	64
4.2.6.	Privacy and Protection of Personal Data	64
4.2.7.	Legislative Framework Obligations to Facilitate E-commerce	65
4.2.8.	Technical Standards and Conformity Assessment Procedures	66
4.2.9.	Specific Commitments on Trade in Services.....	66
4.2.10.	Intellectual Property Rights	67
4.3.	The Dynamics Driving New Rules for the Digital Economy.....	68
4.3.1.	Past Current and Future Negotiating Fora	68
4.3.2.	Regulatory Divergence within FTAs.....	68
4.3.3.	Interests and Interest Groups	69
4.3.4.	Regulatory Autonomy, Industrial Policy and the Risk of Fragmentation	70
4.3.5.	Crafting Digital Trade Rules in the Service of Development	71
4.4.	Key Points for this Chapter	73

Chapter Five A Vision for an Optimal Trade Regime for the Digital Economy	74
5.1. Huawei's Position on International Trade.....	75
5.1.1. Open Cooperation	75
5.1.2. Fair and Open Competition.....	76
5.1.3. Respect for Intellectual Property Rights.....	77
5.1.4. Minimizing the North-South Divide by Focusing on Strengths and Value.....	78
5.2. What Makes the Digital Economy so Special and Why are Special Trade Rules Needed?	80
5.2.1. The Role of Commercial Middlemen: The End of Conventional Intermediation.....	80
5.2.2. Diminishing Information Asymmetries.....	82
5.2.3. The Long-Awaited Level Playing Field	83
5.3. Emerging Consensus and Remaining Differences	84
5.3.1. Low-Hanging Fruit and Quick Wins	84
5.3.2. Policy Areas of Ongoing Contention.....	85
5.3.3. The Need for Narrowly Formulated Exceptions Clauses	87
5.4 Key Points for this Chapter	20
Chapter Six Findings and Conclusions.....	90
6.1. Huawei's thought leadership is timely	91
6.2. These new trade rules will impact Huawei's interests	91
6.3. Huawei should be part of the conversation	91
6.4. Huawei has much to contribute to this dialogue.....	92
6.5. Huawei's interests are broadly aligned with the rest of the global ICT industry	92
6.6. We all win in a world where the internet is global, open and accessible	92
6.7. Governments must and will remain the arbiters of the public policy exception	92
6.8. National security is vital but cannot be used to justify every policy intervention	93
6.9. Regardless of who exercises leadership, these rules ultimately belong in the WTO	93
References and Further Reading	94

EXECUTIVE SUMMARY

This White Paper on Trade Rules for the Digital Economy represents a first attempt by Huawei, as an emerging ICT industry leader, to exercise thought leadership in a relatively new area of international rule-making. The current set of international trade rules largely predates the internet era of the last two decades. An update of the “analogue rules” to bring them into the digital age is long overdue but has run into some unexpected headwinds as of late. Our White Paper is an attempt to express our views on how we see the current debates surrounding new trade rules, with the hope of making a modest contribution to producing outcomes that would guarantee future decades of the breathtaking growth we have seen in the digital economy and the unleashing of pent-up innovation, as well as the seizing of manifold opportunities as millions have become empowered in the developing world to set themselves free from poverty.

The first Chapter of our White Paper defines the digital economy as the range of goods, products, services and solutions that have emerged and continue to emerge in direct relation to online connectivity. This definition admittedly covers a broad value chain ranging from the hardware and equipment constituting the backbone infrastructure of telecommunications networks, to the devices, particularly smart phones, tablets, wearables, computers and other terminals used in order to get and stay online. This definition also comprises the various services, solutions and applications that have emerged to meet the many needs that users place on the internet and the whole online ecosystem, including digital products and services such as software and e-books. In laying out this definition, we will look beyond the narrow confines of focusing simply on e-commerce, but rather examine how digitalization has transformed international trade across borders: Chapter 1 looks to define and elucidate the emergence of modern day digitalized global value chains that are having a disruptive and transformative effect on both the way businesses operate as well as how

consumers acquire and use products, services and information.

Chapter 2 of our White Paper examines Huawei’s place in the digital economy. Across all of its three business groups, we occupy a unique place in the digital economy in terms of product coverage, but also in terms of our geographical footprint, since we operate in both very underdeveloped as well as very technologically advanced markets. With regard to our core carrier business, we are responsible for building the underlying network infrastructure (pipe) that allows the digital economy to function in the first place. When it comes to our enterprise business, we provide a range of new services and solutions that leverage the power of cloud computing and remotely serviced platforms, such as in the area of digital customs, or our many Smart City solutions. Finally in our devices business, where we are contesting global smartphone, tablet and wearables markets, we operate as a seller of the terminals with which users interface with the digital economy in order to purchase and/or consume the services, solutions, products and information that the digital economy offers. As such, we are potentially vulnerable to changes in the underlying legal, regulatory and policy regimes that govern the many stages of the digital value chain. Chapter 2 discusses several ways in which new and existing trade and investment rules affect different aspects of our business.

Chapter 3 focuses on the underlying legal and regulatory environment in which companies like Huawei operate. As in many other fields of the law, the current rules are struggling to keep pace with technological developments and the quick pace of innovation that characterizes the technology sector in particular. Many countries are enacting rules and setting up regulatory regimes that have a direct impact on the digital economy. Whether it be with the objective of better protecting the data privacy of their citizens, beefing up national law enforcement capabilities in the face of increasing cyber-security threats, or in the hope of kick-starting

their own domestic ICT industries, governments in many countries, both developed and developing are becoming increasingly interventionist in this sector. Chapter 3 analyzes a number of these policy and regulatory trends and discusses how they fit into the broader international consensus that has emerged over the last two decades with respect to global internet governance and rules on the digital economy.

Chapter 4 of our White Paper focuses on the existing and emerging set of multilateral and preferential trade rules that currently or may soon govern the digital economy. International rules for digital trade currently exist in a legal framework put in place before the advent of the internet era, so that we currently live in a world of “analog rules” for a digital age. As in most policy areas, international rule-making tends to lag behind domestic legislative and regulatory responses to the needs of the digital economy. This disconnect is something that had begun to be addressed in a series of free trade agreement negotiations, particularly the Trans-Pacific Partnership (TPP) Agreement and the Trans-Atlantic Trade and Investment Partnership (TTIP) - both of which face an uncertain future at the time of writing. International trade agreement texts that relate directly to the digital economy are also emerging in the context of the Trade in Services Agreement (TiSA) negotiations proceeding on the sidelines of the WTO, as well as in the context of the ASEAN+6 Regional Economic Partnership (RCEP) negotiations. In addition to these initiatives, work has been completed at the WTO to update the 1997 Information Technology Agreement (ITA) to bring a whole range of new products within its scope and the ITA Committee at the WTO is now seen as a key way of advancing liberalization of a whole range of non-tariff barriers (NTBs) that effect trade in IT products. Finally, other initiatives on the protection of data and on privacy that are taking place between the United States and the European Union, as well as earlier work in the OECD and APEC, promise to set new standards that will affect the cross-border

transfer of personal information and as such have important ramifications for the digital economy. Chapter 4 of our White Paper explains the current rules framework, and addresses some of these processes and the substantive rules that are emerging in this context, while also looking forward to the next WTO Ministerial Conference in Buenos Aires in December 2017 and what a reinvigorated WTO Work Program on E-commerce may look like.

Chapter 5, the final chapter in our White Paper, outlines what an optimal framework for the digital economy could look like, namely one that is characterized by a level playing field and non-discriminatory access to commercial opportunities in a spirit of fair and open competition. It also addresses the importance of global investment rules and trade in achieving the goal of bridging the digital divide. It then discusses how the domestic policy frameworks and corresponding international trade agreement rules can be formulated and implemented in such a way that both meets reasonable regulatory objectives and does not act as a disguised restriction on international trade, or in a manner which unfairly favors one set of (domestic) industry players at the expense of another. This Chapter discusses the potential benefits of rules that enable innovation, that encourage deployment of ICT solutions in order to bridge existing digital divides, that promote technology neutrality, an open internet, as well as flexible and compliant approaches to increasing domestic value-add requirements. Finally this Chapter makes a set of compelling policy and economic arguments in favor of the positions taken.

We hope our White Paper will make a constructive and welcome contribution to the debate at a time when the openness of the digital economy that we have all become accustomed to could be under threat and at a time when the positive welfare enhancing effects of trade and investment liberalization we have all benefitted from under the post WWII economic order has started to be challenged in much of the developed world.

CHAPTER ONE | DEFINING THE DIGITAL ECONOMY AND DIGITAL TRADE

In this White Paper we define the digital economy as the range of goods, products, services and solutions that have emerged and continue to emerge in direct relation to online connectivity. This definition admittedly covers a broadly defined value chain ranging from the hardware and equipment constituting the backbone infrastructure of the internet, to the devices, particularly smart phones, tablets, wearables, computers and other terminals that users avail themselves of in order to get and stay online. This definition also comprises the various services, solutions and applications that have emerged to meet the multitude of needs that users place on the internet and the whole online ecosystem, including digital products and services such as software, e-books and music downloads. In laying out this definition, we look beyond the narrow confines of focusing simply on e-commerce, and how digitalization has changed international trade across borders, to define and elucidate the emergence of modern day digitalized global value chains that are having a disruptive and transformative effect on both the way businesses operate as well as how consumers acquire and use products, services and information.

1.	Introductory Remarks.....	4
1.1.1.	Rethinking the Scope of the Digital Economy	4
1.1.2.	Defining Digital Trade	4
1.1.3.	The Digital Economy and Economic Growth	4
1.2.	Some Preliminary Insights on the Digital Economy	6
1.2.1.	Infrastructure.....	6
1.2.2.	Services.....	7
1.2.3.	Platforms and Ecosystems	8
1.2.4.	Devices	11
1.3.	Some Preliminary Insights on Digital Trade.....	12
1.3.1.	How Digitalization is Transforming Trade	12
1.3.2.	Trade in Goods in the Digital Economy	15
1.3.3.	Trade in Services in the Digital Economy.....	16
1.3.4.	Trade-Related Intellectual Property Rights in the Digital Economy	17
1.3.5.	The End of “Silofication”	17
1.3.6.	The Development Dimension.....	19
1.4.	Global and Industry Trends in the Shadow of the Digital Economy.....	20
1.4.1.	Ubiquitous Connectivity and Convergence	20
1.4.2.	More Data about More People and Things	20
1.4.3.	Known Unknowns and the Future of the Digital Economy	21
1.4.5.	Investment in the Pipe for Future Growth and Economic Development.....	22
1.5.	Key Points from this Chapter	24

1. Introductory Remarks

1.1.1. Rethinking the Scope of the Digital Economy

Defining the digital economy can be a difficult task given that the scale of convergence between the digital and the real world is so extensive and happening at such a rapid pace. Any attempt to distinguish between the real economy and the digital economy will become increasingly futile over time, since the so-called real economy and the digital economy are converging to become one intertwined and inseparable singularity, as the distinction between the offline and online economy becomes increasingly blurred.

For the purposes of this White Paper, we have chosen to define the concept *Digital Economy* in fairly broad terms because of its growing importance and its increasing encroachment on the “real economy”.

The Digital Economy Defined

The ecosystem comprising goods, products, services, platforms and solutions that are either instrumental to or avail themselves of online connectivity.

We discuss this definition in more detail below. However, it should be obvious that the key characteristic inherent to the digital economy is its reliance on and link with internet connectivity or online access. The invention and mass adoption of the internet in the 1990s is arguably the single most important event in making the digital economy a part of almost everybody’s daily lives and is what triggered the evolution of the digital age we now find ourselves at the very beginning of.

However, this definition focuses on those technologies that *enable* digitalization and the products, services and solutions that make the technologies function – whereas the scope of the trade that is affected and enriched by digitalization is even broader.

1.1.2. Defining Digital Trade

This leads us to our definition of digital trade. Just as we seek to define the digital economy for the purposes of this White Paper we must likewise move beyond a narrow focus on e-commerce, in order to capture as much of the economic activity that takes place on the back of and in connection with the digital economy. Accordingly, we define the term “digital trade” as follows:

The cross-border supply of goods, products, services and solutions that are instrumental to or avail themselves of online connectivity.

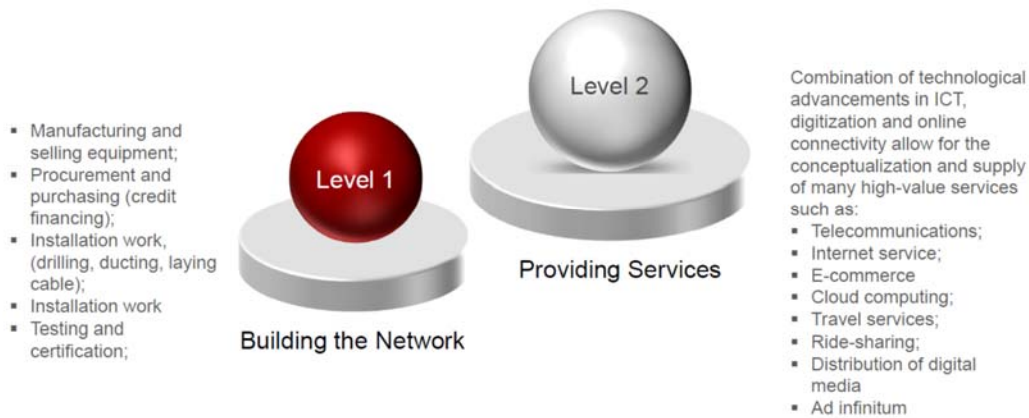
Digital Trade Defined

In other words, what is actually defined as digital trade also includes anything that enables and is enabled by digitalization. These definitions matter first as a way of delimiting and clarifying the scope of this White Paper, but also because, as the importance, ubiquity and centrality of the digital economy grows, so too does the difficulty in clearly delimiting the digital economy from the real economy as they steadily continue to converge with one another.

1.1.3. The Digital Economy and Economic Growth

Much has been written over the last two decades about the role of ICT, digitization and the internet in supporting economic growth in industrial countries and fostering economic development in developing countries. On the economic growth side, the consensus among economists seems to gravitate towards differentiating between the so-called “first level” effects on the one hand and secondary or indirect positive effects on the other (Figure 1.1). The first of these are the direct result of increased investment in the underlying infrastructure and the economic activity this entails, such as manufacturing and selling the

Figure 1.1: First and second level economic impact of investing in connectivity infrastructure



Source: Huawei

equipment, its purchase (and any credit financing involved), as well as any installation work, drilling, ducting, deploying and testing of the equipment. The secondary and ultimately more important economic growth effects that stem from the alignment of technological advancements in ICT, digitization and online connectivity are generally attributed to their combined role in offering platforms for the provision of a whole range of conventional and new services. These services range from telecommunications to those that nobody had previously really thought of providing and/or consuming online (ride-sharing to name one, purchasing and listening to music to name another).

The economic growth effects of the internet economy are also attributed to the ability of this technology to collect, store, and disseminate an unprecedented amount of information to an inconceivably large number of people: not millions, but billions. The transfer of knowledge inherent to this process and the various ways in which all this information is put to productive use is an important pillar of the productivity growth we have seen in all major industrialized countries over the last two decades. Much of this information and all of its potential users were of course “out there” before the advent of the internet economy and the arrival of the digital

age. But the convergence of powerful, relatively inexpensive and ubiquitous ICT technologies (a supercomputer in everybody’s pocket) with fast, reliable and affordable internet access (particularly mobile broadband), has exponentially ramped-up and accelerated the possible transactions, applications and thus potential opportunities for which all this information can be put to some kind of economically rewarding or intrinsically valuable use by all these billions of actors.

Finally, because the internet is a so-called “general purpose technology”, its potential (similar to electricity in another age), to increase both efficiency and welfare, and to transform how and where economic activity is organized, it is not surprising that it has been a big part of the economic growth stories of many countries over the last two decades. Related to these trends are also the increased transparency, lower transaction costs, and ultimately greater competition that ICT technologies and online connectivity have been proven to foster. Although these have proven to be very disruptive for some established actors, these new technologies have also brought with them many new growth opportunities for both legacy players and new market entrants.

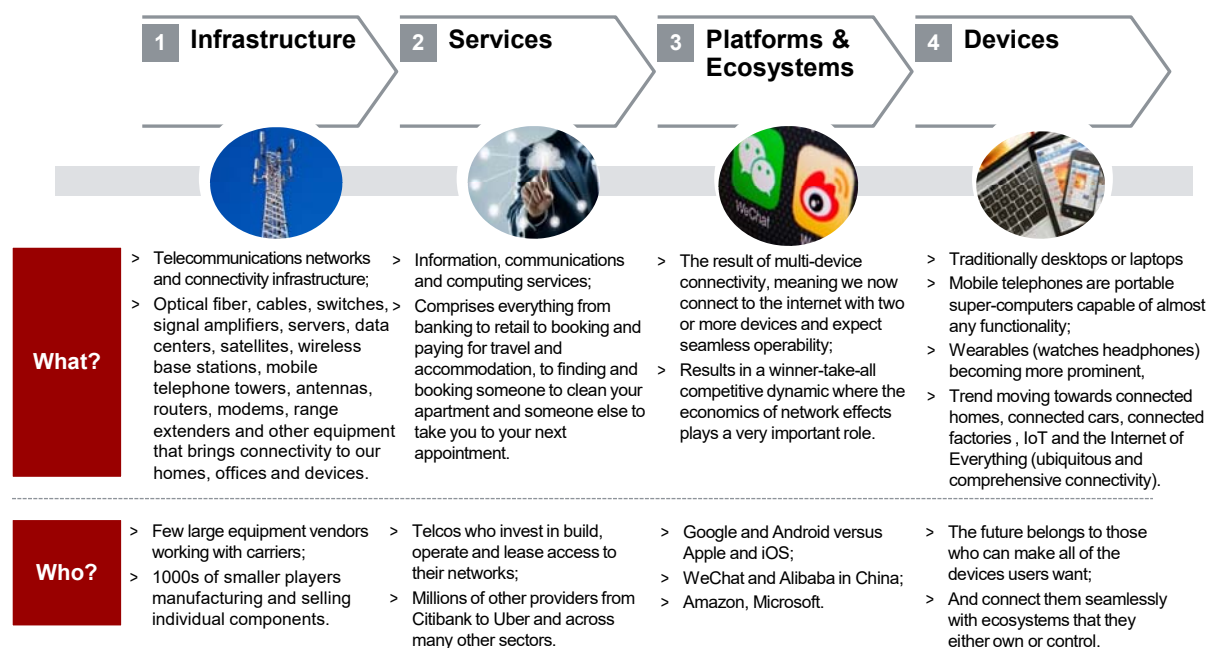
1.2. Some Preliminary Insights on the Digital Economy

The digital economy is characterized by the fact that it often defies the neat classification into product categories that the world has become accustomed to when dealing with the real economy. Digitalization is affecting almost all areas of our economy and society, opening opportunities for new services, products and business models, and transforming the way in which consumers and businesses interact with one another. The impossibility to easily compartmentalize the different products and solutions on offer in the digital economy is one of

1.2.1. Infrastructure

The infrastructure required to power the digital economy largely consists of **telecommunications networks and the underlying backbone equipment** such as optical fiber, coaxial cables, switches, signal amplifiers, servers, data centers, satellites, wireless base stations, mobile telephone towers, antennas, routers, modems, range extenders and other “hard” infrastructure elements that bring connectivity to our homes, offices and devices (discussed in a separate

Figure 1.2: The digital economy: Infrastructure, services, platforms/ecosystems and devices



Source: Huawei

its core strengths, but also one of the things that has most often confused governments and regulators when contemplating policy interventions on how best to harness it for their own objectives. In this chapter we set the scene as to why the digital economy is so important and then focus on a number of items which are critical when analyzing the digital economy. They include infrastructure, services, platforms and devices (**Figure 1.2**).

section below). Except for those in the industry, these elements are largely invisible to most users, unless of course connectivity is disrupted or lost, in which case its absence is suddenly sorely felt by all. Telecommunications networks have been subject to a number of **path-breaking technological innovations** over the last few decades, whereby we have **moved from analog** telecommunications networks that “only” carried voice or audiovisual radio signals, **to the**

present digital age of broadband internet communication networks that carry huge and ever-increasing amounts of data at increasingly faster speeds.

The infrastructure side of the digital economy is made up of a few large equipment vendors that work closely with carriers, as well as thousands of smaller players manufacturing and selling individual equipment components such as cables, antennas, tubing etc. Industry consolidation and vertical integration are ongoing trends, but so is a high degree of fragmentation along different parts of the ICT industry value chain, since many elements are low-cost (and low value-add), so that they have become cheaply and easily tradable commodities. Apart from large **equipment vendors** like Huawei, the infrastructure space is populated by a number of important stakeholders. The most important are arguably 1) **carriers** who invest in, build and operate the telecommunications networks, thereby providing communications services to users and; 2) **governments**, who issue operating licenses, manage spectrum allocation and regulate their respective telecommunications sectors more generally. Other important stakeholders in terms of infrastructure are **standard-setting bodies**, which include international organizations such as the International Telecommunications Union (or ITU), but which also comprise industry players from the private sector who come together to agree on standards for such things as electromagnetic compatibility (EMC) or interoperability of different communications technologies.

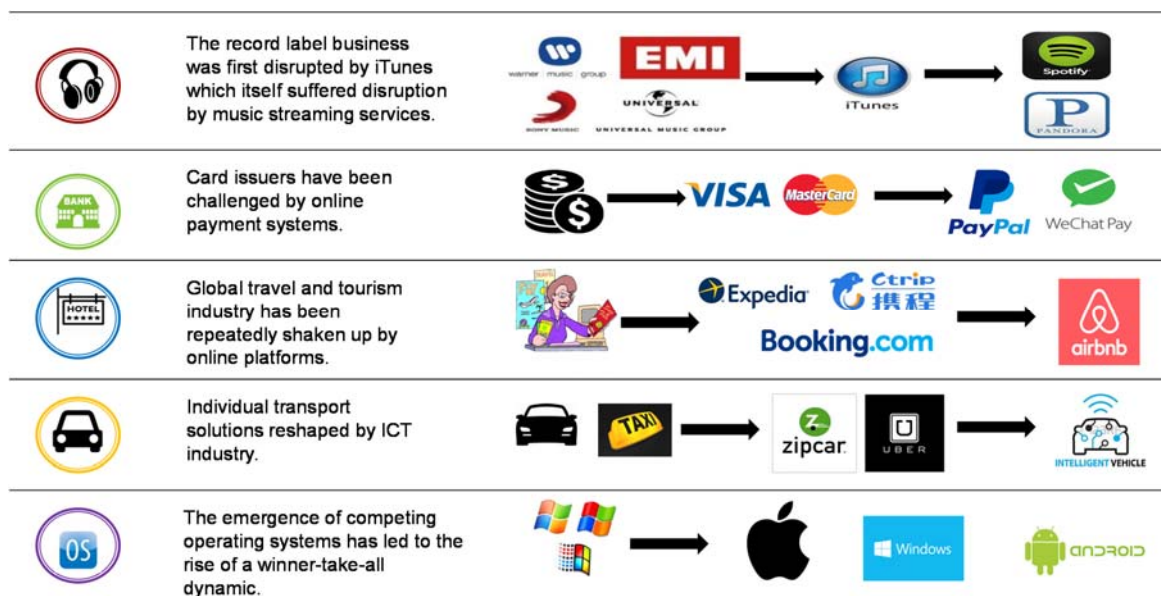
1.2.2. Services

The provision of services is the whole reason the infrastructure described above is built and operated. **Telecommunications services** previously just meant voice calls (and before that the provision of telegraph and telex services). These services have since morphed to first include fax communications (now barely used) and then later email services. They now

encompass the provision of broadband internet connectivity which is used to transmit and receive all kinds of data, from voice, to audio, to text, to images and video. The services side of the digital economy has experienced explosive growth on the back of the internet connectivity provided by telecommunications networks. Whereas the services offerings of telecommunications networks traditionally comprised the transmission of voice signals, telex, fax messages, and later short-message-system (SMS) texts, the trend more recently is for all kinds of content to be downloaded and uploaded over the top of these networks (leading to the distinction between OTT services suppliers and traditional carrier operators), as we have moved from fixed local area network (LAN) connections (usually to desktop or portable computers) to a world of mobile wireless connectivity (directly to handheld devices such as smartphones, tablets or wearables). This has had profound implications for the kinds of services that are now provided and consumed in the digital economy. We now use various services in the digital economy to engage in all kinds

of transactions that used to involve going to a brick and mortar store. Examples of **online services** include booking and paying for airline tickets, paying our credit card and utilities bills, buying groceries, browsing for and purchasing books and magazines. Other services that have been enabled or vastly facilitated by the digital economy include hailing and paying for a taxi or other local transport services, renting out a spare bedroom or vacant residential space, finding, booking and paying for someone to come and clean your house or apartment, finding and making reservations at a restaurant as well as reading and writing online reviews about one's dining experience. In fact, new services are constantly being conceived and offered by entrepreneurs and innovators in the digital economy, so that there are very few limits to the kinds of services that can be bought and sold online.

Figure 1:3: Innovation and disruption due to digitization and online connectivity



Source: Huawei

The biggest players in the services space are again telecommunications companies, who invest in, build, operate and lease access to their communications networks. Across the different services sectors that have emerged over the top of these networks and in the space created by the digital economy, we see other important players, such as banks and financial services providers who were some of the earliest and most enthusiastic adopters of the many possibilities online banking services offered (fintech). Another set of important players that have emerged in the digital economy are search engines and email providers. Yahoo! is an example of a company that emerged quickly in the early days of the internet to provide email and search engine services to subscribers and quickly evolved to become an important platform before its importance dwindled with the emergence of other big **platforms** such as Google or Facebook (discussed in more detail in the next section). Other big players on the services side of the digital economy are of course **software companies** and **app developers**, the most famous of the former being Microsoft, which quickly seized on the game-changing nature of internet connectivity and began

bundling its browsing application Internet Explorer with all subsequent versions of its *Windows* software. But other behemoths in **cloud computing**, **enterprise software** and **services** have also emerged such as IBM (already a big player in office computing systems even before the advent of the digital economy), Oracle and SAP, all of which provide back-office processing software to business users, as well as companies such as Symantec and McAfee, which emerged to provide antivirus software, primarily to corporates and end-users. Finally, worth mentioning in this context are companies such as Amazon, Uber and Airbnb which have emerged as very large and successful companies across different parts of the digital services economy (the last two in the so-called **peer-to-peer** or **sharing economy**), providing different services to millions of consumers and leading the way as pioneers in their respective services sectors.

1.2.3. Platforms and Ecosystems

This space in the digital economy has arguably only emerged thanks to the rise of multi-device connectivity, meaning we now connect to the internet with at least two devices and in some cases more. It is also a space that has opened up

as the range of services provided in the digital economy has expanded, allowing all-in-one or multi-pallet solution providers to emerge. Thus, where we used to only connect to the internet using either our desktop or portable computers, a simple and largely binary choice had to be made between Microsoft's Windows or Apple. Today, different **platforms** and **ecosystems** (of apps and digital content) have emerged to try and capture as much of users' online activity across as many devices as possible.

Often these platforms started out as something much more modest such as a **search engine** (in the case of Google) or a **social network** (in the case of Facebook), before expanding into something considerably more all-encompassing. Today, it is increasingly recognized by analysts and observers that successfully future-proofing a business model in the internet economy either means evolving to become a major platform or partnering with one of these platforms to reach as many users as possible. These platforms or ecosystems comprise both operating systems, app economies, as well as interaction, communication and content spaces to which users turn for a plurality of their online needs. Many of them have incorporated **software** and **digital content** products (e-books, music and video) that used to be goods in their previous incarnations when they were supplied on CDs, video tapes, cartridges and floppy disks. Such products form a special subset that are neither goods nor services, often denoted by trade experts as **digital products**.

As mentioned above, **Google** started out as a search engine and was so successful that by 2006 the word had become a verb, the use of which was so ubiquitous that it had been entered into dictionaries in most of the English-speaking world. At the time of writing, Google has eight different products that over a billion users use on a regular basis, namely: Search, Gmail, YouTube, Android, Chrome, Maps, Translate as well as its app and media store, Google Play. This makes

Today, different **platforms** and **ecosystems** have emerged to try and capture as much of users' online activity across as many devices as possible.

Google a company that knows an incredible amount about its users (the other company in this situation being Facebook, discussed below), positioning it very strategically to anticipate and influence future trends. Google has so far made a number of attempts to move into the devices space, with its Pixel smartphone, as well as prototype wearables such as Google Glass (now discontinued for consumers but increasingly being taken up as an augmented reality technology for industrial applications). Another example is Google Daydream (a set of virtual reality goggles), as well as Google Home (a speaker that allows users to activate and use a range of connected electronic devices by voice commands). Google has also been at the forefront of technological innovation on a number of fronts, particularly autonomous vehicles and more recently artificial intelligence. In much of the world, Google is an indispensable part of billions' of users' daily forays into the online world and the digital economy.

Apple started out as a computer maker that introduced a number of breakthroughs, first in desktop computing (Macintosh) and then later in portable computers (MacBook), portable music players (iPod), and mobile phones (iPhone). Apple is credited with single-handedly inventing tablets (iPad). Apple also

developed software to run on its computers independently of the Microsoft *Windows* platform with which it competed head-to-head for many years and continues to do so across a narrow range of productivity applications as well as competing with the Android operating system from Google for smartphones with its own iOS. When Apple started selling its iPod music players, it simultaneously moved into the business of music downloads with its iTunes store, which revolutionized the way many in the world purchase and listen to music and had far-reaching and hugely disruptive effects for the record-label industry (**Figure 1.3**). Apple TV provided similar functionality in terms of video content (streamable movies and television

series), but by the time it came along content owners had already started to adapt to the new reality of on-demand video (thanks to players like Netflix), so that Apple's entry into this market was less disruptive on the whole as it had first been with its iPod player and iTunes music downloads. Nowadays, Apple is not just a provider of devices, applications and content services, but have also integrated all its services with personalized cloud services accessible all its devices. The iPhone was another technological breakthrough that gave rise to a whole new wave of innovation and firmly planted Apple in the center of a hugely important online ecosystem thanks to its iOS App Store. Apple iOS apps can now be downloaded and used to consume almost any service in the digital economy.

When Mark Zuckerberg started **Facebook** he arguably wasn't really sure what he wanted to do with the website. It was really little more than just an online manifestation of the college yearbook, with photos of Harvard classmates including some information on them. From these humble beginnings, Facebook quickly expanded to other Ivy League institutions, then to all US universities, all universities worldwide (it was initially necessary to have an ".edu" email address to register) before then being opened to literally anyone to register anywhere in the world, provided they had an email address. Facebook quickly became the social network of choice, putting other existing sites such as *Myspace*, *Hi5* and others largely out of business. Today, after an IPO and phenomenal growth in terms of speed and user-base, Facebook is more than just a social network, and offers itself as a platform for communications (Facebook Messenger and WhatsApp that it acquired in 2014), for user authentication with third-party websites, for interactions with old, existing and new connections, as an online gaming vendor, and – most importantly – as an advertising platform. Facebook has also become the primary source of

WeChat is now arguably one of the most innovative, comprehensively cross-cutting and dominant platforms and ecosystems in China and, at the time of writing, is considerably ahead of all of its non-Chinese peers and rivals on many metrics.

news on current events for a large number of its users, with many traditional news organizations paying Facebook to run their content in its newsfeed, alongside updates from users' online friends.

WeChat or Weixin (微信), which means "micro letter" in Chinese) started out as a relatively late entrant to the world of instant messaging, but it has grown, innovated and conquered for itself an important part of the digital economy in China. The company is now arguably one of the most innovative, comprehensively cross-cutting and dominant platforms and ecosystems in China and, at the time of writing, is considerably ahead of all of its non-Chinese peers and rivals on many metrics. WeChat is now a platform by means of which one can communicate with friends and colleagues, send them photos or videos, pay bills,

order and pay for taxis and other transport services, buy railway tickets, order and pay for home or office delivery of meals, buy movie tickets, stream and watch videos, advertise and distribute coupons and promotions, as well as pay for any good or service in the millions of stores equipped with the necessary barcode readers, or to provide payment to

anybody for any service provided they also have a WeChat account that has been enabled to accept and make online payments. One can also use WeChat to transfer money to other WeChat users either as a gift (in the form of a virtual red envelope) or in order to settle a debt. In fact, almost any service that can be provided and consumed online can be accessed from within the app, which in many ways is becoming so ubiquitous and comprehensive that a Chinese user would not need to use his or her phone's internet browser anymore, or any of the other stand-alone apps on his or her smartphone. In this way, WeChat has actually started to "displace" the internet and the app economy per se (in that it serves as an all-encompassing platform on top of the network connectivity

provided for and by the internet). WeChat does this in a variety of ways, but mostly by partnering with online providers of the many services just mentioned and allowing them to use the messaging platform and app directly to plug in their own functionality and content. In this way, said service providers have access to billions of users and WeChat becomes the platform and ecosystem of choice for users (a genuine “win-win”). Users also benefit because they don’t need to keep abreast of the latest offerings in the app world, or download new apps if they don’t want to. WeChat can provide almost all the functionality they need from their devices when it comes to the online world and the digital economy.

1.2.4. Devices

The devices segment of the digital economy is where the user or consumer interfaces with the whole range of goods, services and solutions on offer to him or her online. This part of the digital economy is about getting people staring at their screens and using the functionality offered by their devices to consume, interact, use and engage, either with other users, with sellers, service providers or in fact any of the many other stakeholders in the digital economy. Devices are a crucial aspect of the digital economy but not all the big players described above sell their own devices, although of course all of them make sure that what they offer can be accessed by almost any devices. Below we first discuss desktop and portable computers, before discussing tablets, detachable tablets, smartphones and finally wearables.

Desktop computers are where the devices space started in the 1980s and where most online activity was primarily centered in the early years of the internet (in the 1990s) because of the need to plug into a fixed line connection. Once **portable computers** became affordable and easy enough to carry and once wireless networks

became more widespread, portable computers also started to become widely used to connect to the internet. The biggest manufacturers in the desktop and portable computer segments in the 1990s and 2000s included names such as Apple, Dell, Compaq, Hewlett Packard, IBM, Fujitsu, Acer, Sony, Toshiba and many others. Today, the biggest names in portable computers would have to include brands such as Apple, Sony, Samsung, Lenovo, HP, Dell, Asus, Microsoft (who only recently moved into this space from being purely a software company), Acer, and Toshiba.

Tablets were something that were arguably invented only when Apple introduced its first iPad in 2010. Since then, tablets have become a mainstay of the devices space with many companies quickly following suit and producing their own versions of this predominantly “lean-back” device, meaning it is first and foremost for the consumption of content rather than intended

to be a productivity device.

The leading names in the tablet space today would have to include brands such as Apple, Samsung, Google (which recently started selling its own tablets), Sony, Nexus and Huawei. Because of their limitations as productivity devices, a new generation of **tablets with detachable keyboards** was launched, first by Microsoft,

and subsequently by Apple, with others such as Google, Sony, HP, and Huawei all opting to follow with their own detachable tablets. These devices have to a great extent presaged the very likely direction the industry is headed, namely away from portable (laptop) computers and towards hybrid devices that work equally effectively as both lean-back and lean-forward devices.

Smartphones are now the most common terminals used by people to connect with each other and the internet and thus they are arguably the most important of the various devices in the digital economy. Smartphone-uptake has been on the rise for several years now, with market saturation rates quickly being approached in

most developed countries. The potential of the smartphone to essentially “put a supercomputer in everyone’s pocket” has not been overlooked by many in the industry so that the smartphone is increasingly becoming the focus of various stakeholders’ efforts in the digital economy when developing goods, services, solutions and platforms by means of which to engage with consumers and businesses. There are many players in the smartphone space, but the largest, most innovative and influential at the time of writing are Apple, Samsung, and Huawei, with a wide field of “runners-up” such as Xiaomi, Oppo, Sony, HTC, LG, and Lenovo.

Smartphones generally tend to come within a recognized range of product sizes with another subset of larger smartphones also emerging in recent years for those users who prefer to use their phones as lean-back devices with larger screens. These so-called “phablets” represent hybrid devices between

smartphones and miniature tablets, with the major players in this space being Samsung, Apple (who only recently started to compete in this segment), and Huawei.

Wearables - particularly smart watches - have recently become an increasingly contested space in the devices segment, with many brands vying for more and more market share as consumers increasingly turn to these gadgets as fashion and lifestyle accessories. This is an area with admittedly a lot of growth potential and where future trends are still difficult to predict. The largest players in this space are Apple, which had

The smartphone is increasingly becoming the primary focus of various stakeholders’ efforts in the digital economy when developing goods, services, solutions and platforms by means of which to engage with consumers and businesses.

a respectable degree of success when it launched its Apple Watch in 2014, as well as Samsung, Motorola, Huawei, Sony, Asus, LG and (Swiss watchmaker) Tag Heuer.

Other important connected devices include smart TVs, gaming consoles, virtual reality goggles, set-top media devices and home speakers with interactive technology, all of which are set to play an increasingly important role in the devices space, especially as these technologies continue to evolve and take up their place among more conventional and widely-adopted devices. These are only few examples of

the wide range of devices that are being connected today to the internet. This mass transformation of everyday objects into smart connected devices has given rise to the phenomenon of the **internet of things (IoT)**: a network of connected objects that are able to collect and exchange data without human

intervention.

However, the real impact of internet and connectivity is less eye-catching than the latest wearables. The industrial use of internet and high-speed mobile networks, through so-called **machine-to-machine** communication taking place between machinery, installations and various measuring equipment allows for complex real-time information used to effectively plan production and maintenance. This could be controlling traffic, optimizing energy production or just sending out an alert that the local vending machine has run out of a particular item.

1.3. Some Preliminary Insights on Digital Trade

1.3.1. How Digitalization is Transforming Trade

To recall the definition provided above, digital trade for the purpose of the present White Paper is defined as “the cross-border provision of goods, products, services and solutions that are

instrumental to or avail themselves of internet connectivity”. Although trade in goods has been the predominant form of international trade for millennia, its role in the digital economy is arguably waning. Trade in goods still dominates in terms of both the underlying infrastructure

needed in order to provide online connectivity as well as with respect to the manifold devices needed to translate this connectivity into useful applications for businesses and consumers. But between these two spaces, most activity takes place in the realm of services, or hybrid digital products, and thanks to the protection afforded by intellectual property rights, all of which is discussed below. The last part of this section discusses the fact that the compartmentalized treatment of trade in terms of goods, services and IP is quickly becoming obsolete in the digital economy.

Traditionally, the economic rationale for international trade has been as a means to expand and seek business opportunities beyond the home market. This narrative of market access, i.e., exporting and tapping into economic growth overseas, remains a central part of international trade. In 2016, global e-commerce sales exceeded US\$1tn in turnover, yet was still growing at 20% per year. If e-commerce was a country, it would be the GDP of Australia or Russia, yet growing three times faster than the Chinese economy.

Whereas trade has historically focused on goods – items shipped in crates and barrels – technology and globalization has made other parts of the economy tradable, with online services and content (such as music and video) being the main examples. This increased tradability of services and goods has in turn become a catalyzer for further productivity improvements: As an increasing variety of goods and services become available to the economy, markets start to function better, allowing everyone to be more productive.

This in turns allow businesses and countries to specialize in what they are good at producing – to cultivate their comparative advantage. As economic actors focus on their specialties, whilst importing goods, services and competences from others, economies are now collaborating at a scale never before seen. The digital economy has led to a new level of inclusiveness in global trade. This exchange also takes place at a much more granular and practical level – on the level of individual businesses. Digitalization opens new markets, which allows an efficient firm to expand, reap greater economies of scale – by enabling

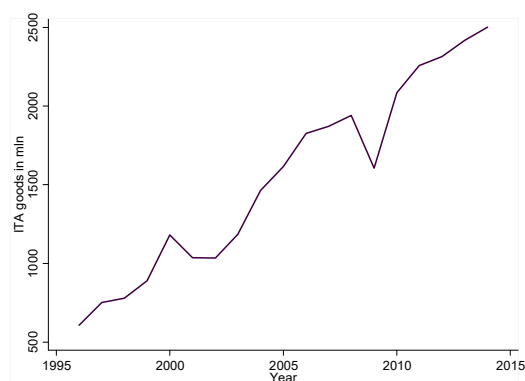
them to scale locally, regionally, or even globally and in doing so, allows them to use their existing resources more efficiently.

The ability to scale creates economic synergies with the productivity increases unleashed by new technologies. These forces of trade and technology may not be entirely new – intercontinental flights and maritime container transport were

innovations of their time – but the impact of the digital economy brought down the cost of engaging in trade for a larger group than ever before, with benefits reaching a much wider group of people, much smaller-sized companies, and covering more sectors of the economy than ever before – in other words, more people reap the benefits from digitalization and access new markets than through previous innovations in trade.

In this context, the use of online platforms plays a key role in this success story of exporting new products and reaching new markets: Online platforms provide export opportunities for the smallest firms to export their products to far-reaching markets without investing in local distributors and sales offices. The near-zero

Figure 1.4: Trade in digital goods as a percentage of global trade, 2000-2016



Source: ECIPE; WITS, WDI. Note: Digital goods are defined here based on ECIPE, 2011.

marginal cost of exporting has allowed even micro and small enterprises in developing countries to evolve into multinational enterprises, into so-called “micro-multinationals”. Consumer confidence in foreign suppliers has also increased thanks to more information being available and thanks to the near-zero costs of market research online, with diminishing “information asymmetries” as a result.

In sum, digital trade brings more opportunities for developing and emerging countries than in industrialized and developed countries. In recent years (and especially since the introduction of the mobile internet), developing countries have leap-frogged into e-commerce, generating higher incomes and catching up with the industrialized world at a faster pace than ever before. Obviously, new services, platforms and apps make physical distances, capital investments and physical presence less relevant. Even traditional goods trade has become facilitated as the sales process – from customization, quality assurance to payments – has been digitalized and available at extremely low costs, though they may not always be interoperable between different countries.

1.3.2. Trade in Goods in the Digital Economy

Whereas trade in digital goods used to be dominated by infrastructure, computers and electronic devices between OECD countries (so-called “north to north” trade) until the mid-1990s, trade in goods is now equally dominated by south-south trade, between developing countries and emerging economies. Here, China plays a central role in making digitalization a realistic and affordable proposition for the non-industrialized economies.

Goods trade is not only expanding geographically. Electronics, processors and computers are finding their way into almost every type of product. For example, more than half of the value of a passenger car is derived from various on-board electronics and software components. The number of digital goods available in the market is increasing constantly and many more will be developed with the adoption of IoT

technologies, smart homes and other concurrent trends. **Figure 1.4** shows how trade in digital goods has been increasing over the last 20 years:

To be sure, global trade rules affect trade in goods in a multitude of ways. Despite international trade agreements like the Information Technology Agreement (ITA), traditional trade restrictions – such as tariffs, rules of origin and customs clearance procedures – still hamper trade to some extent. However, the focus has shifted towards regulatory non-tariff measures (NTMs), such as divergences in technical standards or market rules that are applied inside a country, rather than at the border. It may be self-evident, but trade barriers imposed on goods still matter.

Digital products that used to be sold as goods such as music (in the form of records or CDs) and movies (in the form of video tapes or DVDs) are now transmitted digitally, or have been converted like many books (e.g., PDF, Kindle, epub) into downloadable media. There are two overlooked angles regarding trade in such products. Firstly, the digitalization of physical goods into intangibles inevitably begs the question – should they be subject to tariffs as if they were physical goods if they are transferred across borders, i.e., downloaded, from overseas? The rules of the World Trade Organization (WTO) and other major trade agreements are still inconclusive. The classification of digital products has a major implication on trade rules for 3D printing and other future technologies, as even physical products become downloadable.

Secondly, some of the biggest names that have emerged in the internet economy, such as Amazon, eBay, and Alibaba, are primarily concerned with the old-fashioned business of selling and shipping goods to buyers. These players have been able to leverage the many advantages that online connectivity provides to offer more goods, to more buyers, at massively enhanced economies of scale, and at considerably less cost than legacy “brick and mortar” wholesalers or retailers. Thus, trade in goods is still a central concern for the digital economy, and will continue to be so for the foreseeable future, since not everything people

consume, and not every component that manufacturers input into a product can be reduced to binary code or a series of “zeros” and “ones”.

1.3.3. Trade in Services in the Digital Economy

The cross-border supply of services, known in trade-policy parlance as “mode 1”, has quite understandably experienced enormous growth with the advent of the internet and has thus been a primary driver of the digital economy. Cross-border data flows are often described in ostentatious terms like “the life blood of the economy”, or “the new oil” – and such descriptions are by no means hyperbolic.

As shown in **Figure 1.5**, growth in the cross-border supply of services has been increasing steadily and has bounced back to a higher level after the global financial crisis. This reflects one of the interesting features of trade in digital services: they are more crisis-resilient compared to goods. Globally available digital services become less prone to the fluctuations that occur in local demand. Also, with an annual growth rate of 4.5% in services trade, service-driven businesses tend to be more resilient overall as they become a daily habit of users, as well as a necessity of businesses as a day-to-day production input. In conclusion, data makes our economies more resilient to economic crises.

The digital economy has also given rise to services that did not exist before, or if they did exist, were in much more primitive (analog) forms. According to UNCTAD, half of all global trade in services is enabled by ICT and connectivity: Traditional services like banking, travel, telecoms and professional services can no longer be supplied without a connected device.

But connectivity has also spawned a new category of services including car-sharing services like Zipcar, crowd-funding platforms like Indigogo or high-frequency trading. Some of these services can be traded internationally (e.g., supplying storage on the cloud) and thus frequently are traded, whereas some are inherently local or domestic in nature. For example, using an online app to book a cleaner to come and clean your apartment, or legally downloading a song is contingent on domestic copyright.

But for many services that are now traded in the digital economy, the existence of international

borders is largely irrelevant - the most internationalized services in the digital economy are arguably those that can be provided completely online, such as online advertising, online retail, and back-office business processing services. The trade rules that have evolved to govern international trade in services (discussed in more detail separately

in Chapter Four of this White Paper) generally focus on the terms and conditions subject to which foreign service providers will be given access to domestic service markets (market access) as well as any limitations the host government wishes to maintain in terms of national treatment, i.e., the right to treat domestic service providers more favorably in comparison to those foreign service suppliers granted market access. International trade rules governing services also recognize and address the fact that services markets tend to be heavily regulated. These rules try to set some standards for regulatory interventions in terms of minimum requirements on transparency, predictability and consultation with the affected industry.

Figure 1.5: Growth of Cross-Border Supply of Services, 2007-2012



Source: ECIPE; World Bank TIS database; OECD

The two “elephants in the room” when it comes to trade in services in the digital economy are telecommunications services and financial services. This is because without some sort of deregulated and liberalized set of rules governing telecommunications services we simply would not have much of the underlying backbone infrastructure for internet connectivity, thus rendering the digital economy defunct. The negative impact on digital trade from burdensome telecoms regulations shows that properly functioning telecoms and financial services markets, governed by proportionate rules is a necessity for digital trade. Free trade in such “core” services – and not just connectivity – is of crucial importance for inclusive digital trade.

The importance of financial services to the digital economy resides primarily in the online payments space, where banks, card-issuers and to a more limited extent online payment platforms like PayPal or Alipay play an essential role in allowing people to pay for the internationally traded services they consume over the internet. It’s a well-known fact among international trade economists and lawyers that the multilateral set of rules we have today governing trade in services, the General Agreement on Trade in Services, was largely concluded at the behest and on the insistence of big telecommunications and financial services suppliers lobbying very hard for their adoption during the Uruguay Round (particularly AT&T, American Express, and Travelers – later taken over by Citibank). In the digital age, the importance of these sectors has only grown given their role as enablers for so much of the other economic activity that takes place in the digital economy.

For many services that are now traded in the digital economy, the existence of international borders is largely irrelevant - the most internationalized services in the digital economy are arguably those that can be provided completely online, such as online advertising, online retail, and back-office business processing services

1.3.4. Trade-Related Intellectual Property Rights in the Digital Economy

As might be expected, intellectual property rights play a big role in the digital economy at many levels. Patents are important in terms of ICT equipment and devices, and are often the source of bitter litigation (but also fruitful cooperation) among some of the biggest names in the infrastructure and devices space. Much of the services that are provided across borders also contain a large amount of proprietary information and intellectual property, and this is reflected in the costing and thus the prices that are charged for these services. In

addition to this, much of the content that is traded digitally, whether in the form of video, reading matter (books, magazines), video games, or music, is subject to national and international copyright, which more often than not can act as a serious constraint on the (legal) cross-border trade in these products. Many retail services, such as online pharmacies to name a very prominent example, run afoul of domestic IP laws in the markets where their customers reside, which again acts as a constraint on trade in the digital economy in goods and services protected by IPRs.

1.3.5. The End of “Silofication”

Up until now, much of the thinking on digital trade and how international rules should be conceived to regulate digital trade has followed in the well-trodden pathways already established for regulating trade and negotiating trade and investment liberalization in other sectors. This is understandable but can be somewhat unfortunate, since typically the officials that show up at meetings to negotiate on rules for the digital economy are almost invariably telecommunications regulators who have a very narrow negotiating mandate and also may not be fully briefed on other relevant areas of

substantive expertise that are of intrinsic importance to the digital economy as a whole (services, IP, technical regulations and product standards etc.). This can lead to a fragmented approach that can be detrimental to, rather than supportive of, international trade in digital products. Think about for example the on-demand streaming services for audiovisual media available in markets like the United States. The technology certainly exists to export these services to the whole world, and there is no doubt that the demand is there with viewers in many countries eager to consume this content any way they can. However, restrictions in copyright that have not kept pace with the available technological developments effectively stop such exports from taking place legally. This is just one of many examples where the “silofication” of trade rules leads to sub-optimal outcomes (here in the form of demand and supply gaps) for both consumers and suppliers in the digital economy.

Advocacy in favor of a more “holistic” and horizontal approach to digital trade policy follows a general trend towards breaking silos. World trade is increasingly collaborative, with global supply chains in which inputs are collected globally – or as the WTO puts it: things are no longer made in China, United States or Brazil, but “made in the world”. In fact, intermediate input trade in goods and services represents 56% and 73% respectively of trade flows in goods and services. Global value chains are highly sensitive to trade costs which are to a great extent alleviated by the internet. But it is likely not enough. On the contrary, looking at recently negotiated trade agreements, they include many more items than just traditional trade barriers in goods or services – but also horizontal rules and disciplines common to both, breaking the silos. The negotiation of future trade rules in accordance with the old silos appears increasingly obsolete when confronted with the possibilities of a future replete with connected

World trade is increasingly collaborative, with global supply chains in which inputs are collected globally – or as the WTO puts it: things are no longer made in China, United States or Brazil, but ‘made in the world’

cars, or the realm of the Internet of Things and smart grids. Or imagine a not-to-distant-future where all these technologies can and will work together with a smart watch unlocking a connected car that is interlinked with smart traffic lights in a smart city. It is doubtful that the still very prevalent silo-based format used to negotiate new trade rules and disciplines is well suited to the future on offer by the convergence and widespread adoption of these technologies.

Many observers have noted that we seem poised on the verge of the fourth industrial revolution. The industrial revolution kicked off with the advent of mechanical production in the 18th century, enabled by water and steam power. The second industrial revolution is placed at the beginning of the 20th century with the rise of mass production powered by electricity – often

associated with industrialists like Henry Ford and Frederick Taylor. The third industrial revolution starting in the 1970s saw the widespread adoption of electronics and IT on the manufacturing floor resulting in the automation of production, which paved the way for the current fourth industrial revolution, enabled by ubiquitous connectivity and the rise of “big data”. The fourth industrial revolution has brought along new concepts such as autonomous robotics, 3D printing, cloud computing, the Internet of Things and sensor technologies to drive a paradigm shift in manufacturing. This new era of industrial production builds on the concept of cyber-physical systems. A profound interaction between the real and the virtual worlds, which sits at the core of the manufacturing process. The concept of Industry 4.0 relies on the central role of machines in understanding and interacting autonomously with the physical world and is paving the way to many opportunities in terms of smarter industrial processes, new business models and the development of new services embedded in products. This transformation in the industry is a clear example of how the real economy and the

digital economy are becoming increasingly difficult to separate from one another (convergence).

In conclusion, the policy boundaries between products, ideas and services have become very blurred. And this convergence has already paved the way for the so-called “servicification” of manufacturing. Just to take one example from Huawei’s own industry, the portfolio of cloud application services with the delivery of platforms (PaaS), infrastructure (IaaS) and software as a service (SaaS) are examples of servification of a manufacturing industry. In this example, trade rules for the cloud will follow suit, as trade in cloud necessitates bridging the gap between the trade rules for goods, services and intellectual property.

1.3.6. The Development Dimension

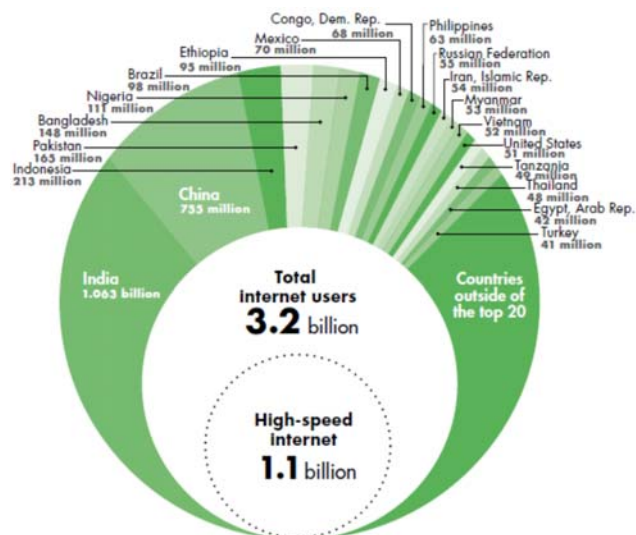
We discussed the linkages between the digital economy and economic growth above at the start of this chapter. This section seeks to provide some insights into the corresponding relationships between the digital economy and economic development.

The determinants of long-run economic growth capable of transforming developing countries to industrialized advanced economies have been discussed for many decades and in fact still continue to be so with some contention. Our purpose here is not to revisit this debate but rather to point out some of the ways in which ICT and digitization can contribute to improving socio-economic outcomes for the poor.

We pointed out above the very powerful role ICT and online connectivity have played in the aggregation and dissemination of information and the impact this has had on productivity and competition in developed countries. For developing countries the value of these technologies lies primarily in their role in mitigating information asymmetries between the poor and the wealthy, but also in their contribution to bringing the poor closer to regional and global supply chains.

Most observers who have studied how country-level improvements to a nation’s regional and international connectivity rankings are achieved seem to point out that there are three areas where governments must act in order to see notable gains. The first of these is ensuring that the required telecommunications infrastructure is built and making sure that it reaches as many people as possible (city-dwellers as well as rural populations) and provides enough of the right kind of connectivity (fixed or mobile broadband, 2G, 3G or 4G networks). The second area where governments must make appropriately balanced policy interventions is on the pricing side. This entails making online connectivity and access to the digital economy as affordable as possible for as many users as possible, while also ensuring that those who have invested in the underlying infrastructure and borne the cost of doing so (usually operators) can recoup their investments and make enough of a profit in order to continue investing in the future. This is a tricky policy balance to achieve but is best done by ensuring that the market for internet services is competitive and not fraught with unnecessary risks. Finally the third piece of the puzzle that most observers point to are policies to promote digital inclusion and ensure that the greatest number of people across all age and

Figure 1.6: World’s offline population by country



Source: World Bank World Development Report 2016 “Digital Dividends” 2016

demographic groups have the highest possible degree of digital literacy.

However too many people still lack access to online connectivity and are essentially denied any meaningful way to participate in the digital economy or reap any of its “digital dividends”

(Figure 1.6). This is something that many stakeholders from both the public and private sectors (including Huawei) are working very hard to address and will be discussed in more detail below.

1.4. Global and Industry Trends in the Face of the Digital Economy

This first Chapter of our White Paper on Trade Rules and the Digital Economy is intended to serve as a primer and to set the context for the remaining sections of this report, which will focus on Huawei’s place in the digital economy (Chapter Two), what policies governments are starting to enact to regulate the digital economy and their (intended and unintended) effects on international trade (Chapter Three), what international rules are starting to emerge to confront some of these policies (Chapter Four), and finally the kind of optimum international trade policy and regulatory frameworks many actors in the digital economy feel would allow all participants to benefit the most from the opportunities it provides and the potential it holds (Chapter Five). Below, and for the rest of this Chapter, we discuss some major trends unfolding in the shadow of the digital economy, an understanding of which is important for any reader of this White Paper.

1.4.1. Ubiquitous Connectivity and Convergence

Although many countries, regions and people on the planet are still sadly underserved when it comes to broadband internet penetration or even any kind of reasonably high-speed access to land-based or wireless internet, it is undeniably true that in many countries, both developed and developing, the trend is heading very quickly towards internet connectivity becoming an indispensable necessity to the daily lives of people and the smooth functioning of all kind of businesses, both big and small. Because of this reality, people are coming to expect that they can get online anytime and from anywhere, and do whatever they need to do online from any device, which means they expect ubiquitous connectivity

and seamless functionality across all platforms. This is something that carriers have to be conscious of when building networks and providing connectivity, and it is something that those offering services over the internet also have to be acutely aware of when designing their access portals (homepages, apps etc.) and online payment modalities (credit card, PayPal etc.). It is likewise something that device makers have to take into account, particularly when designing phones and wearables. This has added a new dimension to the traditional notion of the Universal Service Obligation, since today many citizens are increasingly coming to expect that their governments ensure they can be online all the time, and from any place.

Convergence is another important trend alluded to above which should be reiterated in brief here. The distinction between the digital world (what happens online) and the real world (what happens in the 4-dimensional physical world of space and time), is increasingly converging as the digital world provides new and innovative ways of increasing productivity in the economy as well as enriching the lives of consumers, thereby boosting both GDP and enhancing personal welfare. Clear examples are the products in the field of IoT which make use of the internet to connect equipment to controlling and monitoring platforms that collect data but also provide services and support, including *inter alia* healthcare devices for monitoring and self-care. The recent advancements and roll-out of more advanced and significantly less expensive virtual and augmented reality devices and platforms will only further enhance this trend. This has important implications for how we regulate the digital economy as well as how we establish rules to govern digital trade. Any policies or rules that

seek to maintain the status quo and uphold the increasingly artificial walls between the digital and the real economies will only be a hindrance to innovation and will undermine the potential for the digital economy to continue delivering economic growth as well as the massive societal benefits it has brought over the last three decades to the majority of the world's users

1.4.2. More Data on More People and Things

Because an ever-growing number of people are using connected devices to meet an increasing number of needs and wants in an expanding range of daily activities, more and more data is being generated. The volume of data being used in economies around the globe has grown at an extremely rapid pace, as shown in **Figure 1.7**. Until the early 2000s, the volume of data exchanged was quite limited, but it massively

increased halfway in the 2000s and it is expected to continue increasing even more so in the near to medium term future. According to McKinsey, while flows of goods and finance have lost momentum, the amount of cross-border bandwidth being used has grown 45 times larger since 2005. Moreover, data flows are projected to grow by another nine times in the next five years as digital flows of commerce, information, searches, video, communication, and intra-company traffic continue to surge. Soaring cross-border data flows now generate more economic value than traditional flows of traded goods. Global flows generate economic growth primarily by raising productivity and countries benefit from both inflows and outflows. In total, data flows are estimated to have boosted current global GDP by roughly US\$ 2.8 trillion. This presents both challenges and potential benefits. For those who can successfully mine and exploit

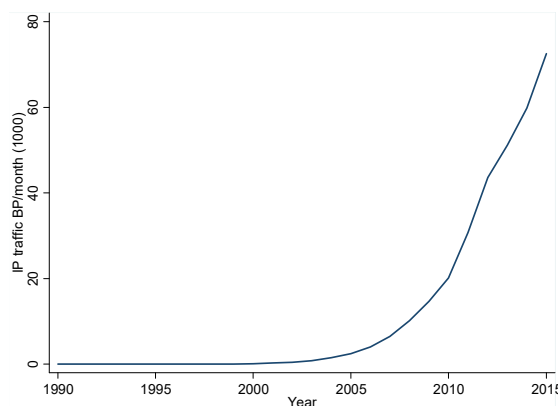
this data for commercial gain, the possibilities are almost limitless. For others, this growing flood of data represents massive storage and processing headaches that must be resolved in order to comply with various laws and regulations on privacy and record-keeping. The two biggest companies in the digital economy, Google and Facebook are arguably the two companies that have the most information about their users, and this fact, and their skillful exploitation of this information in various ways has a lot to do with the massive stock market valuations these companies enjoy. Data is now widely recognized by all market participants and observers for the valuable commodity that it is and will continue to be. How governments regulate the use, sharing and transfer of this information (particularly across borders) has and will continue to have a profound effect on how

the digital economy evolves, since these regulations directly affect how companies organize themselves, their relationships with customers and suppliers, and how they can exploit any data collected in advancement of their own corporate objectives. This is a policy space that is increasingly starting to be specifically addressed in trade

agreements (see Chapter Four), and many companies (including Huawei) need to have carefully thought through their positions and objectives when it comes to rules governing the use, sharing and transfer of data.

In addition to the massive amounts of data created by people that is constantly being generated, we are on the cusp of a new era where not just people, but also things (appliances, machines, household items) can and will be connected to the internet for the purpose of sharing various bits of information that will further optimize supply chains, smooth

Figure 1.7 Internet Protocol Traffic per month, 1990-2015



Source: ECIPE

production flows, improve inventory management systems, and enhance customer relations. This will create quantities of data well in excess of anything we have experienced until now, since we are no longer talking about the potential of connecting 6 billion users to the internet, but rather many more billions of things. Experts predict that there will be around 50 billion objects connected by 2020, with already more objects being connected today than the number of people on the planet. This will be made possible mainly by the increasing spread of sensors. The World Economic Forum predicts that as many as 1 trillion networked sensors will be embedded in the world around us by 2022, with this number growing to 45 trillion in the next 20 years.

This creates both challenges and potential benefits for many of the digital economy's stakeholders, not least for a company like Huawei that provides the pipe through which all this data moves, as well as the hardware and software by means of which all of this data will be stored and processed. Many of the regulatory issues that arise in the context of personal data will equally affect how the Internet of Things is allowed to develop and the impact it has on economic growth and welfare.

1.4.3. Known Unknowns and the Future of the Digital Economy

Perhaps the most exciting thing about the digital economy is that although a large number of experts spend a lot of time trying to predict the next big trends, nobody really knows for certain in which directions and what opportunities the digital economy will open up in the next five, ten or even twenty years. Certainly 5 to 6 years ago very few people could have predicted the importance that the sharing economy would have today, with global brands like Uber and Airbnb, as well as important national brands like Zipcar having quickly established themselves in

their respective market segments. The same is true today, with technologies like augmented and virtual reality, artificial intelligence, 3D printing and blockchain technology, which are promising to give rise to new business models, services and products that will drive value and job creation and be a source of continued economic growth and prosperity worldwide. But the fact remains that nobody really knows what the future will bring for the digital economy and this has implications for domestic policy

Policymakers need to strike a delicate balance between light-touch interventions and forward-looking regulatory activism which is not always easy to achieve, but this task can be rendered a lot easier if the private sector and civil society can be coopted into these efforts in an inclusive and transparent way

formulation and international rule-making. Regulatory frameworks and international rules must remain flexible enough so that innovation can continue to occur and entrepreneurs can continue to develop new and desirable products, services and solutions. At the same

time, a total absence of regulation can also be damaging, as we have seen in the context of commercial drones or autonomous vehicles. In these areas, the technology has existed for several years but, at the time of writing, remains constrained by a lack of proper domestic regulation in most countries. This has had a profound chilling effect on the roll-out of these technologies. The same is true of online and mobile payment platforms, some of which work relatively well in a limited number of domestic market contexts, but have nothing like the reach and functionality of credit cards when it comes to facilitating payments for the cross border trade in goods and services. Policymakers need to strike a delicate balance between light-touch interventions and forward-looking regulatory activism which is not always easy to achieve, but this task can be rendered a lot easier if the private sector and civil society can be coopted into these efforts in an inclusive and transparent way.

1.4.4. Investment in the Pipe for Future Growth and Economic Development

Provided that a number of demand side conditions have been met (not least of which is a certain degree of digital literacy on the part of the intended beneficiaries), investment in network infrastructure can have the same impact on rural poverty and national competitiveness that building similar public infrastructure projects like modern roads, ports, and airports has. Here we discuss the importance of this infrastructure as the first of several enabling elements to bridging the digital divide and promoting inclusive access to the digital economy in the context of supporting economic development.

Many different actors - both public and private - operate along various parts of the digital value chain and in different policy spaces. Different regulatory and legislative interventions will have an impact on the supply side aspects of improving the availability of online access (and its quality, accessibility and affordability). Industry experts tend to differentiate between four infrastructure segments (**Figure 1.8**): (1) the first mile, i.e. the installations and equipment that link national networks to the World Wide Web and that typically consist of either cable landing stations or satellite antennas; (2) the middle mile, which consists of the national backbone infrastructure that comprises fixed-line networks (backhaul), fiber-optic cables or copper wires, data centers, mobile base stations and other equipment; (3) the last mile, otherwise referred to as the “local loop” comprises the final leg of a telecommunications network that typically terminates in the home or in a building where end users live or work, or on a handheld wireless device being operated by the user in the case of mobile broadband; and finally (4) the invisible mile, which consists mainly of spectrum and other invisible elements of the connectivity infrastructure ecosystem.

Rather than just being a simple issue of money, different policy interventions can spur and facilitate investment in each of these four areas. For the first mile for example, the regulatory regime governing the acquisition and operation

of satellite dishes and the competitive conditions that apply to international gateways and landing stations will dictate the degree of interest that private sector actors will have in deploying and managing this critical infrastructure. For the middle mile the competitive environment is also very important, with the role of the regulator being to find the right balance between ensuring competition while also ensuring that those who do take on the risk of investing in and operating infrastructure see a commensurate return on their investments. But there are also other policy instruments that governments have at their disposal to increase the attractiveness of investing in the build-out of infrastructure, including subsidies, co-financing arrangements and reducing the cost of importing equipment and components (import tariffs and other trade costs). Governments can also require by law that any digging done for transport or energy infrastructure (roads, railways, gas or electricity pipelines) also provide for optical fiber to be laid at the same. For the last mile, government intervention that encourages and incentivizes the owners of network assets to cooperate with competing providers or even those providing different services over the same infrastructure (inter-modal competition) is one option regulators have to raise the attractiveness of this segment. Governments can also provide grants to home owners to upgrade their legacy copper wiring and replace it with optical fiber (so-called Fiber to the Home or FTTH), or provide tax or other incentives for building developers to future-proof their projects by laying fiber to the building (FTTB). Finally for the invisible mile, the many ways in which spectrum is governed constitute the primary levers by which governments can encourage investment and optimize the use of this scarce resource. Particularly ensuring that more of it is made available at prices that make its exploitation commercially viable is something that governments should prioritize. Other important ways in which governments can regulate in this space is to ensure that access to spectrum is provided on competitive terms, that essential fixed assets are shared among operators, while finally allowing those who purchase spectrum to

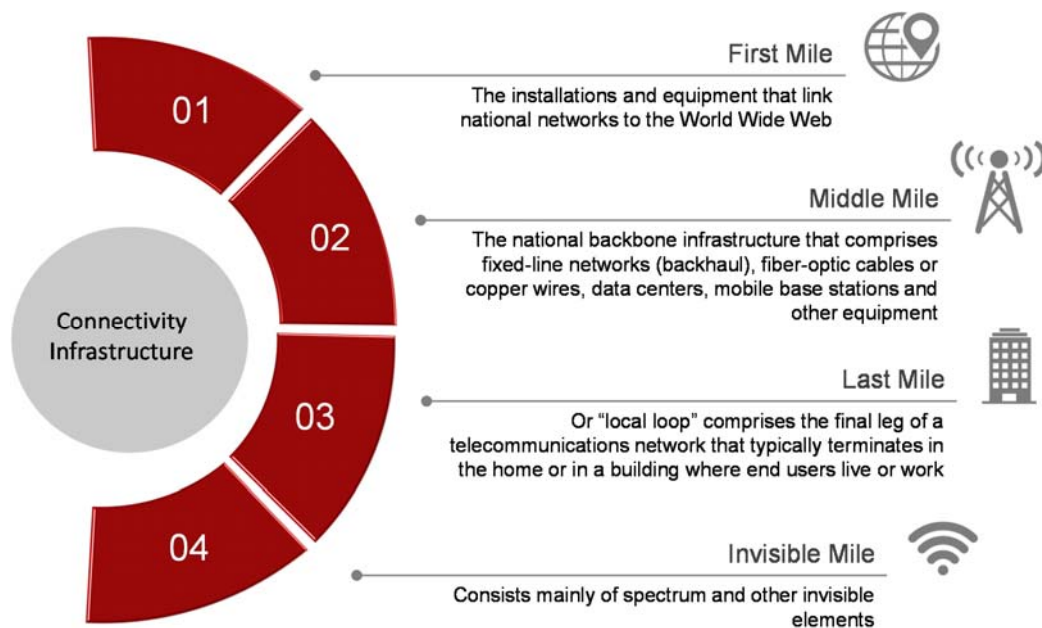
resell it without too many restrictions or conditions being imposed upon doing so.

Of course, money is not irrelevant when it comes to encouraging the necessary investment in this space, since building and operating a national broadband network almost always comes with a high price-tag. The cost of doing so depends on various factors such as a country's size, topography, the density and geographic dispersion of population centers and of course the level of ambition of the government commissioning the construction of the network (and issuing licenses to operate or use it). However it must also be said that money is probably the least difficult of all the problems that national governments face when formulating plans to develop their national broadband infrastructure, since in most cases

these networks ultimately pay for themselves. Operators can of course charge users for connectivity and depending on how much governments charge for licenses and spectrum, there will almost always be a viable business case to be made for operators to get into this space.

Ultimately the onus is on governments to provide the necessary framework conditions that will make investing in and operating broadband network infrastructure interesting for domestic and international investors. The domestic business and legal environments play an important role here, which may sound daunting but which are nevertheless areas of domestic policy firmly within the control of national governments.

Figure 1.8 Four segments of connectivity infrastructure



Source: Huawei

1.5. Key Points for this Chapter

01

The current focus of international trade rules and negotiations for the digital economy is predominantly on e-commerce. Although these rules are important, the rapidly expanding scope of the digital economy requires that negotiations take a more holistic approach to better reflect the full range of issues relevant to the ICT industry and the internet economy value chain.

02

The digital economy is quickly just becoming “the economy” since we are in the midst of full-scale convergence between the real economy and the digital economy. This trend must also be reflected in approaches to formulating rules for the digital economy,

03

The role of the digital economy in raising productivity, spurring innovation and supporting economic development is an important one that policymakers and regulators can foster in various ways.

04

Infrastructure is an important part of the digital economy and here also there are various ways that policymakers and regulators can make investment in the four segments that comprise a country’s critical network infrastructure more attractive to investors, thereby giving a huge boost to their chances of participating meaningfully in the digital economy.

The next Chapter discusses Huawei’s place across a very broad swathe of the digital economy.

CHAPTER TWO | HUAWEI'S PLACE IN THE DIGITAL ECONOMY

Across all of our three business groups, we occupy a unique place in the digital economy in terms of product coverage, but also in terms of our geographical footprint, since we operate in both more underdeveloped as well as highly technologically advanced markets. With regard to our core carrier network business, we are responsible for building the underlying network infrastructure (pipe) that allows the digital economy to function in the first place. When it comes to our enterprise business, we provide a range of new services and solutions that leverage the many advantages of the digital economy to overcome the physical constraints of the real world by harnessing the power of cloud computing and remotely serviced platforms, such as in the area of digital customs, or our many Smart City solutions. Finally in our devices business, where we are contesting global smartphone, tablet and wearables markets, we operate as a manufacturer and seller of the terminals with which users interface with the digital economy, availing themselves of the services, solutions, products and information that the digital economy provides. As such, we are potentially vulnerable to changes in the underlying legal, regulatory and policy regimes that govern the many stages of the digital value chain. This section will discuss the many ways new and existing trade and investment rules affect different aspects of our business across the three business units.

2.1. The Benefits of Digitization	26
2.1.1. Societal and Economic Benefits	26
2.1.2. Digitization, Innovation and Productivity Gains	26
2.1.3. Digitization and Inclusiveness	28
2.2. Huawei's Interests in the Digital Economy.....	29
2.2.1. Building a Better Connected World: Huawei and the Digital Divide.....	29
2.2.2. Customer-Centricity as Guiding Principle.....	29
2.2.3. Huawei's Core Values and our Approach to International Trade	30
2.3. Huawei's Activities and their Place in the Digital Economy.....	30
2.3.1. The Carrier Network Business Group.....	31
2.3.2. The Enterprise Business Group	32
2.3.3. The Consumer Business Group	32
2.3.3. Other Company Stakeholders	33
2.4. Huawei as an Emerging Global ICT Leader.....	33
2.4.1. A China-Based Multinational on a Global Stage	33
2.4.2. A Voice Non-Often Heard	33
2.4.3. An Industry Leader in Waiting.....	34
2.5. Key Points for this Chapter	34

2.1. The Benefits of Digitization

2.1.1. Societal and Economic Benefits

The rapid dissemination of digital technologies amongst users and businesses has brought many benefits to the global economy, and created many new ways for people to pursue various opportunities or improve their living standards regardless of their physical location. By way of example, traders in Tanzania and India use smartphones to sell their products globally, although they still lack a fixed phone-line or a bank account. They have access to up-to-date market information even though they may not own a television.

The benefits to society of digital-ization for both users, as well as businesses may seem self-evident. Daily use by consumers can be translated directly into an economic value: For example, the use of Skype on a typical day saves more than US\$150 million worldwide for its users; the use of e-commerce platforms (e.g. Amazon or Alibaba) for consumer purchases generates savings of similar scale, measured in billions annually. This consumer surplus constitutes a tangible benefit for millions of internet users but remains largely unaccounted for in national GDP or international trade statistics.

Similarly, digitalized processes lower the costs of operations and improve efficiency for businesses. The use of cloud computing and virtual networks creates value by facilitating cross-border business but also by simply obviating the need to buy, own and operate dedicated servers on a given business's premises. In almost every sector of the industry, collaborative and digitalized entrepreneurs are challenging traditional,

costlier business models. As **Figure 2.1** below shows, the productivity gains from digitalization can vary significantly across different sectors. In Europe, the computer and software sectors have experienced vast improvements in productivity that outperform other (less digitized) services, here exemplified by traditional B2B services.

2.1.2. Digitization, Innovation and Productivity Gains

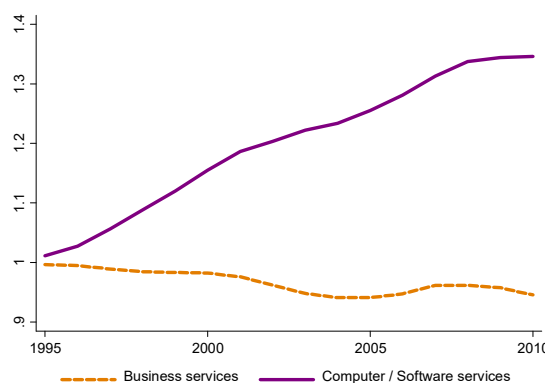
In Chapter 1 we discussed some of the links between digitization and economic growth. In this section we focus more narrowly on some of the ways in which ICT in general and digitization in particular have spurred productivity gains for workers and businesses. This trend is most pronounced in firms in advanced industrialized countries, since these countries have higher

adoption rates, higher digital literacy levels, and have seen firms invest more in the goods, services and intellectual property that comprises the digital economy. But also in middle-income developing countries and LDCs, the transformative effects of digitization are readily apparent, even if they have not achieved the levels of uptake and adoption experienced in many

industrialized countries.

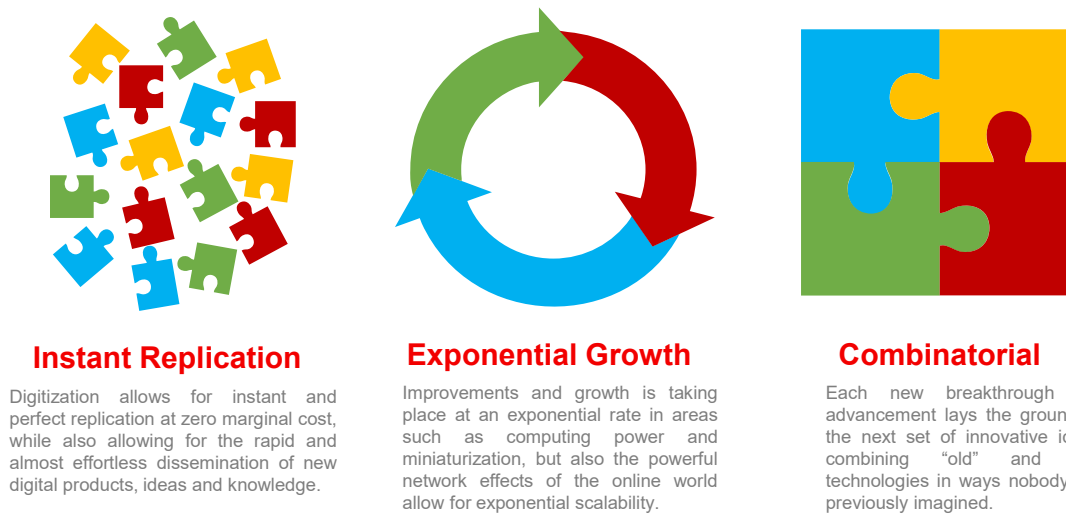
Some observers argue that we are only at the beginning of a new age of sweeping innovation and massive productivity breakthroughs, arguing that it was only 30 years after the general purpose technology of electricity was adopted that we saw corresponding leaps in innovation in many advanced industrialized countries. These observers (like Erik Brynjolfsson and Andrew McAfee of the Massachusetts Institute of

Figure 2.1: Productivity benefits brought forward by the digital economy: EU productivity gains



Source: ECIPE; World Bank WDR; EUKLEMS

Figure 2.2 Three ways in which digitization revolutionizes productivity



Source: Huawei (based on research by Erik Brynjolfsson and Andrew McAfee of MIT)

Technology or Klaus Schwab of the World Economic Forum), argue that the innovation we are experiencing today thanks to breakthroughs in technology (particularly ICT, digitization and connectivity) will be such powerful and all-encompassing agents of unprecedented upheavals and transformation because of three essential characteristics (**Figure 2.2**). Firstly digitization allows for instant and perfect replication at zero marginal cost, while also allowing for the rapid and almost effortless dissemination of new digital products, ideas and knowledge. Second is the exponential nature of improvements and growth we are seeing in the digital economy, as computing power increases at exponential growth rates and as powerful network effects are unleashed thanks to technologies like the internet and the platforms and user-groups that operate on top of it. Third is the combinatorial nature of today's technological innovation, as each breakthrough and advancement lays the ground for the next set of innovative ideas, combining old and new technologies in ways that had previously seemed unimaginable (such as using commercially available and inexpensive drones to fulfill online e-commerce orders).

Across different sectors the productivity enhancing effects of ICT and digitization are clear. In agriculture even poor farmers in developing

countries can leverage these technologies to gain better insights into meteorological conditions, as well as other factors such as soil and water quality, thereby boosting yields, but also to better understand price variations on local and regional markets, which allows them to maximize profits. Slightly more advanced applications allow for irrigation systems to be linked with powerful cloud computing platforms that combine and process data from different sources including satellite weather information, hydroponics know-how and which determine - via proprietary algorithms - how much water (and fertilizer) to dispense and when (smart farming).

In manufacturing, the productivity gains of new digital technologies is also readily apparent, From automation and remote or cloud-assisted management of production, to 3D printing, to augmented reality being used on factory floors or in sectors such as oil and gas, these technologies are quickly revolutionizing the ways so many industries operate, boosting efficiency and making what was previously back-breaking and dangerous work easier and safer. Also, but particularly in the services sector we have seen digitization and the adoption of ICT completely transform and to a large degree also disrupt traditional industries from banking to travel to education and health.

Although many have benefited enormously from these changes, the new digital age has also resulted in some disruption to labor markets and the fact remains that billions of people across the world in developed and developing countries are still unable to reap the benefits of these transformative technologies.

2.1.3. Digitization and Inclusiveness

Although the transformations wrought by ICT and digitization that many of us have witnessed during our lifetimes have been nothing short of phenomenal, the sad fact is that far too many people in the world are still unable to access a high-speed internet connection and/or leverage the many potential benefits that these technologies hold for them. The World Bank's 2016 World Development Report "Digital Dividends" contains some of the most recent statistics: almost 6 billion people still do not have access to high-speed internet; nearly 60 percent of the world's population are still offline and are unable to participate "in any meaningful way" in the digital economy. Clearly the digital divide is still a very real constraint in terms of access to infrastructure. But infrastructure constraints are not just a problem in developing countries. Even in some advanced industrial economies with significant rural populations living in geographically isolated areas, like the United States, Australia or Canada, providing access to high-speed networks on affordable terms is a very daunting challenge.

Just as daunting a problem in terms of inclusiveness is the generational gap between those that grew up with easy access and a great

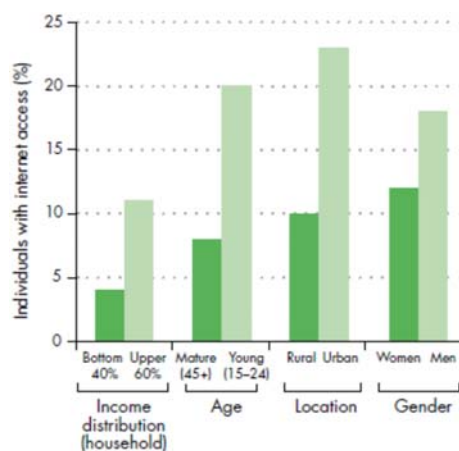
degree of familiarity with these technologies ("Millennials") and those whose learning curve has been much steeper (the baby boomers and to a certain extent also Generation X). Even in the developed world, many of those born before 1980 reached adulthood and entered the labor force before the advent and widespread adoption of these new technologies, and so they were forced to work harder and be more proactive in order to acquire and maintain the same skills that their younger colleagues seemed to acquire almost effortlessly. Digital literacy campaigns targeting the aged have had some

success, but many have still been left behind. This problem is even more acute in poorer developing countries (see **Figure 2.3**) where infrastructure constraints play a greater role and where digital literacy campaigns are beyond the limited fiscal reach of governments and must defer to more pressing policy priorities.

Nevertheless, the many success stories of increased inclusiveness, especially in the international trade literature, are irrefutable evidence that these

technologies - once they become available and traditionally marginalized segments of the population learn to use them - can be just as transformative to the lives of those in developing countries as they have been to productivity and welfare in developed countries. The well-known and often-recounted story of the transformative effect that M-Pesa has had on the entire monetary system in Kenya and the emergence of so-called Taobao villages across rural China are testaments to the transformative impact these technologies can have and the way they can and do promote inclusiveness for many in traditionally marginalized demographic segments.

Figure 2.3: Domestic digital divides among different demographic groups



Source: World Bank World Development Report 2016 "Digital Dividends"

2.2. Huawei's Interests in the Digital Economy

2.2.1. Building a Better Connected World: Huawei and the Digital Divide

There is strong economic evidence that digitalization amongst users and businesses contributes strongly to key economic indicators such as labor productivity, as well as per capita GDP and even correlate closely with achieving the Sustainable Development Goals. Digital trade is only just starting to bridge the income gap between different parts of the world. Poorer countries still face a digital challenge, attributable to inadequate digital infrastructure as well as “soft” factors such as proper market institutions and regulations to support and facilitate the digital economy.

Many people across the world are still underserved. This is evident from statistics on the availability of affordable high-speed, fixed-line or wireless internet. It is more than twice as likely that upper income earners in Africa will have online access compared to the bottom half; the access differentials between urban and rural areas are more than two-to-one. The generational and gender gaps in the African digital economy are still apparent, although it is undeniable that being connected to communications networks is becoming an indispensable necessity for people everywhere.

Nevertheless, new opportunities to participate in global value chains are not created automatically in a vacuum. The benefits of digital trade are reaped thanks to a framework of global and local enabling factors that allow people everywhere to capitalize on the opportunities created by these technologies. Here is where our market proposition fits into the digital trade agenda – as an enabling factor for all countries and people, fueled by digital entrepreneurship. Huawei Technologies Co., Ltd is a relatively new company in what is essentially an established industry, although some of the products or markets in which we operate have not existed for that long. We have emerged from humble beginnings as a reseller of cheap switches, to become one of a small handful of leading telecommunications

equipment vendors as well as one of the top three smartphone makers globally. We have charted our own course throughout the company's short history and, thanks to close collaboration with partners in the telecommunications and other industries, we have emerged as one of the most innovative players across all of our businesses and product lines.

2.2.2. Customer-Centricity as Core Value

As the newly emerging international consensus on how governments can regulate digital trade takes shape, Huawei's own interests and the positions we take with respect to these rules will not arise or be upheld in a vacuum. First and foremost, we will stand with our customers -- that is to say our interests in this new area of rule-making will be strongly aligned with those of our customers across the company's three business groups. Be that as it may, articulating a clear and concise set of messages with respect to each of the trends, needs, and new international trade agreement obligations emerging to govern digital trade is not as straightforward as it may at first appear, since we as a company are active across such a broad swathe of the digital economy, so that different business groups within the company may harbor different interests and concerns relating to their respective customers and with regard to the various rules starting to take shape as the new and prevailing international consensus on digital trade begins to emerge.

At Huawei we have an established tradition of working very closely with our customers to form mutually beneficial relationships that in the past have culminated in a number of breakthroughs benefitting the entire ICT industry. This dynamic continues to prevail today, with the company working hand in glove with industry partners, governments, standards organizations, suppliers and customers. As we at Huawei begin to articulate our position on the new set of rules emerging to govern the digital economy we will take into consideration the possible implications

these rules may have, not only on our core business interests, but also on the business models and strategic interest of our many partners and the industry as a whole.

2.2.3. Huawei's Guiding Principles and our Approach to International Trade

At Huawei we operate in accordance with a number of established guiding principles when it comes to international trade. These principles emphasize values such as openness and collaboration, as well as an overarching imperative to comply with all relevant and applicable laws and regulations. These principles must also guide the company as we formulate our response to the new and evolving international trade and investment rules intended to govern digital trade. We are committed to openness and fair competition and believe these are the cornerstones of the market economy. It has always been our firmly-held conviction that openness, competition and collaboration are the underlying drivers of growth and development. These convictions apply in equal measure to digital trade. Where rule-making for the digital economy in international trade agreements is conducive to promoting open and fair competition, fostering innovation, is supportive of openness and promises to improve

Huawei recognizes that the spirit of openness and collaboration that have characterized and underpinned the massive growth of the internet and the digital economy over the last two and a half decades is something that all stakeholders on both the supply and demand sides have a genuine interest in preserving

cooperation, then we will be fully supportive of such rules.

At Huawei we take our role and responsibilities as an emerging industry leader very seriously. We recognize that the spirit of openness and collaboration that have characterized and underpinned the massive growth of the internet and the digital economy over the last two and a half decades is something that all stakeholders

on both the supply and demand sides have a genuine interest in preserving, as well as being in the best interests of governments and regulators alike. As such, we will continue to advocate in favor of policy frameworks and rules that are broadly supportive of openness and that reward collaboration between different stakeholders both within and outside of the industry. Be that as it

may, at Huawei we likewise recognize the sovereignty of governments to regulate within their own borders and in the interests of their citizens within the parameters of internationally agreed principles, so that we will always comply with these regulations, even if doing so imposes additional costs on our business. We view compliance as one of our core business interests and not as something we can simply choose to opt in or out of.

2.3. Huawei's Activities and their Place in the Digital Economy

This section provides some insights in non-technical terms as to how Huawei's different business groups engage with and contribute to the digital economy at various points along the digital value chain (**Figure 2.4**). The discussion begins with the company's traditional line of business, our relationships with those firms that build and operate telecommunications networks for the transfer of voice, text and data traffic to network customers, who are either businesses,

governments or consumers. This section then discusses the company's enterprise business, which works with both public and private sector customers to optimize the use and operation of both publicly and privately owned infrastructure though the use of cloud services and data analytics. Finally, this section discusses the company's newest area of business, consumer devices and wearables. In all cases, our baseline

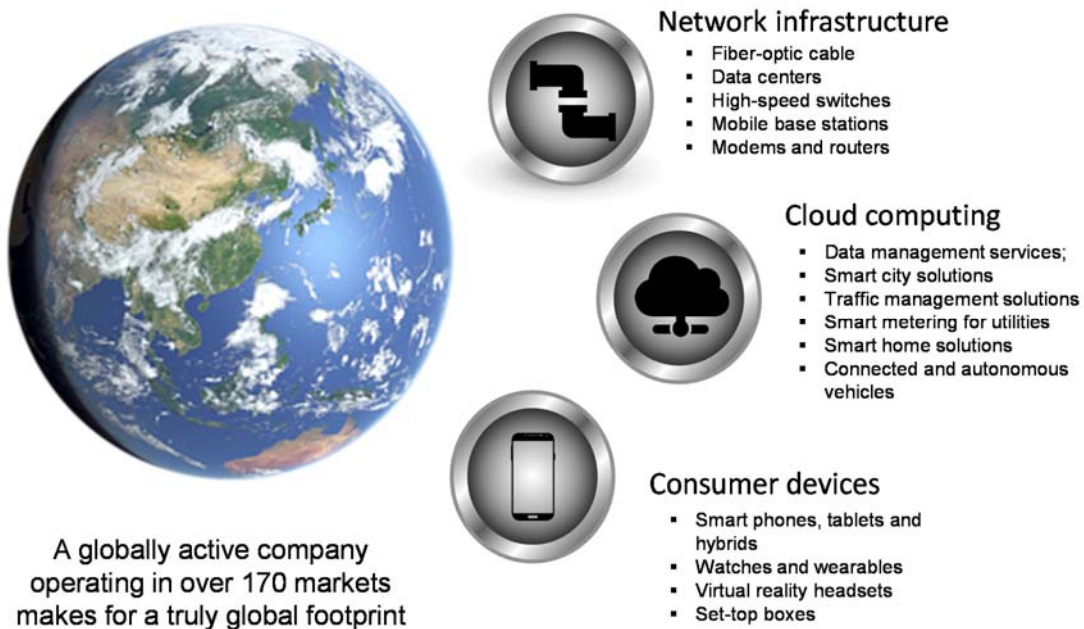
assessment is clear: we favor openness, fair competition and technology neutrality.

2.3.1. The Carrier Network Business Group

The **Carrier Network Business Group (CNBG)** is one of Huawei's three business groups, and as the name suggests, it is primarily involved in the manufacture and sale of communications network equipment and solutions. The most important customers of this group include top-

and migrate large-scale data centers across vast geographic areas and oceans. Our carrier business has also made notable inroads into the cloud computing business, where we work with more than half of the world's top-tier carriers to provide storage, server and cloud computing products. We were also selected by Deutsche Telekom to be a partner under its public cloud strategy. Our carrier business is inevitably impacted by new international trade rules on

Figure 2.4: Huawei's place in the digital economy



Source: Huawei

tier carriers such as Vodafone, Telefonica, MTN, China Mobile, Telenor and Deutsche Telekom. For several years, we have been moving away from being mainly an equipment vendor to being an end-to-end ICT solutions provider as we help our carrier customers implement their digital transformation strategies. Our CNBG also provides consulting and systems integration services to our carrier customers to help them transform to experience-driven operations for their subscribers and to restructure their existing network infrastructure to better support their digital business offerings. We have provided data center integration services for 255 cloud data centers and helped carriers smoothly consolidate

such issues as tariffs (a number of which have been eliminated for products manufactured and sold by Huawei thanks to the updated WTO Information Technology Agreement), as well as any rules that make it easier to import and supply components or equipment, such as those on conformity assessment procedures or electromagnetic compatibility. In addition to this, trade rules that provide for greater transparency and predictability in heavily regulated sectors like telecoms will also have a positive impact on our business and any commercial interests of our customers.

2.3.2. The Enterprise Business Group

Our Enterprise Business Group (EBG) has a related, but slightly divergent set of interests. Enterprise BG's customers consist of a diverse range of public and private sector entities such as municipal governments (to whom we provide Smart City solutions), financial services providers (particularly banks and insurance companies), as well as operators in the transportation and energy sectors. Our Enterprise BG works with customers to provide cloud computing and Big Data solutions to help streamline processes and achieve efficiency gains across a range of different industry verticals. In the transport sector we have developed and implemented solutions that allow our

customers (including legacy railway operators) to transition from conventional radio-reliant communications to broadband-based railway operations and communications systems. In the energy sector, Enterprise BG works predominantly in the area of providing Smart Grid solutions

that allow power producers and distributors (but also industrial-scale users) to better monitor and meter their energy consumption needs (again achieving efficiency gains). Our Smart Metering solutions are also used in the oil industry as well as by water utilities to help better manage and optimize flow-times. These are just some of the examples of the way our Enterprise BG operates across digital value chains to meet the needs of our customers in the real world.

Many other examples exist where cloud-based and remotely accessible applications suggest themselves as obvious solutions, such as in the education sector and in the area of broadcast media. As a Huawei Business Group, Enterprise BG certainly has a direct interest in the digital trade rules currently being negotiated on issues such as data localization, mandatory source code

The world of cloud computing, in which Huawei has its sights set on becoming an industry leader, is one area of the company's business that will inevitably be impacted by the newly emerging international trade rules on such issues as privacy, data localization and free movement of information.

disclosure, encryption, compatibility of privacy regimes and the cross-border flow of information. Our Enterprise BG also has a very real interest in the scope and interpretation of public policy and national security exceptions that might limit the company's freedom of action in countries that apply these exceptions very broadly. On the other hand, because we partner so closely with governments in providing these services and implementing these solutions, we will not want to be on the wrong side of any advocacy that seeks to overly limit their regulatory autonomy or policy space beyond what is necessary for us to operate as a legitimate business. This requires a bit of a balancing act for Huawei, as it does for other industry actors.

The world of cloud computing, in which we have our sights set on becoming an industry leader, is one area of the company's business that will inevitably be impacted by the newly emerging international trade rules on such issues as privacy, data localization and free movement of information. It is equally possible that different customers may take a differentiated stance on some of these issues. For us, the right outcomes will achieve a balance

between the needs of business for predictability and transparency on the one hand, and the needs of governments to ensure that recognized public policy imperatives are upheld in a manner that is minimally trade-distorting, and by means of interventions that are proportional to and effective in achieving their purported regulatory objectives.

2.3.3. The Consumer Business Group

Finally our Consumer Business Group (CBG) interacts with and sells smartphones, wearables and tablets to consumers directly, as well as offering some aspects of the mobile apps platforms that power them. Our Consumer Business Group has only emerged very recently as a force but has moved quickly to establish itself as a serious contender across almost all of the devices it sells. Our smart phones and

watches in particular are very popular and are expected to continue their impressive sales growth in many markets. This places Huawei at the cutting edge of the consumer technology industry and will force us to confront the same issues that other smart phone manufacturers are currently facing in the area of privacy, encryption, and cooperation with domestic law enforcement authorities. In addition to this, we have a very real interest in a number of the new trade disciplines emerging in areas such as conformity assessment procedures, electromagnetic compatibility, privacy, non-discriminatory treatment of digital products, online consumer protection, data localization, unsolicited commercial electronic messages and the mandatory disclosure of source code.

2.3.4. Other Company Stakeholders

Other parts of Huawei such as Legal Affairs (who deal extensively with intellectual property rights) and Supply Chain (concerned with logistics,

tariffs, non-tariff barriers and customs clearance procedures), Corporate Communications and Media (both concerned with external messaging) will also have interests that affect their areas of competency with respect to the new generation of trade rules and the emerging consensus on these rules that are beginning to take shape. The executive management team, particularly the three rotating CEOs and members of the Board have already given some indication of where the company is likely to position itself in respect to the emerging reality of new international regulatory disciplines. The messaging has been pragmatic and consistent. We favor openness, we advocate for fair competition, and we favor technology neutrality. We are also a company that stands by our customers when formulating and advocating positions in this and any other area of policy debate. Finally we are a company that puts legal and regulatory compliance front and center of all of our strategic decision-making and day-to-day operations.

2.4. Huawei as an Emerging Global ICT Leader

2.4.1. A China-Based Multinational on a Global Stage

Huawei is still something of a unicorn for both the world and even for China itself, given that we are and always have been a privately-held Chinese company. Unlike almost any other Chinese company one can think of, Huawei has achieved unprecedented geographical reach, operating in 170 countries and territories and comprising employees from over 170 nations. We are a China-based multinational, which very few other companies with similar origins can claim to be. In addition to this, we are a wholly-owned private undertaking, with ownership residing exclusively with our (Chinese) employees. This makes us a very unique entity in the corporate landscape of the modern Chinese economy. We have recently assumed a hard-won place among established industry giants like Ericsson, Cisco, Nokia, Alcatel Lucent, and HP. We are also a leading consumer technology company among the ranks of Apple and Samsung. Finally we are one of the first China-based

multinationals to have done this on the strength of our own organic growth, rather than through acquiring an established international brand or by entering into a joint venture with another global industry leader.

2.4.2. A Voice Non-Often Heard

Perhaps because it has emerged so quickly, Huawei is still an unfamiliar presence to many both inside and outside the industry. Huawei has gone to great lengths to distance itself from the image that many have falsely tried to pin on it, namely that of a corporate extension of Chinese State interests. Accordingly, Huawei has taken a backseat in policy debates and public advocacy, preferring instead to work quietly behind the scenes with industry partners and trade associations. This is true both at home and abroad. The very visible policy engagement that large corporate interests practice in the West, and particularly in the United States, where companies are not shy about lobbying their governments in pursuit of their own interests, is not always common in Asia and is something

Huawei has also refrained from engaging in too visibly to date.

2.4.3. An Industry Leader in Waiting

Given our sheer size and the pace at which we continue to grow, it remains to be seen whether the “walking softly” approach will continue to be feasible for Huawei. Regardless of the approach taken, we need to be acutely aware of the implications of favoring one policy approach over another. As we get larger, it will be impossible to please everyone, so our positions on the state of

the industry, government policies affecting the digital economy and the evolution of international trade rules for the digital economy must look beyond the short-term, and be clearly conceived and properly articulated. Industry leadership is not just about winning, it is also about shouldering responsibilities, and this is something our management of Huawei is acutely aware of.

2.5. Key Points for this Chapter

01

Huawei’s unique position across a very broad spectrum of the digital economy is a strength but also involves risks for potential misalignments between the interests of different stakeholders within the company, as well as our customers.

Whether you agree or not that humanity is on the cusp of a new revolution in the way we use and benefit from digital and ICT technologies, the productivity enhancing effects of these technologies are clear and readily apparent.

02

03

There are still too many people on the planet without access to these breakthrough technologies and too many people being left behind as the digital age advances rapidly in both developed and developing countries.

Huawei is typical of other ICT suppliers facing inconsistencies and uncertainties. These will tend to stifle innovation and deployment of solutions, such that the ICT industry’s position must be articulated in a way that plays to our core values and guiding principles.

04

The next Chapter discusses the emerging regulatory and legislative landscape as policymakers contemplate different interventions in the digital economy in the pursuit of various objectives.

CHAPTER THREE | EMERGING POLICY AND REGULATORY TRENDS

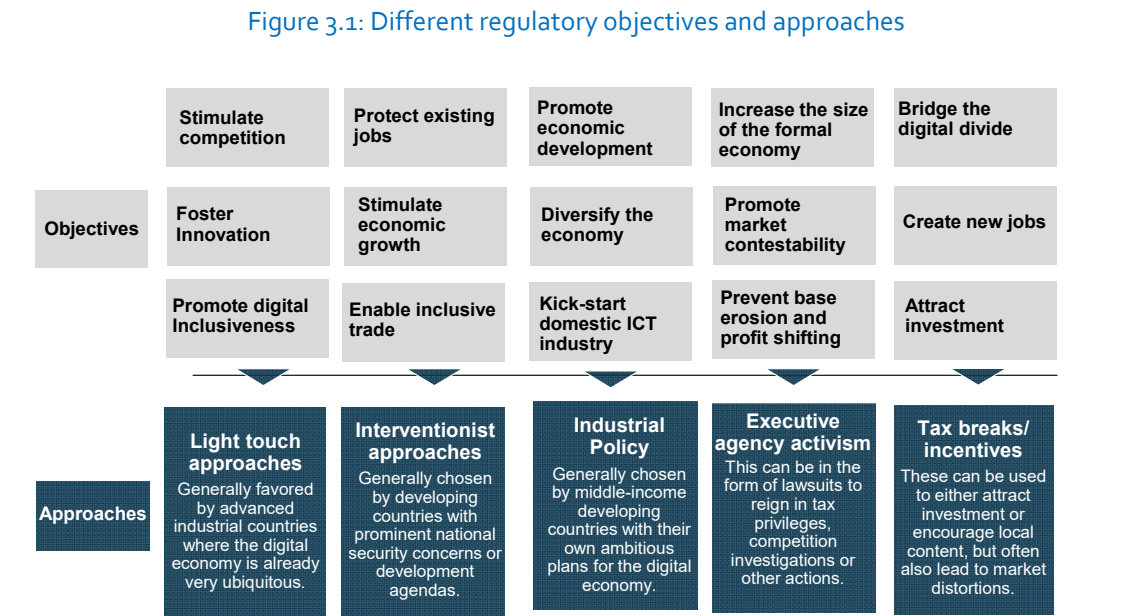
The underlying legal and regulatory environment in which companies like Huawei operate is struggling to keep pace with technological developments and the quick pace of innovation that characterizes this sector. Many countries are enacting rules and setting up regulatory regimes that have a direct impact on the digital economy. Whether it be with the objective of better protecting the data privacy of their citizens, beefing up national law enforcement capabilities in the face of increasing cyber-security threats, or in the hope of kick-starting their own domestic ICT industries, governments in many countries, both developed and developing are becoming increasingly interventionist in this sector. This section will analyze a number of these policy and regulatory trends and discuss how they fit into the broader international consensus that has emerged over the last two decades with respect to global internet governance and rules on the digital economy.

3.1. Different Policy Objectives and Approaches	36
3.1.1. Light Touch Approaches.....	36
3.1.2. Interventionist Approaches	38
3.1.3. Digitization, Economic Policy and Industrial Development	39
3.1.4. Celebrating Complexity and the Need for an Overarching Digital Strategy	39
3.2. Different Impacts and Implications of Different Policy Interventions	40
3.2.1. Vulnerability of Digital Trade to Different Regulatory Interventions	40
3.2.2. The Importance of the Technology Industry as Policy Advocate	42
3.2.3. The Obvious Benefits of Investment in Communications Networks.....	42
3.2.4. Giving the Digital Economy the Space It Needs to Foster Innovation	44
3.3. Finding a Consensus on what Works.....	45
3.3.1. Broad Consensus on Policy Interventions	45
3.3.2. The Implications of International Rule-Making	46
3.3.3. Consensus on the Need to Bridge the Digital Divide	46
3.4. Key Points from this Chapter	45

3.1. Different Policy Objectives and Approaches

As is often the case, legislation and regulation have consistently been a couple of steps behind when it comes to the internet economy, and many observers credit the enormous growth in the early years of the digital economy as being in part due to the wide-spread absence of regulatory constraints. Today things are very different. As **Figure 3.1** tries to encapsulate, today governments even in developed countries exercise varying degrees of policy intervention or regulatory oversight to govern online activities and the broader digital economy. This section discusses a number of these policy and regulatory trends and their implications for the global ICT industry.

is certainly the case of the United States as early as 1997, when President Clinton and Vice President Al Gore released their *Framework for Global Electronic Commerce* (exhorting governments to "adopt a non-regulatory, market-oriented approach to electronic commerce") and the United Kingdom, which in 2002 adopted a set of *E-Policy Principles* that encouraged policymakers to think very carefully about any regulatory action they intended to take and its implications on e-commerce. In this context, it is also very relevant that the internet economy took off immediately following and - many have argued - as a direct result of the large-scale and far-reaching deregulation of the telecommunications sector that many



Source: Huawei

3.1.1. Light Touch Approaches

Some governments quickly recognized the potential of the internet and related technological advancements for promoting their countries as knowledge economies and for significant and widely-felt improvements in productivity. These governments were also cautious of any policy or regulatory interventions that could undermine this growth potential. This

governments initiated, starting with the United States and the United Kingdom, but which quickly spread to almost all countries developed and developing.

The European Union, for its part has taken a more ambiguous approach towards the digital economy in terms of lawmaking and regulatory responses, due in part to the varied interests and approaches of its different Member States, but

also due to the imperative to balance different and sometimes competing policy objectives. The 2015 Digital Single Market initiative appears on its face to embody a forward-looking and ambitious vision of what Europe could become in the internet space. But this initiative must be balanced against what amount to very strict EU rules on the cross-border transfer of personal data, as well as a more recent statement of objections by the European Commission to claw back what it construes to be unlawful tax benefits afforded by Ireland to Apple, and alleged abuses of dominance by Google over its Android OS. Many observers believe these actions are just the first of potentially several similar cases against other technology giants who benefitted from similar arrangements, namely Facebook and Amazon to name just two.

Another reason the EU's position is less clear-cut than that of the U.S. when it comes to the digital economy is because except for a few isolated outliers such as Skype (now owned by Microsoft), SAP and Spotify, the EU has so far failed to produce very many globally active players in the internet economy, although it has produced a range of international leading telecommunications providers (Telenor, Orange, Vodafone, Deutsche Telekom, BT) as well as some leading equipment makers (Ericsson and Nokia). Nevertheless, European multinationals are dependent on connectivity to export services as well as operate their subsidiaries and manage HR, inventory and overheads efficiently.

Today, globally-active technology companies, especially those from exporting countries like the United States, typically continue to advocate in favor of light-touch regulatory approaches that seek to limit governments in their capacity to intervene in the digital economy, particularly in ways that might constrain the development of new and innovative products, services and business models. This is an approach that has also found expression in how governments and

The light-touch approach has also generally been endorsed in multilateral regulatory best-practices clubs like the OECD and APEC.

regulatory authorities in some countries have reacted to the emergence of new services.

For example, when it comes to services such as Airbnb and Uber, the EU Commission released guidelines on the sharing economy urging regulators in the 28 Member States to only ban services as a last resort. Policy analysis by the European Commission on the subject has extolled the virtues of approaches that are generally supportive of the efficiency gains, increased competition and wider range of choices that the sharing economy provides to businesses and consumers, while simultaneously recognizing the need to mitigate the economic downsides and disruptions the emergence of these new business models have had on the traditional industries they displace (being the hotel and taxi cab industry in the case of Airbnb and Uber respectively).

A light-touch approach in most market economies also requires that intermediaries such as telecoms operators, managed services and platforms cannot be held liable for user transgressions committed through the use of their services, provided they act as "mere conduits" that transmit content. This was the main principle of the EU E-Commerce Directive, but also finds expression in the United States in the Digital Millennium Copyright Act, and many other laws in the area of hate speech, tax avoidance or copyright infringement.

A light-touch approach does not hold innovation and conduits accountable, and does not seek to regulate *ex ante*. The light-touch approach has also generally been endorsed in multilateral regulatory best-practices clubs like the OECD and APEC. Documents like the 2008 *Seoul Declaration on the Future of the Internet Economy* (signed by 39 countries, both OECD members and non-members alike) and the 2011 *OECD Council Recommendation on Principles for Internet Policy Making*, both favor approaches characterized by less rather than more direct policy interventions and explicitly call for policies that promote and protect the free flow of information, an open and

interconnected internet, the cross-border delivery of services, inclusive (multi-stakeholder) internet policy formulation processes, and that encourage transparency, fair process, and accountability.

As early as 2002, APEC was making joint policy declarations with regard to the digital economy stating that it should be able to "flourish in a liberal and open trade environment", and that where domestic policy objectives do require regulatory interventions, these should be "transparent, non-discriminatory and least restrictive on trade".

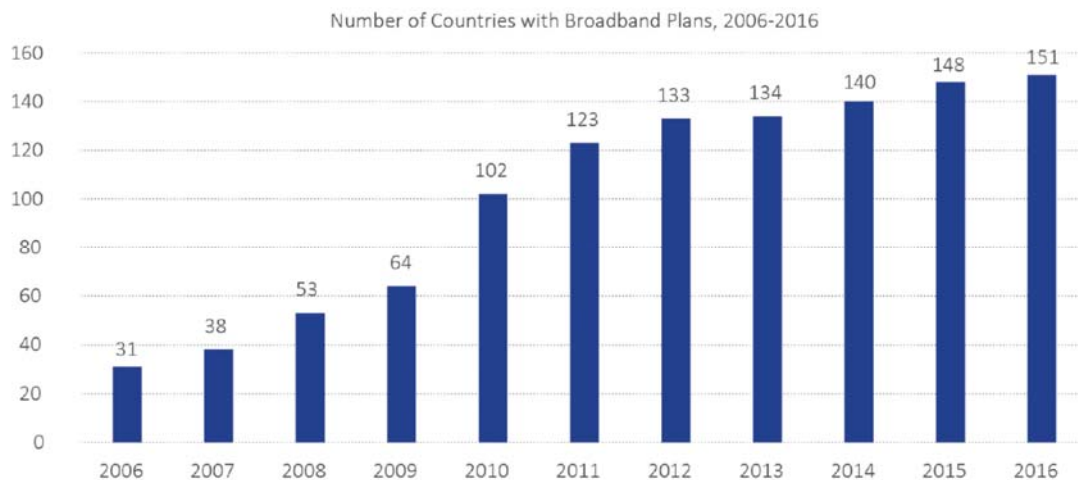
3.1.2. Interventionist Approaches

Over the years, the importance of the digital economy has become increasingly apparent and has become the focus of regulatory action and policy interventions by different governments, either with the objective of suppressing certain online activities or seeking to encourage the development of economic sectors linked to the

reasons. Likewise, many governments, even liberal democracies have contemplated and in many instances also implemented blanket bans on certain social media sites fearing their susceptibility for abuse in organizing mass demonstrations and thereby fermenting social unrest.

Other interventions are focused on increasing access to the digital economy or making such access easier, faster, more ubiquitous and cheaper. Many governments long ago enacted different policies to boost the role played by the digital economy in their national economies, recognizing the many societal benefits but also efficiency and productivity gains resulting from the increased use of ICT and online systems. Korea, Japan and Singapore were early proponents of these kinds of plans, with the United States, Australia and many others also adopting national broadband plans slightly later. Among the more than 150 countries with a clearly formulated national broadband plan

Figure 3.2: Number of countries with a national broadband plan



Source: ITU

digital economy. Different governments have reached for different regulatory tools depending on their objectives. Censorship, which many governments of all ideological bents have practiced in various forms for centuries, is also widely used on the internet, for a variety of policy

(Figure 3.2), views on what exactly is the desired level of government intervention have tended to differ. Some governments have chosen to actively become involved in building networks (for example Australia), whereas others espoused an approach whereby the role of

governments should be limited to establishing and overseeing the underlying institutions (particularly markets) so that the digital economy can thrive (for example the United States).

Industrial planners are still grappling with how digitalization is transforming the economy. In an era of global and digitalized supply chains, where data is an increasingly important input, digital protectionism can be self-defeating. The effectiveness of the post-war model for industrial policy in Asia and Europe, i.e. fostering national champions in manufacturing through protectionism and state aid, can be questionable in an era of global supply chains and a digital economy that largely ignores the existence of national borders.

3.1.3. Digitization, Economic Policy and Industrial Development

Many governments were very quick to seize on the potential of the digital economy to advance specific areas of economic policy. In the United States, the 2010 National Broadband Plan was actually conceived as part of the 2009 Troubles Assets and Relief Program (TARP) legislation that sought to provide massive economic stimulus to a national economy reeling from the effects of the 2008 Global Financial Crisis.

In Europe also, the Digital Single Market strategy, launched in 2015, has among other things, the explicit aim of boosting economic growth (adding up to 450 billion per year to the EU economy) and creating hundreds of thousands of new jobs. It purports to do this by focusing on three policy areas or pillars, namely: (1) improving access to digital goods and services; (2) creating the right online environment (by enacting appropriate rules); and (3) promoting full use of the possibilities afforded by digitization (essentially raising digital literacy among Europe's people and businesses).

Many of the policy interventions required to increase participation in the digital economy will be outside the remit of those directly responsible for government policies on the digital economy as well as beyond the timeline of any sitting government

In the developing world we have seen similar policy initiatives. Take Digital India, for example, launched in 2015 under the leadership of Prime Minister Narendra Modi. Its vision is to “transform India into a digitally empowered society and knowledge economy”, focusing again on three pillars” (1) infrastructure and making the internet a basic utility available to everyone; (2) governance and availability of online services; (3) the digital empowerment of India's citizens.

Different approaches have been taken under the various government initiatives to boost the role the digital economy can play in supporting and sustaining the many economic policy goals it

is increasingly being called upon to fulfil. What one typically sees is varying levels of government intervention, either directly or indirectly across the three main areas or pillars of internet policy (availability of infrastructure, affordability of access, and widespread adoption). These days, most governments recognize that the sort of sweeping changes needed on both the supply and demand sides can only be achieved if both public and private sector actors work together, with each leveraging their own important and often complementary strengths.

3.1.4. Celebrating Complexity and the Need for an Overarching Digital Strategy

Policymakers everywhere are now aware of the potential of the digital economy as an agent for change and of the sector's potential for increased competitiveness and inclusive economic growth. However, they continue to disagree about which interventions are likely to be conducive to amplifying the positive benefits of the digital economy and which interventions could be potentially damaging to it. This is because many policymakers still lack a sophisticated understanding of how the digital economy really works, which is where the technology industry must help to inform governments of the possible implications of different policy choices. The

digital economy, like the global economy, is a complex ecosystem of interconnected and mutually reinforcing actors and systems. Seeking to have any positive impact on it at all, or rather seeking to harness it for the benefit of a given territory or economic sector requires not just a single action but rather a range of well thought-out policy interventions, some of which may take years to bear fruit. In particular the development of the kinds of skills typically needed to kick-start and maintain a position in the knowledge economy takes a multi-pronged policy approach over many years before showing any results.

Many of the policy interventions required to increase participation in the digital economy will be outside the remit of those directly responsible for government policies on the digital economy

as well as beyond the timeline of any sitting government. This is the reason why overarching strategies on how to harness the digital economy should be both top-down (meaning from the highest levels of political leadership), and multi-stakeholder (involving input from all parts of the industry both foreign and domestic), as well as being bottom-up (meaning with the needs of users and small businesses taking a prominent position in terms of the formulation of policy priorities). Any individual regulatory action that seeks to constrain or dictate terms to digital economy stakeholders should ideally be in accordance with such overarching strategies, lest they merely serve to promote the interests of a narrow set of industry actors who have succeeded in capturing regulatory institutions in order to advance their own policy agendas.

3.2. Different Impacts and Implications of Different Policy Interventions

Like in any other sector, different policy interventions can have varying impacts and implications on the digital economy, some positive and some more ambiguous. In this section we discuss some of the upsides and potential downsides of different regulatory actions, but we begin by focusing on the importance of the technology industry in educating policymakers and informing good policy.

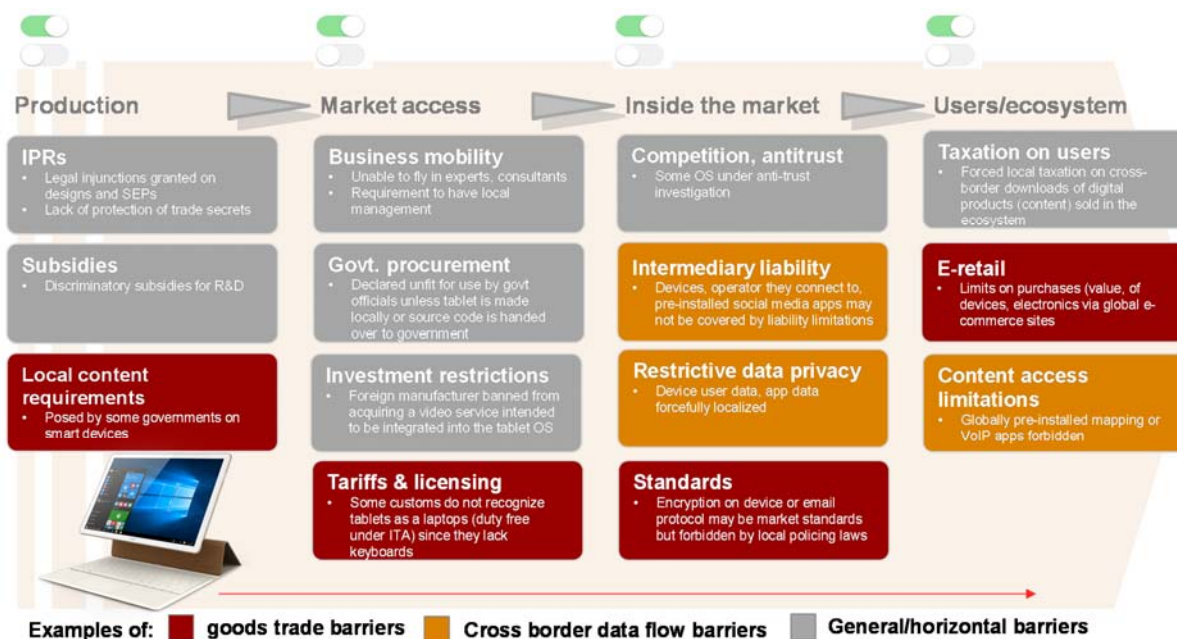
3.2.1. Vulnerability of Digital Trade to Different Regulatory Interventions

In the analytical discussion on impediments against digital trade, it is important to bear in mind that the taxonomy and the impact of disruptive digital trade are different from more traditional trade barriers on conventional goods and services trade. Firstly, the digital economy is more vulnerable to disruptions due to its many interlinkages between devices, infrastructure, services, apps and technology. Complexity in production due to historically unprecedented levels of supply-chain fragmentation renders international trade vulnerable to being blocked at an equally unprecedented number of potential choke-points. This is illustrated in **Figure 3.3**, which depicts how digital trade barriers could

precipitate disruptions at various points along the digital value-chain. Potential sources of discrimination can be found as early as the production phase, continuing through to market access (typically at the border). Other trade restrictions may be inside the target market, which is typical of many horizontal, regulatory barriers. Finally, certain digital trade barriers do not discriminate between producers of the good or suppliers of the service, but rather between buyers and users in their ecosystems, for instance by limiting their use (such as what users may access or download) in a discriminatory manner.

Secondly, unlike tariffs that increase the cost of exporting to a given market (thereby making an imported product incrementally less competitive vis-à-vis the domestic like product or a potential substitute product of domestic origin), many digital trade measures are prohibitive in a binary, “all or nothing” manner – they either permit trade, or they ban it. For example, a discriminatory technical regulation, or a mandate to use a certain technology (e.g. encryption standard, mapping service on a smartphone or tablet) make exporting impossible. Likewise a discriminatory requirement to surrender source code in a public procurement tender can make it

Figure 3.3: Vulnerability of digital trade: Illustration of potential barriers



Source: ECIPE

prohibitively expensive for a foreign supplier to participate, since the downside risks and potential commercial disadvantages of surrendering proprietary information could massively outweigh the potential profits to be made if it is awarded the tender contract.

However, this is not to say that tariffs no longer matter post-ITA: There are still tariffs on a broad range of products, in particular inputs used in the manufacturing process. These are often so-called nuisance tariffs, but there are also tariff peaks of up to 35% on ICT goods in certain very large and important markets. Rapid advances in technological change have also given rise to some problematic classification issues given that trade commitments and classifications are not updated at the same pace. For example, commonsense would argue that a tablet computer is equivalent to a laptop: Yet from a strictly legalistic perspective, the harmonized system of tariff schedules defines portable laptops (more specifically HS847130) as portable machines with a physical keyboard, which tablets obviously lack.

The vulnerability of global value chains to disruption at the hand of various regulatory interventions has granted considerable leverage to governments who now find themselves equipped with the ability to surgically disrupt digital trade - effectively giving them a “kill switch” on trade in an enormously wide range of items. Moreover, discriminatory measures in the digital economy are not only enacted on the basis of whether the producer is foreign or domestic, but also by differentiating between online and offline transactions. For example, an e-book may be taxed differently from a physical publication on paper; items that may be available for sale in a brick and mortar store may be banned from being sold on the internet.

Figure 3.4 shows the result of an audit of thirteen trade policy areas that are relevant to the digital economy and where trade restrictive measures have an impact on digital trade, either because they distinguish between foreign versus domestic; or online versus digital. The sample consists of 65 countries from all regions, and of all sizes, income levels and models of economic governance, which indicates that restrictions on

cross-border data flows (e.g., discriminatory privacy policies, data localization) are by far the most common type of barrier. In the next Chapter (Chapter Four) we examine some substantive rules that trade negotiators are grappling with in an attempt to both maintain openness in the digital economy and balance such openness against a range of other policy objectives.

3.2.2. The Importance of the Technology Industry as Policy Advocate

Today, the importance of the online and technology sectors is beyond doubt and widely recognized as key drivers of growth, job creation, upward social mobility, and productivity improvements. Technology companies have long found their voice and organized themselves into influential trade associations that advocate vocally and assertively on policy and regulatory issues that affect the industry. Major technology companies in many countries have direct and privileged access to the very highest levels of political power which certainly was not the case when industry start-ups like Hewlett Packard or Apple first began putting Silicon Valley on the map. Social media is a big part of companies' corporate communications strategies and also figures prominently in political campaigns by candidates seeking election to public office at all levels in a growing number of countries. Technology companies and the ICT industry have become influential policy advocates and they are increasingly playing an important role in setting national economic agendas in many countries.

When technology companies join together under the umbrella of a trade association or other industry groups, they can become a force for

Figure 3.4: Types of discriminatory digital trade measures and number of occurrences in global trade



Source: ECIPE Digital Trade Estimates

enlightened and informed policy advocacy, although this is generally only true provided they have open membership requirements that promote inclusiveness and welcome a broad range of industry actors, including consumer groups. Other influential players in this space come from grass-roots organizations which advocate primarily in favor of consumers and users on a wide range

of internet-related issues, such as privacy, cybersecurity, and net neutrality. Moreover, given the public interest in digitalization, the debate has also led to alliances being forged between different technology industry associations, SMEs, traditional industries and consumer groups. This is most apparent in the European context where start-up alliances, traditional service industries and the technology industry have often formed coalitions to support digital free trade.

Through these various avenues of influence, individual actors working within the context of industry associations can have a significant impact at the national level, with their views and priorities then feeding into national positions that are subsequently championed at international meetings of organizations such as the OECD, APEC, the ITU, the WTO, as well as being reflected in the positions taken by one or more parties to international trade negotiations.

3.2.3. The Obvious Benefits of Investment in Communications Networks

By now, a large body of research has demonstrated the economic and social benefits of building better communications infrastructure and of making this infrastructure as universally accessible as possible, as well as broadly affordable. Any disagreements on this point, if

they do exist, tend to focus on who should pay to build these networks and how quickly any capital investments made to build them can and should be recouped. A small number of governments, recognizing the public-good nature and general welfare-enhancing effects inherent to internet connectivity, have shouldered the burden of building the backbone infrastructure themselves, whereas others have "allowed" the incumbent operator to assume this burden while simultaneously requiring it to lease circuits and spectrum to internet service providers or competing mobile operators. In yet other countries, it is new-entrant network operators that have been tasked with rolling out the country's communications infrastructure as part of the conditions of their operating licenses. The incumbent or the new-entrant network operator can recoup its investment by such leasing arrangements as well as by the revenues it earns directly from customers. Given the size of the investments made in building, maintaining and upgrading this infrastructure,

as well as competition from service providers that engage directly with customers over the top of this infrastructure (so-called OTT providers), as well as the prices paid at spectrum auctions, some operators have complained that their return on investment is extremely low – whereas the pressure for operators to pay out dividends to shareholders remains high. This dynamic can undermine incentives for network operators to continue investing in the underlying infrastructure, which can have potentially negative effects on intra-sector competition between operators and OTTs (i.e., infrastructure

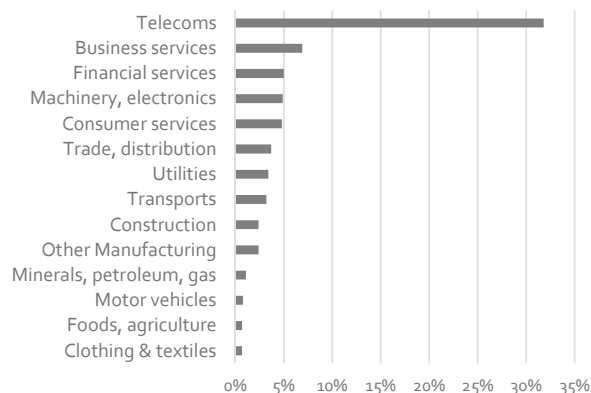
competition) as well as the whole digital economy ecosystem.

These problems are exacerbated by the fact that the telecommunications industry is characterized by high barriers to entry, as well as a restrictive trade and investment climate, so that it lends itself easily to duopolistic or oligopolistic models of competition that can undermine the efforts of regulators to prosecute operators that seem to engage in anti-competitive behavior. This is potentially a dangerous evolution given that competition is a key driver for investment, as is evident from the data available in countries with deregulated markets. For example, in the EU, the deployment of FTTH/B has so far been most extensive in the countries where there is already strong physical

access competition on the existing networks, for instance in Portugal, France, Netherlands, Germany and Italy, where the market shares of alternative operators have been around 50%, based on unbundling of the local loop (ULL). Similar trends have been observed in the U.S., Japan and Korea, where fiber roll-out was preceded by strong service-based access competition on the broadband market,

encouraged by mandatory unbundling of all segments of the existing networks, including both cables and local loops. As a general matter, the tension between the need to continually increase investment in network infrastructure and the desire to have competitive online digital ecosystems is a delicate balance with which many governments are still grappling. **Figure 3.5** shows how connectivity and online software make up for almost 5% of the inputs used in producing machinery – exceeding the importance of energy and labour. In other words, stable prices and access to the latest technology

Figure 3.5: Value of connectivity used as an input in production



Source: ECIPE

are fundamental to competitiveness in many sectors, including industrial manufacturing. Competitive markets are not about picking winners through public investments and state aid. Competitiveness in the new economy comes from quickly tapping into ideas and technology in other countries, and using them to build your own success stories.

Since the events of 9/11 in the United States and other similar attacks by likeminded groups in many other places, both developed and developing countries have seen national security concerns take up a new and more central role in dictating policy responses to the digital economy in addition to simply supporting and promoting it as an engine of economic growth. These efforts have become even more

acute since the revelations of Edward Snowden provided hitherto unknown insights into the sheer scale and intrusiveness of online surveillance by a number of Western governments as well as raising awareness of just how easy and widespread the practice

of compromising and exploiting sensitive user information online has become. This has resulted in a number of policy responses, the results of which are to limit the freedom of action of technology companies and to require these companies to disclose more – in some cases proprietary – information on how they work (particularly source code disclosure requirements). Data localization measures are another such policy response being contemplated by governments in many jurisdictions, both developed and developing, as are restrictions or conditions on the use of encryption for messaging traffic. Here the debates seem to be less between North and South interests per se rather than between Doves and Hawkes, i.e., those stakeholders that espouse a more liberal and open approach to online activities and those predominantly concerned with the security risks such activities

Both developed and developing countries have seen national security concerns take up a new and more central role in dictating policy responses to the digital economy in addition to simply supporting and promoting it as an engine of economic growth.

potentially entail. This is a difficult and sensitive policy balancing act that must be performed by the highest levels of countries' political leadership. International trade negotiations are an important forum where precisely this kind of weighing and balancing of interests is currently taking place.

3.2.4. Giving the Digital Economy the Space It Needs to Foster Innovation

Regardless of the underlying tensions between operators that pay for the network and OTT providers that make money from the services they provide over these networks, most stakeholders seem to agree that the freedom to innovate and exploit existing regulatory and legal loopholes in the development of new business

models has been a key characteristic of the digital economy. Also the benefits of the internet as a retail space devoid of the upfront costs of a brick and mortar store and the heavy regulatory burdens of opening and licensing a business in the real world are well understood, particularly by small and medium-

sized firms whose primary point of contact with (and sales platform to) customers is their internet website (and increasingly their mobile app). The history of M-PESA, the ubiquitous online payments platform in Kenya, is illustrative in this respect. Originally launched in 2007 by the country's largest mobile operator Safaricom, it was allowed to proceed on an experimental basis by the country's banking and financial services regulator, which didn't really know what to do about the service. Today, it has propelled Kenya to the position of world leader in mobile payments with more than 17 million Kenyans using this service, and somewhat stunningly, a quarter of the country's GDP passing through it. There are several reasons credited with the runaway success of the application, with one of the most prevalent being the regulatory holiday it was afforded from the outset. Such freedom to

experiment has often been lacking in other more technologically advanced and richer economies, where a number of factors have slowed the

universal adoption of different online and mobile payment platforms.

3.3. Finding a Consensus on what Works

Given the fact that the internet and the digital economy have been around for just over two decades now, a fairly broad and increasingly well-defined consensus has started to emerge both internationally and among the many different stakeholders (governments, private-sector, grass-roots etc.) as to how the internet and the digital economy should be governed. This is arguably true despite that fact that different approaches and different degrees of “free” versus “regulated” continue to face off against one another in various fora. This section discusses some of the principles underpinning this consensus and also discusses the implications for the digital economy more generally, of international rule making that seeks to incorporate a number of these principles into binding and potentially actionable obligations in trade agreements, a subject that is explored in more detail in the following Chapter of this White Paper.

3.3.1. Broad Consensus on Policy Interventions

A number of policy choices that governments can make are generally viewed as favorable and enjoy a broad international consensus in international meetings of organizations and groupings such as the OECD, the ITU, APEC, and the G20, as well as among the many private-sector, grassroots and non-governmental organizations that engage in policy advocacy with respect to various aspects of the digital economy. These tend to involve clear and transparent policymaking that is open to a wide range of stakeholders and which carefully considers the costs and benefits of regulation, while also inviting and affording thoughtful

Interventions that unnecessarily restrict the openness of the internet, or force supply-side actors to jump through a complex array of regulatory hoops in order to comply, are generally seen as detrimental to the growth and continued vitality of the digital economy

consideration to any constructive input received during public consultations. Regulatory approaches that are geared towards protecting the weakest elements of the ecosystem (users) and positively rebalancing preexisting power asymmetries, such as enhancing effective mechanisms for users to protect their privacy, strengthening consumer protection for those who engage in e-commerce, making it easier for businesses to understand and comply with legal requirements, shield users from nefarious activities like unsolicited email (spam), and that help to identify theft and online scams, are all approaches that are almost unanimously viewed as welcome policy interventions.

This is equally true of policy approaches that allow for a broad margin of discretion by all parts of the online ecosystem with respect to how to best comply with or implement them. Interventions that disproportionately restrict the openness of the internet, or force supply-side actors to jump through a complex array of (often arbitrary) regulatory hoops in order to comply, are generally seen as detrimental to the growth and continued vitality of the digital economy. Any such measures are usually suspected of concealing ulterior policy motives and are a red flag for internet companies that have hitherto been able to operate freely in the absence of such restrictions. Finally, policy responses that reduce the freedom of action of internet operators or technology companies by mandating the adoption of certain standards, the use of specific technologies, the disclosure of proprietary information, or the localization of information storage facilities or business processes, tend to be viewed by many in the

industry as acts of regulatory over-reach and very possibly disproportionate to the legitimate public policy objectives purportedly being pursued. These views are starting to be reflected, albeit only tentatively and subject to various exceptions, in international rule making which we discuss in brief under the next heading and in more detail in the next Chapter of this White Paper.

3.3.2. The Implications of International Rule-Making

Until fairly recently, multilateral action on issues such as internet governance and rules for the digital economy had typically been espoused in the form of ministerial declarations and statements of desired best practices by governments, private sector associations, and grass-roots advocacy groups. Although certainly representing a positive development, the main drawback to these declarations was that they were completely non-binding, and in many cases seemed to be observed primarily in the breach by many of the governments that were signatories to them. However, commitments in bilateral, regional and plurilateral trade agreements are normative, and sometimes even enforceable for any government party to such an agreement, but they could also apply indirectly as a *de facto* code of good conduct even for countries and territories not party to such agreements.

In many ways the situation we are currently seeing unfold in the area of trade rules and the digital economy mirrors the approach taken towards the end of the 20th century on intellectual property rights. International treaties on IPRs had existed since the 1800s, and the World Intellectual Property Organization (WIPO) was established to oversee the implementation of these agreements in 1967. However, in the absence of binding dispute settlement provisions, these IPR treaties remained largely declarations of intent and WIPO itself was powerless to

enforce these rules, with whatever enforcement possibilities these treaties did contain being left to national courts. But what if national courts couldn't or didn't enforce IPRs as foreseen in international IP treaties? This all changed on the 1st January 1995 with the entry into force of the WTO Agreements, including the Agreement on Trade-Related Intellectual Property Rights (TRIPS). By incorporating the WIPO treaties by reference into the TRIPS Agreement and by making these provisions subject to the binding and compulsory dispute settlement procedures of the WTO, the international enforcement of IPRs had entered a new era. Much the same thing

A new set of rules is emerging to clarify and constrain the ability of governments to arbitrarily legislate and regulate in ways that, at least to some stakeholders in the digital economy, are perceived as being inherently inimical to its future growth and vitality.

is happening now in the area of digital trade, even while we have “analog rules” for an economy that has now gone digital, with a new set of rules emerging to clarify and constrain the ability of governments to arbitrarily legislate and regulate in ways that, at least to some stakeholders in the digital economy, are

perceived as being inherently inimical to its future growth and vitality.

3.3.3. Consensus on the Need to Bridge the Digital Divide

One thing that everyone agrees on is that too many people on the planet are still beyond reach of these transformative technologies. Across governments of almost every ideological persuasion and among all the major multilateral and regional development agencies, consensus prevails that more of the world's poor need to be brought into the digital economy as a matter of the highest urgency.

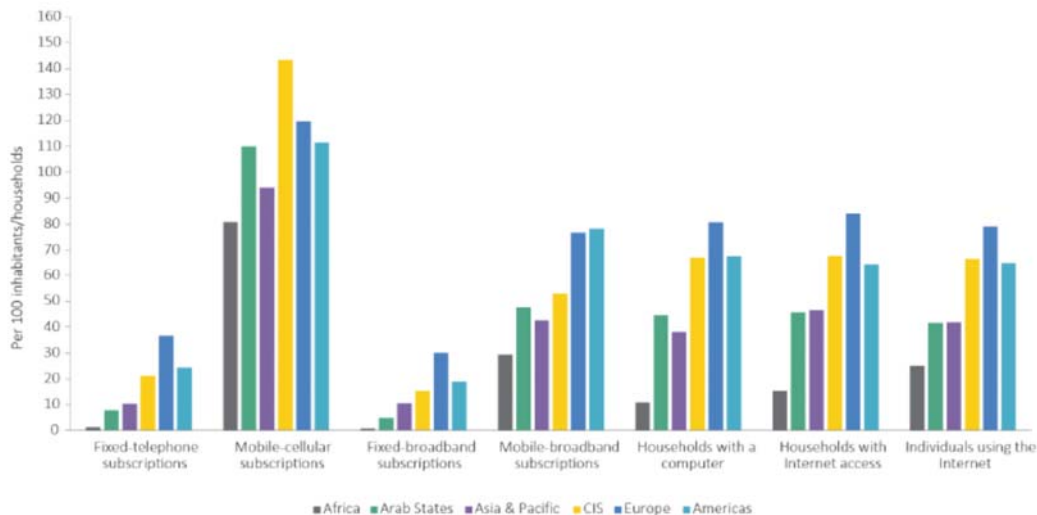
The World Bank, in its 2016 World Development Report points out that “nearly 60 percent of the world's people are still offline”, while advocating that “[m]aking the internet universally accessible and affordable should be a global priority”. In order to complete the “unfinished task of connecting everyone to the internet”, the World

Bank calls for what it refers to as a “judicious mix of market competition, public private partnerships, and effective regulation of the internet and telecom sector”.

By the same token, the International Telecommunications Union (ITU), in the 2016 edition of its annual Measuring the Information

United Nations – in its 2016 Sustainable Development Goals report notes that “[f]ixed-broadband connections remain largely unaffordable and unavailable across large swathes of the population in developing regions, highlighting the vast digital divide in access to high-speed, high-capacity Internet services”. It

Figure 3.6 Estimated ICT penetration levels (2016) by region



Source: ITU Measuring the Information Society (2016 Report)

Society report, states that “in some low-income countries, between 20 and 40 per cent of people still do not own a mobile phone and [...] the gender gap in mobile phone ownership is substantially higher”. It also points out that “while 84 per cent of the world’s people live in an area where mobile broadband services are offered, only 47 per cent are actually using the Internet”. The ITU report concludes that “[u]rgent action is required to address this persistent digital divide”. **Figure 3.6** shows the ITU’s estimates for ICT penetration levels based on different metrics and across different regions. Africa comes in lowest across the board, proving that this is where most of the world’s unconnected still reside and where the greatest urgency is for rapid and tangible improvements in connectivity, access and digital literacy.

But it’s not just specialized agencies for development or telecommunications that agree on the need to bridge the digital divide, also the

also notes that “internet access is a requirement for producers and entrepreneurs to remain competitive, and greater efforts are needed to expand this type of coverage to rural and remote parts of the world”.

And finally the WTO has also recently taken up the call for expanding access to the digital economy for the very important role it plays in supporting inclusive trade and helping micro and small businesses, as well as women in developing countries, connect with global trade flows. In 2016, the WTO Public Forum was dedicated to the topic of “inclusive trade” and the role of the trading system in supporting innovation, particularly in the realm of the digital economy and new technologies. In 2016, the WTO’s flagship publication, the World Trade Report analyzed the important role the digital economy plays in bringing SME’s, the vast majority of which are found in the developing world, closer to regional and global value chains.

As one of the biggest equipment vendors in the global ICT industry, and given our evident commitment to helping bridge the digital divide in many developing countries including many in Africa, we at Huawei stand at the forefront of

these efforts and are already deeply entrenched with both operators, private sector partners and government stakeholders in bringing new and affordable connectivity solutions to the hitherto disconnected.

3.4. Key Points for this Chapter

01

Although often adopted with perfectly legitimate policy objectives, the impact of regulatory responses to digital trade in many cases has a number of unforeseen consequences.

Policies affecting digital trade should be conceived and implemented according to international best practices and principles such as transparency, multi-stakeholder engagement, non-discrimination, cost-benefits analysis, proportionality, least-trade restrictive approach, and genuine effectiveness in achieving the stated policy objectives.

02

03

Digitization and online connectivity have an important role to play in industrial development and other economic policy objectives in both the developed and the developing world. We should seek flexible approaches that combine and harness the strengths of both the public and private sectors.

There is almost unanimous consensus among governments and certainly among multilateral institutions as to both the desirability and the urgent necessity of acting quickly to overcome the digital divide and bring the world's poor into the fold of the digital economy.

04

The next Chapter turns to an examination of the emerging set of international trade rules currently being crafted to try and discipline many of the regulatory interventions discussed in this chapter.

CHAPTER FOUR | INTERNATIONAL TRADE RULE MAKING FOR THE DIGITAL ECONOMY

As in most policy areas, international rule-making tends to lag behind domestic legislative and regulatory responses to the needs of the digital economy. This disconnect is something that had begun to be addressed in a series of free trade agreement negotiations, particularly the Trans-Pacific Partnership (TPP) Agreement and the Trans-Atlantic Trade and Investment Partnership (TTIP) - both of which face an uncertain future at the time of writing. International trade agreement texts that relate directly to the digital economy were also emerging in the context of the Trade in Services Agreement (TiSA) negotiations proceeding on the sidelines of the WTO, and currently feature in the ASEAN+6 Regional Economic Partnership (RCEP) negotiations. In addition to these initiatives, work has been completed at the WTO to update the 1997 Information Technology Agreement (ITA) to bring a whole range of new products within its scope and the ITA Committee at the WTO is now seen as a key way of advancing liberalization on a whole range of NTBs that effect trade in IT products. Finally, other initiatives on the protection of data and on privacy that are taking place between the United States and the European Union, as well as earlier work in the OECD and APEC, promise to set new standards that will affect the cross-border transfer of personal information and as such have important ramifications for the digital economy.

4.1. Existing and Emerging Global and Regional Rules Framework.....	50
4.1.1. Existing WTO Rules on Trade in Services.....	50
4.1.2. New initiatives in the WTO Post-Nairobi and ITA2	51
4.1.3. Trans-Pacific Partnership Agreement (TPP).....	52
4.1.4. Trade in Services Agreement and the Transatlantic Trade and Investment Partnership	53
4.1.5. Regional Comprehensive Economic Partnership (RCEP)	54
4.1.6. APEC Initiatives on the Digital Economy and Privacy	55
4.1.7. OECD on Privacy, Trans-border Flow of Personal Data and the Internet Economy	55
4.1.8. The Future of Digital Trade Rules.....	56
4.1.9. Trade Policy-Making in an Uncertain Future	57
4.1.10. The Road to Buenos Aires and MC11.....	58
4.1.11. UNCTAD and e-Trade for All.....	61
4.2. Substantive and Procedural Rules.....	61
4.2.1. Transparency and Notification Obligations	61
4.2.2. Elimination of Customs Duties on Digitally Traded Products.....	62
4.2.3. Obligations on Free Flow of Information	62
4.2.4. Forced Data Localization.....	63
4.2.5. Mandatory Disclosure of Source Code.....	64
4.2.6. Privacy and Protection of Personal Data	64
4.2.7. Legislative Framework Obligations to Facilitate E-commerce	65
4.2.8. Technical Standards and Conformity Assessment Procedures	66
4.2.9. Specific Commitments on Trade in Services.....	66
4.2.10. Intellectual Property Rights	67
4.3. The Dynamics Driving New Rules for the Digital Economy	68
4.3.1. Past Current and Future Negotiating Fora	68
4.3.2. Regulatory Divergence within FTAs.....	68
4.3.3. Interests and Interest Groups	69
4.3.4. Regulatory Autonomy, Industrial Policy and the Risk of Fragmentation	70
4.3.5. Crafting Digital Trade Rules in the Service of Development	71
4.3. Key Points from this Chapter	74

4.1. Existing and Emerging Global and Regional Rules Framework

We begin by examining the status quo under existing WTO rules before turning to summarize the negotiating fora where different sets of new rules for the digital economy are starting to emerge. It is important to understand each of these initiatives since they involve different groups of countries with varying offensive and defensive interests, and because as we discuss the substantive rules taking shape later in this Chapter, we will also refer back to several of these negotiations to compare how these rules are being addressed in each of them.

4.1.1. Existing WTO Rules on Trade in Services

The WTO launched the so-called Global Electronic Commerce Work Program in 1998, which sought to lay the groundwork for agreeing on disciplines on the then newly emerging issue of e-commerce as they related to other areas in which the WTO already had established rules, particularly in areas such as trade in services, trade in goods, and trade-related intellectual property rights. Substantively the main achievement that can arguably be accredited to these efforts is a now long-standing (albeit still temporary) moratorium on imposing customs duties on internationally traded electronic transmissions, which more recent bilateral, regional and mega-regional trade agreements have sought to make permanent. Nevertheless, it is likewise true that during the Uruguay Round of multilateral trade negotiations (1986 to 1993), Contracting Parties of the General Agreement on Tariffs and Trade (GATT), and now WTO members, agreed on what are essentially fairly far-reaching commitments that affect cross-border trade in services across many sectors, including computer and related services, but also – more importantly – across many other services sectors that are of

fundamental importance to the digital economy today (retail, financial and communications services to name just three), but which at the time, negotiators considered of very minor importance in terms of the actual cross-border supply of the relevant services. These commitments under the WTO are generally overlooked and underused, and they bear strongly on the digital economy. To begin, WTO members have comprehensive commitments under GATS in services sectors like “online processing services”. These commitments include the most common forms of internet services and industrial use of connectivity; Members are therefore bound to provide market access and provide national treatment (i.e. non-discrimination) on both cross-border transmissions and commercial presence in their jurisdictions.

WTO members are also signatories to the GATS Annex on Telecommunications that ensures open access or use of “public telecommunications networks” on “reasonable and non-discriminatory” terms. The Telecoms Annex is unique within the WTO system, as it is the only set of rules within the multilateral system that requires Members to police anti-competitive behaviour by

market players, so that it could effectively remedy antitrust practices of any upstream players that exert downstream effects on service providers (such as, say, bandwidth throttling). Although the Annex predates cloud computing, VoIP or on-demand streaming, it deals with open competition on the telecoms market as well as the delicate market interface between telecoms and OTTs. In addition to the Annex, a consensus document called the Reference Paper also sets out a number of important substantive obligations on issues such as universal service and discriminatory practices on interconnection,

Many of the limitations, restrictions and conditions that WTO members have sought to impose in order to limit access to their domestic services markets, and which essentially represent a restriction on digital trade, are not consistent with WTO rules.

regulation and licensing procedures for cross-border infrastructure and competition within telecommunications services markets.

In the years since these commitments were made – in what was essentially a pre-internet era – several WTO dispute settlement rulings have interpreted important clauses of the WTO General Agreement on Trade in Services (GATS) and a number of market access commitments WTO members made during the Uruguay Round and also since then in the context of WTO accession negotiations. These rulings have deemed that many of the limitations, restrictions and conditions that WTO members have sought to impose in order to limit access to their domestic services markets, and which essentially represent a restriction on digital trade, are not consistent with WTO rules.

Much of the consequent negotiations and public discourse taking place around the digital economy is effectively about the two paradoxical evolutions from GATS: on the one hand, there is a need for more ambitious and stringent commitments going beyond GATS to open up digital trade, and to maintain the global nature of the internet; on the other hand, there is also a need for deeper carve-outs and exceptions for governments from such commitments to preserve their policy space in addressing the many political sensitivities that the digital economy has given rise to – especially on security, privacy and industrial policy. For this reason, many argue that what is required in the realm of digital trade is less a set of new and binding trade agreement rules, rather than clarification and acceptance of the scope and meaning of existing rules.

4.1.2. New initiatives in the WTO | Post-Nairobi and ITA2

The original Information Technology Agreement was concluded in 1996 and involved a

The incremental expansion of the ITA is just one path towards more comprehensive and contemporary trade rules for the digital economy within the multilateral system building on what was originally a tariff-centric deal on devices and equipment.

commitment to eliminate tariffs on dozens of tariff lines for information technology products. Starting with 29 signatories, the ITA ultimately came to comprise some 81 WTO members and covered a reported 97 percent of world trade in information technology products. In 2015, the original ITA was updated (ITA 2) to more accurately reflect the technological advancements that had taken place in this sector since 1996, whereby an additional 201 items were added to the list of duty-free traded IT products. Some fifty-three WTO members (counting the EU as one) are participating so far in ITA 2, including China and other big exporters of IT hardware products.

The updated ITA is a positive development for the hardware side of the digital economy. Non-tariff measures have now been included as a discussion item on the ITA Committee's agenda, and it remains to be seen whether such talks can

progress much in the absence of the negotiating dynamic that characterizes market access offers and requests. Although the initial items on the ITA NTM agenda are relatively rudimentary and concern very basic areas of harmonisation on electromagnetic compatibility (EMC) and interference (EMI) that were also part of the Doha negotiations, positive outcomes from these processes remain uncertain. This will to a large degree depend on how well the global IT industry manages to organize itself and put pressure collectively on negotiators from different countries to push this agenda in meetings of the ITA Committee as well as with individual governments who are party to ITA2.

The incremental expansion of the ITA is just one path towards more comprehensive and contemporary trade rules for the digital economy within the multilateral system building on what was originally a tariff-centric deal on devices and equipment. Other approaches have their points of departure in various other disciplines, such as those governing trade in services. Within the so-

called post-Nairobi agenda (called this because it constitutes the negotiating agenda that followed the Nairobi WTO Ministerial Conference in December 2015), attempts are being made to find slimmer sectoral issues where compromises can be found amongst likeminded parties within the broader WTO membership. In 2016, India tabled a proposal emphasizing their interest in the importance of connectivity for knowledge process outsourcing (KPO) and mode 4, or the temporary mobility of ICT consultants. China has also presented a constructive proposal based on liberalization of electronic retailing, as well as the use of connectivity and online platforms to support international trade in goods. These initiatives evidently demonstrate there is a broad consensus and ownership of the e-commerce agenda within the multilateral system.

4.1.3. Trans-Pacific Partnership Agreement (TPP)

The TPP was a so-called mega-regional trade and investment agreement originally between 12 countries (**Figure 4.1**) whereby the United States withdrew in January 2017 after a final treaty text had been agreed but before ratification procedures. A number of other important regional economies have at various times expressed their desire to join the TPP in future

(South Korea, Philippines, and Thailand). Taken together, the parties to the TPP would have comprised almost 40% of global GDP; trade flows of the TPP countries represented the same coverage of global trade as the GATT system by the 1980s – a considerable coverage by any measure.

Although at the time of writing its future seems uncertain, the TPP is increasingly being credited with setting benchmarks in a range of trade policy areas that have so far defied consensus at the WTO, including investment, competition, e-commerce, environment, and labor. But the agreement also covers some new territory in that it contains rules on issues that have never been tabled for negotiation in Geneva, including state-owned enterprises, competitiveness and business facilitation, regulatory coherence, as well as on transparency and corruption. In this context, the TPP advances the first strand of the post-GATS evolution – namely to advance commitments within e-commerce, digital products (e.g. downloads), including disciplines for the cross-border transfer of information, which also comprises “personal information, by electronic means”, as well as a ban on the forced localisation of computing facilities.

Figure 4.1 Original 12 negotiating parties to the TPP



Source: The European Financial Review

Although formal negotiations were concluded in 2015, at the time of writing there remains a good deal of uncertainty as to whether the agreement will ever be ratified by the parties, particularly following the withdrawal by the United States, and thus whether it will ever actually enter into force. However, this does not mean that the results of the drafting exercise under the TPP negotiations will have been lost, many of the negotiating outcomes that emerged from the TPP process have found their way into other negotiating fora, albeit often with various nuances.

4.1.4. Trade in Services Agreement and the Transatlantic Trade and Investment Partnership

One of the new agreements that could have potentially adopted some of the negotiating outcomes achieved in parts of the TPP was the Trade in Services Agreement (TiSA), negotiated for four years (and counting) amongst a group of 23 like-minded WTO members that were originally called the Really Good Friends (RGF) of services. These plurilateral talks were formally taking place outside of the framework of the WTO itself. TiSA is itself currently under re-evaluation.

A number of draft negotiating texts have been leaked which provide insights into which direction these talks could have been headed. The TiSA negotiating texts included proposals on e-commerce bearing a strong resemblance to the corresponding TPP text as well as various proposals that diverged from the TPP orthodoxy. The differences of opinion within even supposedly “really good friends” clearly shows the different approaches and objectives being

pursued on digital trade. The outcomes that ultimately could have resulted from the TiSA talks on e-commerce were much more likely to accommodate the need for further exceptions than both TPP and GATS, reflecting a balanced consensus from a broader group of countries than the TPP – especially, given the influence of the EU in TiSA. Given this balanced approach, China formally announced its intention to join TiSA, which the founding parties are yet to agree on. As TiSA may be reinitiated in the near future – possibly under different leadership – the exceptions may further diverge from the GATS and TPP texts.

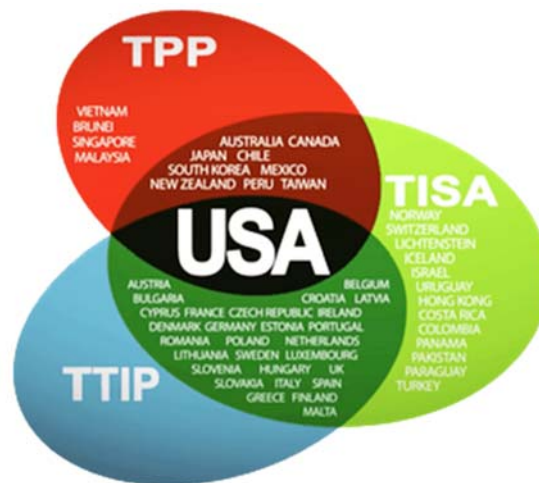
The Transatlantic Trade and Investment Partnership (TTIP) between the European Union and the United States is another possible causality of a similar political crisis and negotiation fatigue. The parties to the TTIP – the EU and the U.S. – comprise almost 50% of world

GDP and nearly a third of global trade flows. Because tariffs between the EU and the U.S. are relatively low after almost 60 years of successive rounds of multilateral trade negotiations, the big gains in terms of trade and investment liberalization that this initiative promised were in the area of non-tariff barriers (NTBs) and regulatory impediments to

increased economic integration – something that proved more difficult than envisaged, especially in the detailed sectoral negotiations in areas of interest for this White Paper, namely e-commerce and services.

Similar to the TiSA talks, TTIP shows how the EU’s positions on privacy and data protection leads to a need to define exceptions to the common

Figure 4.2 Overlapping trade agreement negotiations in 2016



Source: Global Research Canada

principles of open digital trade, more or less derived from the TPP. Outside of cross border data flows, publicly available texts on electronic communications and tele-communications seem to be little more than elaborations of many of the principles already laid out in the 1996 WTO Telecoms Reference Paper – an approach usually taken in EU FTAs; Likewise, the leaked draft of the TTIP chapter on technical barriers to trade (TBT) comprises a restatement of the WTO TBT Agreement, with the important addition of non-discrimination in conformity assessment procedures – an approach that closely resembles that taken in the corresponding chapter of the TPP.

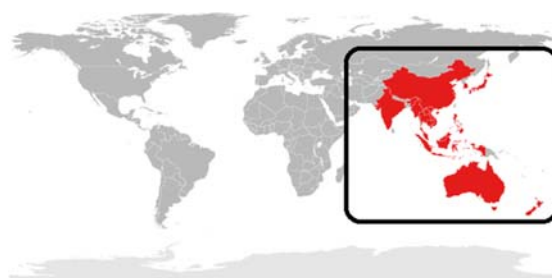
At the time of writing, it is generally agreed that the three new major initiatives on services – TPP, TiSA and TTIP (**Figure 4.2**) – are in stasis for the coming political cycle. Yet it is important to bear in mind that the seemingly diverging views on e-commerce were not the definitive issue that brought any of these agreements to a temporary halt. But rather, an era of mega-FTAs may come to an end due to much more pertinent domestic political factors – various forms of populism and nationalism with a widespread sense of disillusionment over the effects of technology and globalization on the fabric of society, or the distributive effects of an increasingly integrated world to the detriment of vulnerable political-economy constituencies.

4.1.5. Regional Comprehensive Economic Partnership (RCEP)

The Regional Comprehensive Economic Partnership (RCEP) currently being negotiated between ASEAN and its six FTA partners (**Figure 4.3**: Australia, China, India, Japan, Korea, and New Zealand) was launched in November 2012. Progress has been varied given the different levels of ambition and diverging degrees of enthusiasm among what ultimately comprises a

set of negotiating parties with highly divergent views on the desirability and benefits of international trade and investment liberalization (e.g., India and Indonesia, as compared to China, as compared to Japan, as compared to economies like Australia, New Zealand and Singapore). Negotiations have been initiated within the context of RCEP on e-commerce and much of the discussions have revolved around a similar set of core obligations to those found in

Figure 4.3 Geographical coverage of RCEP



Source: Wikimedia Commons

the TPP e-commerce chapter. Given the presence of some countries in these negotiations who have chosen to intervene quite forcefully in their domestic e-commerce frameworks and in which regulators have taken what many actors

consider to be a more restrictive approach to regulating the digital economy and digital trade, it is as yet unclear whether the RCEP e-commerce provisions will involve a set of “hard” and enforceable obligations much like those found in the TPP, or whether they will be limited to a less ambitious set of largely hortatory best-endeavor obligations in favor of future cooperation.

For this reason, if and when rules on e-commerce emerge from the RCEP process, they are likely to contain only some of the obligations entered into under the TPP. Nonetheless, if it can be successfully concluded, RCEP is likely to be a cornerstone of global economic governance in a post-TPP world. Given some of the parties to the RCEP negotiations are genuinely concerned with retaining policy space for their regulators, exceptions may be considerable in relation to the binding disciplines that would constrain them. Given the current uncertainty surrounding the TPP, RCEP has emerged as a potential candidate for the first regional platform where the new consensus on trade governance of the digital economy finds its home, and from which it will evolve and grow.

4.1.6. APEC Initiatives on the Digital Economy and Privacy

Codes of conduct for the digital economy are not only negotiated as a part of trade agreements, but in the context of soft law and other fora for international cooperation. For example, the Asia-Pacific Economic Cooperation (APEC) group (**Figure 4.4**) can be credited with recognizing the potential of the internet quite soon after the technology's worldwide adoption, having adopted its Blueprint for Action on Electronic Commerce as early as 1998 (the same year the WTO adopted its Electronic Commerce Work Program). The APEC Blueprint is a declaration that essentially comprises two sections, namely 1) a statement of principles, and 2) a work program. Among the principles elucidated, one finds APEC affording a leading role to the private sector when it comes to the development of e-commerce technologies, applications, practices and services. APEC Ministers also affirmed the role of government in the then newly emerging sector as being one of providing a favorable legal and regulatory environment characterized by predictability, transparency and consistency. APEC Ministers also emphasized their role in providing an environment that promotes trust and confidence between e-commerce participants. Another principle stated in the 1998 APEC document is that governments shall promote efficiency in the functioning of international e-commerce by aiming to develop "domestic regulatory frameworks which are compatible with evolving international norms and practices". The section containing the statements of principles also recognizes that "although some degree of government regulation may be necessary, technology-neutral, competitive market-based solutions which can be safeguarded by competition policy, and effective industry self-regulation, should be

Figure 4.4 Geographical coverage of APEC



Source: APEC Secretariat

favored". Finally the principles recognize that governments and the private sector must collaborate in the development and implementation of technologies and policies in the realm of e-commerce in order to "build trust and confidence in safe, secure and reliable communication, information and delivery systems, and which address issues including privacy, authentication and consumer protection." Now,

almost 20 years later, the 1998 APEC Blueprint seems to represent a remarkably visionary and prescient document in that it addressed a number of the issues that today have become somewhat contentious, namely, the role of government in regulating e-commerce and the acceptable level

of government intervention in the digital economy.

4.1.7. OECD on Privacy, Trans-border Flow of Personal Data and the Internet Economy

Like APEC, the Organization for Economic Cooperation and Development (OECD) also represents an important inter-governmental organization that produces policy statements and action plans that affect different areas of relevance to the digital economy, particularly privacy, the trans-border flow of personal data, and the internet economy. In each of these areas, the OECD generally tends to strike a consensus that invariably represents the views of its member economies, which, except for Korea and Mexico, are all wealthy industrialized countries from Europe, North America and Australasia (**Figure 4.5**).

In the area of privacy, the OECD was the very first international organization to take up this issue and in 1980 adopted a first set of Privacy Principles, which addressed such issues as limitations on the scope of data collected, the quality of data collected on people (in terms of functional relevance, proportionality, as well as

accuracy, completeness and being up-to-date), the need to specify the purpose for which data is collected, limitations on the use of data, the secure storage and processing of data, openness with respect to developments, practices and policies affecting personal data, the principle of individual participation and finally the accountability principle, namely that those that collect data

on individuals are accountable for complying with these principles. The 1980 Principles reflect the concerns of their time, as citizens in advanced Western democracies were slowly becoming cognizant of the capabilities of their governments and other organizations such as credit card companies and banks, to gather, store and exploit massive amounts of personal information on individuals. Today these concerns remain, but in the digital economy data represents the lifeblood of the entire system, and so there must be suitable legislative and regulatory frameworks in place that support the cross-border flow of personal data. This was one of the underlying rationales behind the 2013 update to the 1980 OECD Privacy Principles. The 2013 update saw the emphasis shift slightly in favor of this new reality, and culminated in the Guidelines on the Protection of Privacy and Trans-border Flows of Personal Data. These new Guidelines called for the establishment of multifaceted national privacy strategies with buy-in from the very highest levels of government, as well as for the adoption of national privacy management programs for the operational implementation of privacy protection. The 2013 Guidelines also sought to strengthen notification procedures to both national governments and the affected individuals in the event of a data breach. The 2013 Guidelines also call for the international inter-operability of privacy regimes and the collection of more sophisticated data on the

functioning of different privacy regimes in order to better inform ongoing and future policy-making processes.

Figure 4.5 Geographical coverage of OECD



Source: Wikimedia Commons

Similarly, the OECD has been pursuing an agenda on the internet economy, with members long recognizing the importance of the internet and the digital economy as drivers of national economic growth and global welfare. These efforts culminated in the 2008 Seoul

Declaration on the Internet Economy and the 2011 Recommendations for Principles for Internet Policy Making. These recommendations cover some very important aspects of internet governance and are discussed in more detail in Chapter Five. Suffice to say here, however, that OECD members recognize the value of an open and global internet and have committed themselves to national and international multi-stakeholder governance frameworks that seek to uphold the open and global nature of the internet in the future.

4.1.8. The Future of Digital Trade Rules

In the context of this White Paper, it is important to bear in mind that a new gold standard for digital trade rules has emerged, by and large derived from the TPP. The coming generation of FTAs will build on this benchmark to one extent or another, with exceptions likely for policy space related to security and privacy concerns. This is not the case for just TPP signatories and RCEP, but also for future bilateral trade agreements, such as the EU FTAs. Europe's next major agreement (e.g., EU-Japan FTA) is likely to contain some form of progeny of the TPP rules but reflecting EU priorities on privacy and data protection. Politically speaking, this standard also calls for an effective set of adequate exceptions based on the varying political sensitivities of the participants of each trade agreement, unique for each FTA. For example, what the EU deems as sensitive towards the U.S.

may not be a sensitivity in its relationship with China or Japan.

What is more, the role of soft law, value-driven and endeavor-based cooperation should not be underestimated in their ability to play the role of policy catalysts. This is particularly true at international organizations such as the OECD or APEC, where members share similar economic conditions, development trajectories, or a common set of regional policy objectives.

4.1.9. Trade Policy-Making in an Uncertain Future

International trade flows slowed to a trickle in the aftermath of the 2008 Global Financial Crisis, the result of both a collapse in demand and the sudden drying up of trade finance. Although trade growth seemed to recover somewhat as major economies slowly climbed back to their feet, it has not managed to maintain the steady upward trajectory it experienced for many years prior to 2008. The reasons for this are still being debated by trade economist, but it is clear that governments all over the world continue to resort to conventional and new forms of protectionist measures, as has become well documented in reports produced by organizations such as Global Trade Alert as well as the WTO itself. Trade finance has also failed to recover to pre-crisis levels, for reasons that trade economists also continue to debate, but for which some lay the blame on Basel 3 and the high capital requirements it places on banks, long the major sources of trade finance.

More recently, advanced industrialized nations have seen a popular backlash unfold against the forces of globalization and economic integration, with the unexpected victory of the Leave campaign in the Brexit vote being the first major warning bell, and which now sees the United Kingdom firmly planted on the path to an uncertain future as it attempts to manage its

disentanglement from the European Union. Equally unexpected was the victory of Donald Trump in the 2016 U.S. presidential election, who like the other major candidates, had adopted a platform that disavowed the TPP and promised to chart a new course for U.S. trade policy that would be very different than that pursued over the last several decades. Soon after being elected, then President-Elect Trump reaffirmed his commitment to withdraw the United States from the TPP and to henceforth use trade policy as an instrument for bringing jobs back to America. Economists and seasoned trade policy experts all agree that the jobs that left America in the last two to three decades of global economic integration are not coming back, so at the time of writing it remains to be seen what direction

Soon after being elected, then President-Elect Trump reaffirmed his commitment to withdraw the United States from the TPP and to henceforth use trade policy as an instrument for bringing jobs back to America.

President Trump's trade policy will ultimately take, particularly given threats by President Trump to withdraw from both NAFTA and the Korea-US FTA (KORUS).

The prolonged deadlock and ultimate failure of the Doha Round should arguably have served as forewarning that "business as usual" was no

longer a viable option for the world trading system, since firstly the developing world now expects to be taken seriously with its demands in Geneva, but also because of seismic shifts taking place in the developed world. In advanced industrialized countries the constituencies in favor of continued trade and investment liberalization are starting to break down, but more importantly they were starting to be dwarfed by a growing and increasingly vocal movement of workers on the wrong side of the distributive effects that economic integration (offshoring) coupled with technological advancement (automation) inevitably produce.

Until governments in advanced industrialized countries can figure out ways to distribute the benefits of trade and investment liberalization more evenly, and start making a coherent and persuasive case that trade and investment liberalization are beneficial forces, there will

likely be no overcoming the increasingly entrenched opposition to further economic integration. In light of this reality, it seems more realistic to expect only very incremental changes to the existing framework of multilateral and preferential trade agreements we currently have in force.

This sets the stage for progress to be made in other negotiating fora, particularly RCEP, but also possibly a reconstituted TiSA. It also provides an opportunity for others to show leadership in drafting and enacting the next generation of trade rules for the digital economy.

4.1.10. The Road to Buenos Aires and MC11

In December 2017 the WTO will hold its 11th Ministerial Conference since the organization was founded in 1995. MC 11 will be hosted by the Argentinian Government in Buenos Aires. At the last Ministerial Conference (MC10), held in December 2015 in Nairobi, WTO members issued a declaration on electronic commerce in which they undertook to continue the work already ongoing under the 1998 Work Program on Electronic Commerce (discussed above), instructed the General Council to hold periodic reviews and report on the outcomes of these reviews at MC11, and finally Members decided to extend the moratorium on the non-imposition of customs duties on electronically downloaded products.

One such periodic review took place in July 2016 and saw a flurry of proposals and statements submitted by WTO members both individually and in different groupings, and provided an opportunity for Members to express their views on where they believe the organization's focus should be leading up to the next Ministerial Conference in December 2017 with respect to the e-commerce Work Program and digital trade more generally. Most Members seemed to be cautious in how they approached this issue, not

The stage is set for progress to be made in other negotiating fora, particularly RCEP, but also possibly a reconstituted TiSA. There is also an opportunity for others to show leadership in drafting and enacting the next generation of trade rules for the digital economy

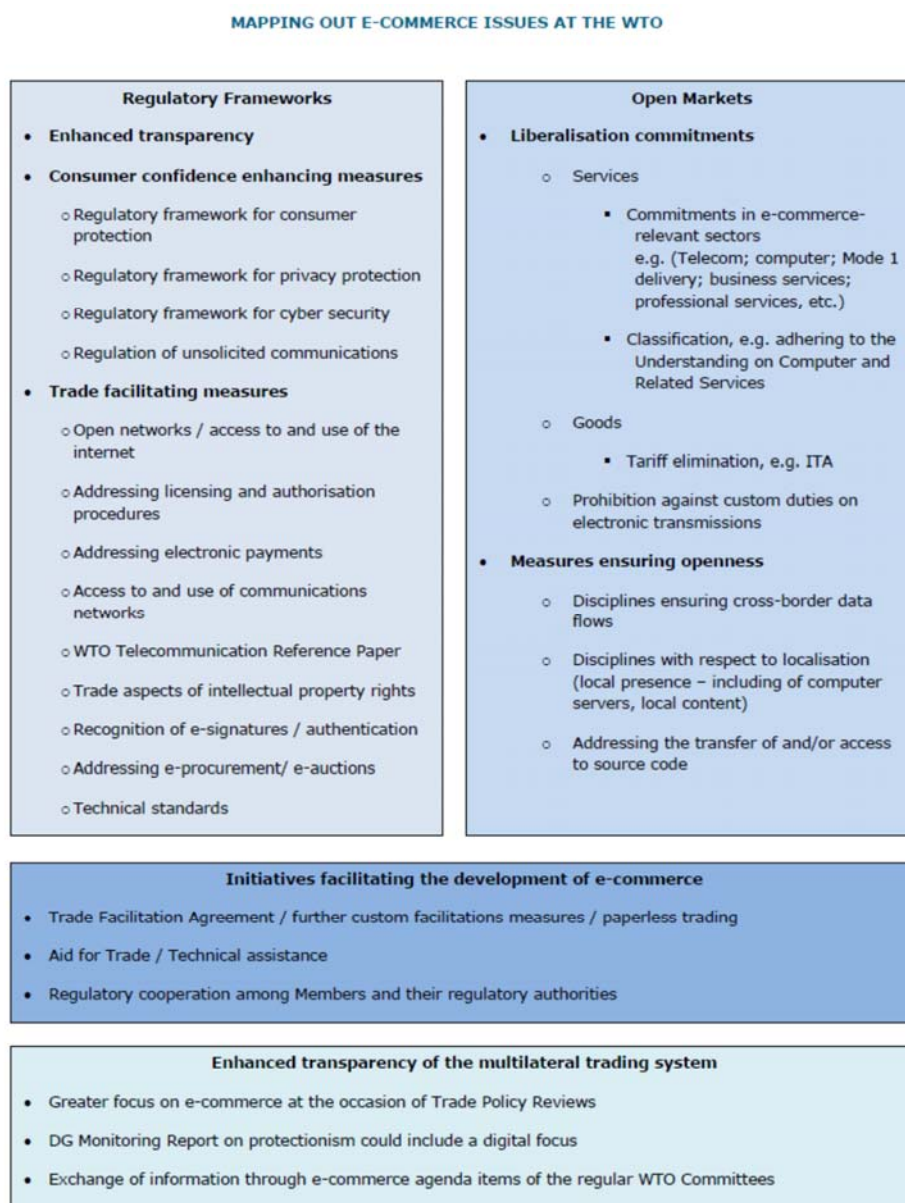
wanting to advocate too vocally in favor of new negotiations lest such a proposal inflame already existing tensions among different Members on

this and many other issues. Many of the proposals called for careful consideration and reflection among Members, with some seeming to more openly favor the WTO taking up a more active role in the area of e-commerce and digital trade more generally.

Two proposals, from the United States and Japan respectively, seem to advocate in favor, at least in the long-term, of a set of rules-based outcomes very similar to those that emerged in the TPP e-commerce chapter and the TPP TBT chapter (both discussed in more detail above).

Another proposal from a group of nine countries comprising Canada, Chile, Columbia, Côte d'Ivoire, the EU, Korea, Mexico, Paraguay and Singapore began by briefly describing the way that digital technology has transformed the global economy before highlighting some challenges that currently impede countries from realizing the full benefits of the digital economy, including increasing digital protectionism, inadequate infrastructure and connectivity, and insufficient access to technology. The proposal then seeks to inform Members in their efforts to address these challenges under the WTO's e-commerce Work Program. It attempts to do this by mapping out different e-commerce issues at the WTO under four main headings (**Figure 4.6**), namely 1) regulatory frameworks; 2) open markets; 3) initiatives facilitating the development of e-commerce and; 4) enhanced transparency of the multilateral trading system. The proposal concludes by outlining what the next steps could be, beginning by exhorting Members to make more effective use of the e-commerce Work Program so that the WTO continues to retain its relevance to the global economy. Finally the proposal poses four

Figure 4.6. Mapping exercise conducted by Canada, Chile, Columbia, Côte d'Ivoire, the EU, Korea, Mexico, Paraguay and Singapore as part of the July 2016 Review of the WTO Work Program on Electronic Commerce.



Source WTO (JOB/GC/97/Rev.1)

questions to Members, namely 1) whether the mapping exercise it has embarked upon should include other e-commerce-related elements of trade policy; 2) on what elements would WTO members like to have technical discussions; 3) whether any elements could be pursued as potential outcomes for MC11 and; 4) how and where Members should discuss such elements. This proposal, which has been the focus of much

discussion since it was circulated in July 2016, is interesting not only for the methodological mapping exercise it undertakes and the very practical questions it asks of Members, but also because of the composition of the group of Members that circulated it. Canada, the EU, Korea and Singapore represent advanced countries when it comes to the digital economy and online connectivity, while Chile, Columbia,

Mexico and Paraguay each representing largely open middle-income developing countries. Chile, Mexico and Singapore were party to the TPP negotiations and participated in the elaboration of the many rules discussed above on digital trade in those talks. Finally Côte d'Ivoire's presence seems remarkable since it is the only LDC in this group.

Another proposal by a similarly eclectic group of WTO members comprising Hong Kong, Japan, Pakistan, Russia, Singapore and Taiwan, likewise begins by extolling the transformative nature of electronic commerce for the global economy, but also highlights the unique position of the WTO as the "pre-eminent global forum for trade rules setting and governance". This proposal seeks to have Members engage in discussions on e-commerce issues and in furtherance of this objective asks

Members to answer three questions. The first of these asks Members to identify existing barriers to e-commerce faced by stakeholders such as consumers, manufacturers, service providers, regulators and SME's. The second

question asks Members whether existing WTO frameworks and initiatives already address these barriers in part or in full. It also asks whether the WTO can or should address these barriers. The third question asks Members to identify current or future initiatives or practices in the area of e-commerce at either the international, regional or domestic level.

Finally, yet another proposal has emerged from this process, namely one from the Peoples' Republic of China, circulated in November 2016. This proposal calls for WTO members to focus on promoting and facilitating cross-border trade in goods enabled by the internet (particularly B2C and B2B transactions), in conjunction with services directly supporting such cross-border trade in goods, such as payments and logistics

services. The Chinese proposal also calls for extensive information exchanges on a range of e-commerce and digital trade related issues as well as for enhanced transparency on policies governing cross-border e-commerce. Compared to the expansive range of issues covered in other proposals submitted in the context of the July 2016 periodic review, the Chinese proposal rings a relatively cautious note, but otherwise seems geared to furthering the global interests of major e-commerce players such as Alibaba, and even explicitly refers to the Electronic World Trade Platform (eWTP) first touted in 2016 by Alibaba founder Jack Ma as China was hosting the G20.

Reports on the July 2016 review session also note that India and a number of African countries adopted a similarly cautious approach, with some African LDCs warning Members not to stray

too widely from the work program already established under the Doha Development Agenda (which many other WTO members perceive as being dead for all intents and purposes). Clearly the membership remains very divided on these issues, and perhaps the best one can hope for coming out of MC11 is a set of modalities or a roadmap laying out the issues

on which negotiations can take place for the WTO membership as a whole or for like-minded groups of Members. In the near future, the most likely fora for progress remain a reconstituted and reinvigorated TiSA and (somewhat less likely perhaps), a new work program on NTBs under the expanded ITA.

What is clear from the e-commerce proposals submitted is that any new rules or market access commitments in this area will inevitably have to be balanced against similar commitments under either Aid for Trade or other capacity building and technical assistance frameworks that can help developing countries close the many gaps between themselves and developing countries in digital trade and online connectivity more generally.

What is clear from the e-commerce proposals submitted is that any new rules or market access commitments in this area will inevitably have to be balanced against similar commitments under either Aid for Trade or other capacity building and technical assistance frameworks

4.1.11. UNCTAD and e-Trade for All

Launched at the 14th quadrennial Conference of UNCTAD which took place in Nairobi, Kenya in July 2016, the e-Trade for All initiative focuses on online platforms and the transformative role e-commerce can play in minimizing start-up costs for SMEs and helping these businesses to scale in ways that would be unthinkable or at least extremely difficult in the conventional (offline) economy.

By bringing together partners from both the public and private sectors, UNCTAD's e-Trade for All initiative seeks to itself provide a knowledge-sharing platform serving e-commerce businesses in the developing world, helping them to find both information on best practices, but also to raise awareness of opportunities, challenges and potential solutions. This new platform is also intended to serve as a portal for developing countries seeking technical and financial assistance to support the growth of their domestic e-commerce ecosystems.

The initiative is directed towards seven policy areas, namely: (1) e-commerce readiness assessment and strategy formulation – helping

governments determine what areas require more active policy interventions; (2) ICT infrastructure and services – focusing on both the availability and affordability of these elements; (3) trade logistics and trade facilitation – acknowledging the need for complimentary policies to smooth the flow of goods in the real world; (4) payment solutions – promoting online payment options, particularly for the unbanked; (5) legal and regulatory frameworks – seeking to balance the imperatives of consumer protection, privacy and cybersecurity against the need to facilitate online transactions; (6) e-commerce skills development – raising digital literacy; and (7) access to financing – providing startups with access to credit to be able to grow and scale.

UNCTAD's new e-Trade for All initiative represents a comprehensive and holistic approach to the many constraints currently impeding more of the world's poor, as well as both internet users and digital entrepreneurs in developing countries from seizing and leveraging the many opportunities that the digital economy offers. We at Huawei are enthusiastic supporters of these efforts.

4.2. Substantive and Procedural Rules

This section discusses the different substantive obligations emerging in the context of the rule-making frameworks described in brief above. Where possible, we compare how some of the obligations agreed in one framework compare with those under discussion in another.

4.2.1. Transparency and Notification Obligations

Transparency is one of the core principles of WTO membership and it is given operational effect by a number of notification obligations that can be found throughout the WTO Agreements. This is the case for example with GATT Article X ("Publication and Administration of Trade Regulations"), which requires WTO members to be transparent when enacting and applying all measures of general application affecting international trade with other WTO

members. In the same way, Article III ("Transparency") of the General Agreement on Trade in Services requires WTO members to promptly publish any measures of general application that would affect the operation of the Agreement, and this arguably applies to any and all measures affecting the cross-border supply of services on which commitments have been taken, or which are likely to affect the domestic regulatory environment in any sector in which the services suppliers of any other Member may operate (i.e., the financial sector, the telecommunications sector, even the retail sector).

WTO members are thus bound by far-reaching and generally all-encompassing transparency obligations with regard to the trade-related aspects of their domestic economies, which, seek to impose certain disciplines on a wide range of

domestic regulatory agencies beyond simply the ministry of trade or the ministry of foreign affairs, the two ministries that are most likely to represent the Member in question at the WTO. Such transparency obligations will inevitably apply to any policy or regulatory acts that affect the digital economy, and should be seen as a minimum requirement of internationally recognized internet governance practices. Moreover, transparency is a minimum requirement for allowing traders to effectively comply with any NTMs and TBTs, the so-called “comply or explain” approach of e.g., ASEAN FTAs.

4.2.2. Elimination of Customs Duties on Digitally Traded Products

A moratorium on the imposition of customs duties on electronic transmissions was first agreed on a provisional basis at the WTO in 1998 and has since been continually extended. The Trans-Pacific Partnership sought to make the moratorium permanent among its signatories. This is a substantive obligation that, although slightly controversial among many developing countries can generally be said to enjoy a fairly broad consensus globally. As such, one can be almost certain that this obligation will likely figure as part of any e-commerce chapter that results from RCEP.

This obligation is very important today because of a range of electronic media products that have long been available in digital format, such as music, e-books, audiovisual content, and downloadable software and computer games. The range of products that can be reduced to binary code and transmitted electronically is only likely to grow, meaning that the importance of the moratorium on customs duties for such products is likewise certain to increase. It is enough to think about the range of products connected with the rise of the so-called app economy and to advances in 3D printing (discussed immediately below), which until today have largely been limited to industrial applications, but which are also poised to become more important for consumer and retail products.

In fact, 3D printing turns many fundamental concepts of international trade on their heads. To begin, market access may be governed by numerous sets of rules, as what is actually traded is just a digital file that is transferred to another country where the physical good will actually be printed. This issue is particularly pressing given that the use of 3D printing is spreading and covering not only applications of fast prototyping, but also the production of intermediate and final goods. Such future applications and extension of the concept of “digital products” pose interesting trade policy questions. For example, the digital file per se does not have any value unless it is actually rendered into a physical object, while software, content and other digital products can be consumed directly in digital format.

Another fundamental concept that could be called into question as trade in digital products and services becomes more ubiquitous is the concept of technology neutrality. Most likely, some questions must be determined on a case-by-case basis in the course of litigation. However, since data transfers might replace the movement of physical goods, this revenue stream might dry up and tempt governments, particularly those that rely on tariff revenues as an important source of fiscal receipts, to tax data in various ways as an alternative. Therefore, in order to ensure clarity with respect to the rules that apply to these applications and to avoid impractical and inefficient approaches to taxing data flows, many in the digital economy feel that the moratorium on custom duties on electronic transmissions must be made permanent and adopted by the vast majority of WTO members. Another approach to this issue can be found in the draft e-commerce chapter of the EU-Mexico FTA that is still under negotiation. Here trade in digital products has been classified as trade in services and thus by definition not subject to customs duties.

4.2.3. Obligations on Free Flow of Information

The TPP contained a provision that sought to enshrine the right to transfer and access information across borders in its e-commerce chapter, but subjected this right firstly to a narrow scope of application, namely only for the

sake of conducting business, while secondly making this obligation subject to an exception that governments may invoke when imposing measures that would limit the free flow of information for legitimate public policy purposes. Yet, this exception applies only if the measure is not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on trade, and provided that governments do not impose measures restricting cross-border information flows in a way that is disproportionate to the public policy objective being pursued. This exceptions language is broadly similar to that found in similar general exceptions clauses in both the GATT and the GATS, although it does not specify in explicit terms what constitutes “a legitimate” public policy objective, and therefore a justifiable derogation from FTA commitments.

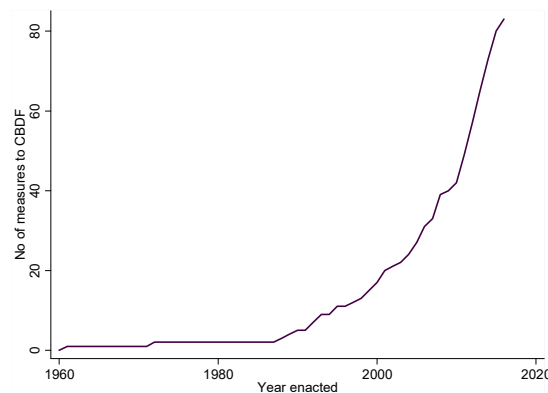
The draft version of the TiSA e-commerce annex that was leaked to the public also contains a clause on the free flow of information, although it is obvious from the draft versions of the clause that have been tabled that different parties to the talks have different approaches and objectives. Some parties to the TiSA negotiations would prefer to see any provision on free flow of information limited to addressing the protection of user information in e-commerce, whereas other parties wish the language to better reflect the needs of service providers in terms of predictable and stable market access conditions, and a level playing field on which to compete against other foreign or domestic suppliers of the same or similar services.

4.2.4. Forced Data Localization

Forced data localization is essentially the antithesis of free flow of information discussed in

the previous paragraph: A general prohibition on forced localization of server capacity (so called data localization) is found for the first time in the e-commerce chapter of the TPP. This refers to cases in which a company is required to either use or locate server capacity in the implementing jurisdiction as a condition for doing business there. Data localization is a contentious issue in many countries, particularly between exporters of affected services, on the one hand, and a number of governments that have legislated or are in the process of considering legislation in this area on the other.

Figure 4.7: Rise in data localization measures



Source: ECIPE Digital Trade Estimates, 2016

At the time of writing, there are as many as eighty-three different regulations being applied that regulate how and when data can cross the border of the country of residence of a citizen making use of a certain service (see **Figure 4.7**). Among these, some forty-seven measures require the service provider to use or locate

computer facilities in a specific country as a condition to conducting business in that territory. In addition, there are thirty-six regulations which impose certain conditions for the transfer of data abroad with localizing effect on data of varying degrees of restrictiveness.

A provision enshrining the right to transfer information across borders by electronic means would be an important political statement in a period marked by a growing number of restrictions on such transfers and demands by many governments that electronic data be stored and processed locally. While many stakeholders agree on the need to enact treaty language effectively constraining the use of data localization laws, some economic actors may look favorably on expansive exceptions to negotiated limitations to data localization

measures in the hope that the legal uncertainty leads to a surge in local demand for their services. However, evidence shows that data localization rules can come at severe costs for those economies that enact them, as shown in **Figure 4.8**. The estimated costs of data localization and its associated regulatory barriers are significant and run through the entire economy. As a matter of fact, data localization benefits businesses that would provide their services and goods at a less efficient rate, with negative implications for productivity over the short, medium and long terms, which as is well-known, can have serious long-run implications for economic growth.

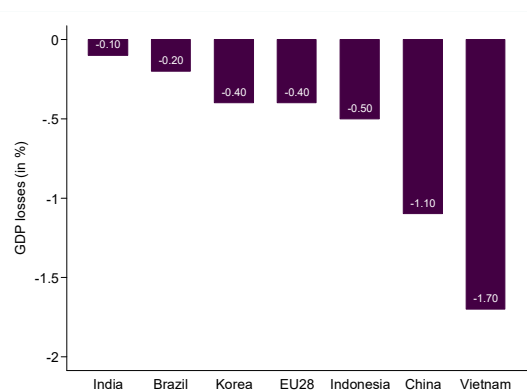
The conflict is essentially about the right of governments and regulators to compel service providers in the digital economy to localize data storage and processing facilities in countries as a prerequisite for doing business there. The inclusion of language in the TPP that constrains the freedom of action of regulators in this regard is seen as something of a victory by export interests, i.e., those who have businesses dependent upon cross-border data flows, and this is something that is likely to be included to a similar degree in future trade rules. This was the case for TTIP as well as the TiSA e-commerce chapter. How the countries participating in RCEP decide this issue will be very important, since it is likely to establish a broader international consensus on this issue.

4.2.5. Mandatory Disclosure of Source Code

The TPP was also the first agreement to contemplate the issue of forced access to software source code. The e-commerce chapter of the agreement contains language that seeks to constrain the ability of signatory governments to require the mandatory disclosure of source code as a condition for doing business in their

respective territories. Unlike the corresponding provisions on the free flow of information or data location, the relevant clause in the TPP e-commerce chapter did not contain a public policy exception, although the provision's scope was ultimately limited to mass-market software and would not be able to be invoked to counter regulatory interventions aimed at safeguarding software used for critical infrastructure. As the term 'critical infrastructure' is left undefined in the agreement, there is a lot of space for interpretation and thus arbitrary application in this area. The draft trade agreement text that has been tabled on

Figure 4.8: Losses from data localization measures



Source: ECIPE using GTAP

mandatory disclosure of source code in the course of the TiSA negotiations contains proposed language very similar to that contained in the TPP. It is hard to predict how any potential RCEP e-commerce chapter may play out on the source code issue, given the presence

in these negotiations of certain governments which have not shied away from using mandatory source code disclosure requirements for foreign software companies as a condition for them being allowed to operate on their markets.

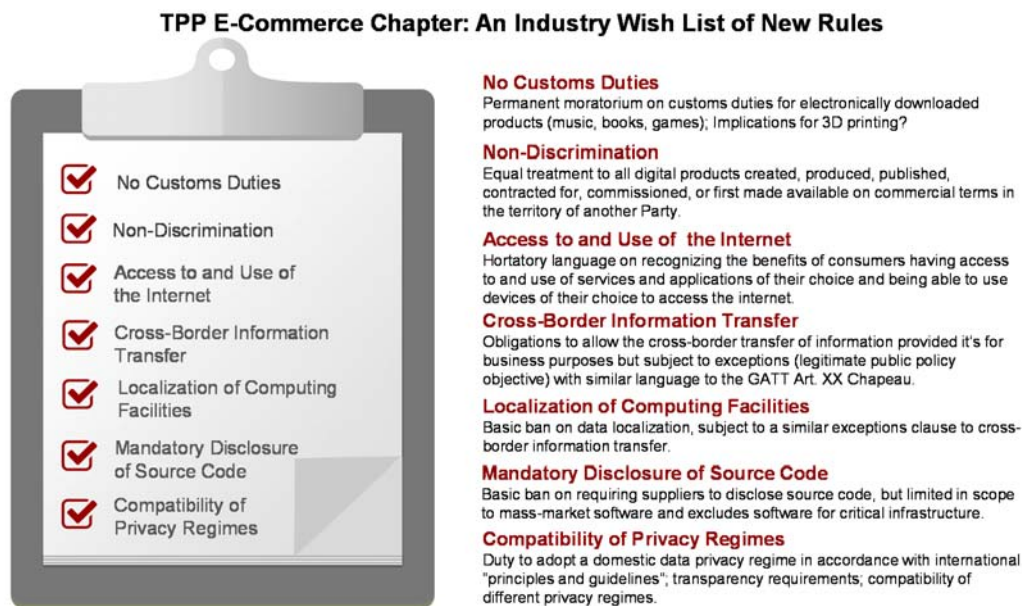
4.2.6. Privacy and Protection of Personal Data

Privacy and the protection of user data has emerged recently as a hot-button issue. Given the importance of data to the digital economy, it is not surprising that all of the international rule-making frameworks address this issue from one perspective or another. Both the TPP and the leaked draft of the TiSA e-commerce chapter address this topic in a similar manner, namely by proposing a set of best-endeavor obligations for signatories, and attempting to afford sovereign governments certain flexibilities for the different approaches they may take in protecting the

privacy of their citizens' data. The balance to be struck seems to be one of achieving a minimum level of trust and security for consumers and businesses to feel confident about engaging in internet commerce, while at the same time allowing commercial operators in the digital economy enough space to innovate and develop new business models using the very large

Finally, the TPP data privacy provisions exhort signatories to develop mechanisms that allow for their different privacy regimes to be recognized as valid (a form of mutual recognition agreement) and thus compatible so as to be facilitative of the cross border transfer of private user data upon which the modern digital economy relies.

Figure 4.9: Summary of TPP e-commerce chapter commitments



Source: Huawei

amounts of data being generated by private and commercial users.

The TPP sought to achieve this by setting forth a number of obligations for signatory governments. First they must adopt or maintain a set of laws and regulations that provides protection of the personal information of users, and in formulating these rules, governments are exhorted to take into account internationally agreed principles and guidelines. In addition to this, the relevant provision of the TPP e-commerce chapter exhorts members to enforce laws on data privacy in a non-discriminatory manner in their jurisdictions and to practice transparency on data protection laws with regard to both how individuals can pursue remedies in the case of a violation of their privacy and how businesses can comply with the applicable data privacy laws.

4.2.7. Legislative Framework Obligations to Facilitate E-commerce

The e-commerce chapter of the TPP contains a number of provisions that require or encourage signatories to set up or maintain rules that are supportive of e-commerce (Figure 4.9). In addition to those already discussed above on the protection of personal privacy, a number of different legislative action obligations were included in the TPP. One such obligation is that signatories must maintain laws and regulations that are consistent with either the 1996 UNCITRAL Model Law on Electronic Commerce (MLEC) or the 2005 United Nations Convention on the Use of Electronic Communications in International Contracts otherwise known as the Electronic Communications Convention or ECC.

In addition to the obligation to enact or maintain laws governing electronic transactions, the TPP also requires signatories to “adopt or maintain consumer protection laws” for the benefit of “consumers engaged in online commercial activities”. A similar provision is being considered in the context of TiSA.

Finally, both the TPP and the leaked draft of the TiSA e-commerce annex set out an obligation on the part of signatories to adopt or maintain measures to combat unsolicited commercial electronic messages (spam). Here the emphasis is on requiring the producers of spam emails to comply with a number of obligations that empower recipients to minimize the incidence of such emails, while at the same time equipping recipients of these unsolicited messages with effective legal remedies against producers of spam that fail to abide by these spam minimization obligations.

4.2.8. Technical Standards and Conformity Assessment Procedures

The TPP also includes a chapter on technical barriers to trade (TBT) which itself contains a dedicated annex on information technology equipment that will be of interest to vendors of hardware and devices in the digital economy. The TBT chapter incorporates the disciplines contained in the corresponding WTO Agreement but goes slightly further in constraining the use that signatory governments can make of their own mandatory conformity assessment procedures. It achieves this by introducing a national treatment obligation for conformity assessment procedures, requiring signatories to recognize testing and certification carried out by another signatory’s qualified bodies. The TBT chapter also contains a number of new and far-reaching transparency obligations that, if

The TPP TBT chapter contains a number of new and far-reaching transparency obligations that, if implemented faithfully, would ensure that in future, technical regulations and product standards are developed in consultation with stakeholders representing the interests of domestic industry, consumers and trading partners.

implemented faithfully, would ensure that in future, technical regulations and product standards are developed in consultation with stakeholders representing the interests of domestic industry, consumers and trading partners.

The dedicated annex within the TPP chapter on technical barriers to trade essentially focuses on two issues, cryptography and electromagnetic compatibility testing. With regard to the first of these, the annex’s provisions are intended to safeguard both the integrity of any cryptography technologies that manufacturers or suppliers of a product may use as well as their freedom of discretion in opting in favor of any one such technology over another. Thus TPP signatories cannot compel manufacturers or suppliers to disclose how a

particular cryptography technology works or force them to either work with a domestic partner or choose a given form of the technology. With respect to electromagnetic compatibility, the provisions of the dedicated ICT annex require signatories to accept a supplier’s declaration of conformity, which on its face would seem to be a very far-reaching obligation and could have significant benefits for the ICT industry if this was to become international best practice and adopted in future trade agreements.

4.2.9. Specific Commitments on Trade in Services

The TPP also contains a chapter on cross border trade in services that will be of direct relevance to the digital economy. First and foremost, the chapter’s scope extends to any measures that affect “the purchase, use, or payment for, a service”, as well as measures affecting “the access to and use of distribution, transportation or telecommunications networks and services in connection with the supply of a service”. The relevant TPP provisions impose far-reaching due-

process requirements and transparency obligations in connection with the regulation of services and the issuing of permits to provide any services in a signatory economy, which will apply to the supply of digital services as it will to any other services. Finally, the cross-border trade in services chapter of the TPP contains a provision entitled "Payments and Transfers" which circumscribes the ability of signatories to impose a *de facto* restriction on cross-border trade in services by impeding the processing of payments for them.

The negotiations taking place in the context of TiSA likewise looked set to achieve an important number of commitments that would limit the scope of national regulators to arbitrarily disrupt or impede the supply of services and which would otherwise be formulated in a way that would be broadly supportive of the digital economy and global e-commerce.

4.2.10. Intellectual Property Rights

Intellectual property rights are important in the digital economy and are facing new challenges. The TPP seeks to strike a balance between the needs of traditional content creators, such as the motion picture and record label industries as well as publishing houses, against the interests of big and more recently emergent players in the digital economy that provide new and innovative platforms for the dissemination of such media and who seek protection against litigation by copyright owners. The negotiating outcomes that emerged in the TPP are likely to represent a broad international consensus and will probably find corollaries in RCEP and (eventually) even the WTO. As of today, IPR issues are covered at the multilateral level by the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which only prescribes the minimum standards of protection while national laws are those that govern IPRs in

substance. This has resulted in a fragmented approach which makes it harder to cope with new digital challenges and might prevent the development of new digital solutions.

The TPP provisions on copyright begin with hortatory language exhorting signatories to "achieve an appropriate balance" in their respective copyright regimes by using limitations and exceptions where appropriate for "legitimate purposes". The relevant TPP provisions name several of these limitations and exceptions, including criticism, comment, news, reporting, teaching, scholarship and research. There are also provisions in the IP chapter of the TPP that require signatories to put in place and enforce civil and administrative procedures and remedies against persons who knowingly circumvent any technical protection measures or knowingly remove any rights management information intended to protect the rights of copyright holders.

The TPP IP chapter also contains a dedicated section for internet service providers (ISPs) and requires signatories to provide them with so-called "safe harbors" by means of which ISPs are shielded from legal liability for copyright infringements provided that they cooperate with content owners in trying to minimize the

The existence of a safe harbor for ISPs is considered a key success factor for the emergence of innovative services and provides intermediaries with sufficient legal certainty to conduct their activities free from the threat of potential liability and the chilling effect of potential litigation.

incidence of such infringement (by say removing or disabling access to copyright-infringing material from websites at the request of rights-holders).

The existence of a safe harbor is considered a key success factor for the emergence of innovative services. As a safe harbor framework provides intermediaries

with sufficient legal certainty to conduct their activities free from the threat of potential liability and the chilling effect of potential litigation. According to the data available on sixty-four countries in the Digital Trade Estimates database of the European Center for International Political Economy, at least sixteen economies currently

lack a framework that provides a safe harbor for intermediaries, while at least twenty-nine countries have exceptions in place on the scope of liability. The fact that this issue was addressed

in the TPP is of course no coincidence. Time will tell if similar provisions become a staple of the IP chapters of future trade agreements.

4.3. The Dynamics Driving New Rules for the Digital Economy

4.3.1 Past Current and Future Negotiating Fora

As discussed above, a new set of rules is starting to emerge that is designed to augment and clarify the current WTO system of “analog rules”, and to articulate a fragile and still emerging consensus on the kinds of policies governments can and should enact to regulate international trade and investment in the digital economy. The formulation of these rules has so far been driven in no small part by the interests of a small group of well-organized technology companies most notably from the United States. Although European companies have themselves been both coordinated and active in

communicating their views and interests to the European Commission and the European Parliament, these efforts have not as yet found any manifestation in the form of substantial e-commerce chapters in the FTAs that the EU has been

negotiating in recent years with its trading partners, except of course where the United States is also at the negotiating table. Until recently, other developed countries (e.g., Japan, Canada, etc.) have also not been very proactive on the digital trade front but have generally shown themselves to be supportive of others’ initiatives in this area.

As a general matter, until very recently developing countries on the other hand have either been silent or defensive on these issues and have largely viewed efforts to negotiate rules in this area as an attempt to limit them in their regulatory autonomy or even as a direct affront to their economic development ambitions (an attempt to “kick away the ladder”). This is

The formulation of these new rules has so far been driven in no small part by the interests of a small group of well-organized technology companies most notably from the United States.

surprising since many developing countries benefit from the digital economy in ways that are similar to developed countries, such as the massive business process outsourcing industries that have netted some developing countries billions in services exports. Research by McKinsey Global Institute finds that cross-border flows of data have increased world GDP by an estimated USD 2.8 trillion, exerting a larger impact than the global flows of goods. Developing countries (and in general countries which are found at the periphery of the network of global data flows) are found to benefit the most from cross-border data flows as these allow for new ways of engaging with the global

economy and of overcoming local market constraints, especially when it comes to connecting with customers, suppliers, financing and talent worldwide. The negotiations currently ongoing in the context of TiSA, as well as the potential of seeing an e-commerce chapter concluded

under RCEP, arguably offer developing countries and emerging markets a chance to have their interests better reflected in negotiated trade agreement texts than has been the case up to now. The positive economic benefits of internet use for the purpose of bridging the digital divide need to be better understood, and these need to be embraced as negotiating objectives.

4.3.2 Regulatory Divergence within FTAs

As shown in this section, there is great diversity when it comes to the extent of commitments undertaken in different FTAs and negotiating fora. This is inevitably related to how the regulatory environments of signatories and participants to negotiations differ. As a general rule, if the parties have already a modern and

open framework to regulate digital issues domestically, they are also more likely to commit to high levels of cooperation on digital issues externally with other countries. However, this is only part of the story. In fact, when looking more in detail at recent FTA negotiations, it is striking how currently the deepest levels of integration and commitment related to the digital economy have in fact been achieved by countries with more divergent regulatory frameworks on digital issues. This is summarized in **Figure 4.10**, which

shows for certain agreements the level of regulatory divergence between signatories or negotiating partners of an FTA when it comes to digital issues. The fact remains that the agreements involving countries which have the highest degrees of regulatory divergence related to digital issues (namely, APEC and TPP) are also the agreements where a deep level of commitment on digital issues has been

achieved. Similarly, in the context of other negotiations where one would expect deeper levels of commitments on digital issues due to less regulatory divergence between negotiating parties (such as the TTIP), consensus in these negotiations seems to have proven much more elusive. Taken together, it is revealing that the reasons for commitment and non-commitments go beyond economics, as a clear political commitment is needed in order to bring forward the market integration agenda.

4.3.3 Interests and Interest Groups

As alluded to above, the formulation of these rules has up to now been driven by a relatively small group of technology companies and their trade associations, and less so by telecommunications companies and other business and consumer interests. This is largely

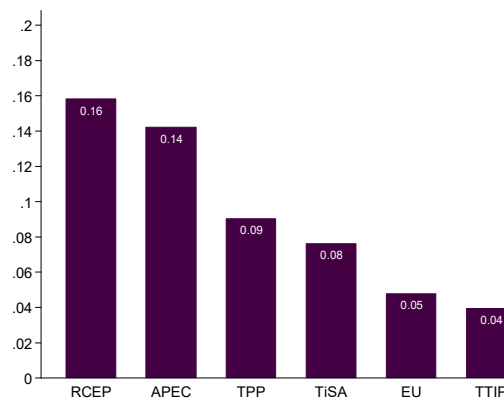
the result of both the global dominance of many of these companies in the digital economy, but also the many opportunities that the trade policy formulation processes, particularly in the United States, offer to well-organized groups to influence agendas and outcomes in international trade negotiations. Be that as it may, there are clearly other interests besides those of big business to be considered and advocated in international trade talks on the digital economy. A number of groups concerned with the needs of

users and consumers have also emerged, such as the Electronic Frontier Foundation that has well thought-out and sophisticated policy views, which it advocates on issues such as privacy, cybersecurity, and copyright, predominantly in the American domestic legal and regulatory context. Outside the United States and operating in a more international context, there are groups like

the World Wide Web Foundation and the Internet Society, dedicated to openness of the internet as a medium of information sharing available to anyone anywhere.

In terms of identifying interests that all users of the internet share, views and approaches differ. Universally accepted values may be difficult to identify but certainly anyone who connects online ideally wants to be able to do so easily, reliably and cheaply, and to be able to find and use the information and services he or she wants with as little obstruction as possible and without suffering the negative consequences of fraudulent behavior. This means that internet users must also be safe with respect to their personal and financial information, and must be able to browse websites and use apps free of harassment by unsolicited commercial interests, unscrupulous advertisers or - even worse -

Figure 4.10: Regulatory divergence in digital trade across FTAs



Source: ECIPE

fraudulent hackers seeking to steal their personal data in order to access credit card numbers or bank account information. When engaging with and sharing their information with online service providers, users also want to know that their personal data will not be accessed by unauthorized third parties, in particular governments, either their own or those of foreign countries. Finally, all users can arguably be said to desire easy and secure online payment systems, without arbitrary limitations or restrictions on their use.

In terms of the interests of suppliers and service providers in the digital economy, these are largely congruous to the interests of market actors in the real world, in that they want predictable and effective market access, transparency and fairness of market terms and the ability to understand and comply with any laws and requirements upon which such market access is contingent. They also wish to be free in their choice of technologies and business models to the extent this does not run contrary to any overriding public policy interests. Suppliers and service providers also wish to be treated equally, and be confident that they will not be undercut by the arbitrary interventions of governments or regulators in favor of their competitors, which can be done in a range of ways, such as prescribing the use of proprietary technology, the mandatory application of non-universally adopted standards, or by subsidizing one set of industry players to the detriment of others. Many of these interests are starting to be reflected in the negotiating texts analyzed above and will continue to be the focus of debates between different countries in negotiating fora like TiSA and RCEP in the coming years.

4.3.4 Regulatory Autonomy, Industrial Policy and the Risk of Fragmentation

As discussed in Chapter Three of this White Paper (Emerging Legislative and Regulatory Trends),

Suppliers and service providers in the digital economy want predictable and effective market access, transparency and fairness of market terms and the ability to understand and comply with any laws and requirements upon which such market access is contingent.

many governments in both developed and developing countries are finally catching up with the technological advent of the digital economy and starting to regulate in ways that are both long-overdue and welcome, as well as – in some cases – potentially more ominous for its future growth. In the developed world, most of the debate focuses on privacy and security, which have been ongoing concerns for several years, but which are currently subject to diverging views on the increasing use of end-to-end encryption in instant messaging platforms and to what extent it should be possible for law enforcement authorities to compel technology companies to provide them access to devices and user information (as well as the actual messages sent) in the

case of criminal investigations or in the face of an overriding and urgent threat to national security. This is also a trade issue since a lot of these technology companies operate internationally and transfer user data across borders. It is likewise a trade issue because many technology companies do not want to be subject to laws and regulations compelling them to comply with any such orders from law enforcement authorities in either their home jurisdictions or in foreign markets, and would like to see effective constraints on this sort of behavior included in international trade agreements.

From the perspective of developing countries, regulatory and law-making activities in the digital economy have on the one hand focused to a large degree on increasing the size and value of their participation in the digital economy and global ICT supply chains, while on the other hand seeking to ensure that domestic regulators and law enforcement authorities can play an effective role in regulating and policing the activities of international technology companies despite or perhaps directly because of the fact that such companies are not beholden to just one jurisdiction and thus may be perceived as having

more leeway to engage in cross-border regulatory arbitrage and thereby escape or circumvent many of the legal and regulatory constraints to which domestic suppliers and services providers are inevitably subject.

Despite the differences in concerns and approaches by governments and regulators in different countries, the internet and the digital economy have thrived thanks to the ease with which information, digital products and services can effortlessly and instantaneously cross international borders. This is one of the defining characteristics and intrinsic strengths of the internet and any policy, law or regulation that undermines this ease must be carefully considered. The interventions of some governments have resulted in an internet that today is much more fragmented along national lines than was the case in the early years of the technology. This is cause for concern by technology companies, online service providers and users.

4.3.5 Crafting Digital Trade Rules in the Service of Development

If we consider that the three largest causes of the digital divide are (1) infrastructure deficits, (2) affordable access to online connectivity, and (3) insufficient digital literacy in much of the developing world, it seems equally clear how trade rules can be crafted to support developing countries (**Figure 4.11**)

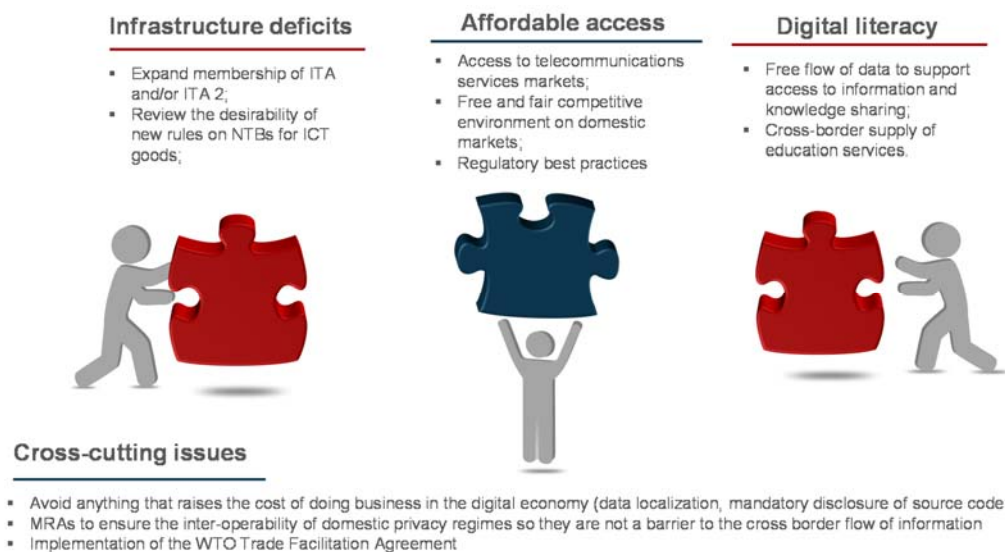
On the infrastructure side, initiatives like the ITA and ITA2 offer a clear path for countries to eliminate tariffs on these vital goods, and organizations like the Information Technology and Innovation Foundation (ITIF) have published compelling research on the economic and business arguments for governments to do so. Here, the onus is on those countries who are already signatories to the ITA and ITA2 to expand the Agreement's membership, monitor its faithful implementation, and review its product scope from time to time to ensure that it remains technologically relevant.

Yet another set of barriers on the infrastructure side can be found in the use made of high-impact and discriminatory trade barriers that target equipment vendors on the basis of their nationality and effectively deny them market access, much to the detriment of prices for infrastructure, since these markets are typically contested by a very small number of vendors in any event. The same price distortions are prevalent from the use of local content requirements, which trade rules could also discipline more stringently.

The other big trade barrier to infrastructure is of course comprised by technical regulations and conformity assessment procedures. The TPP sought to impose a national treatment obligation for conformity assessment procedures, and indeed the multilateralization of such an obligation would be hugely facilitative of international trade in ICT products. For now, WTO members must decide in the coming months whether they wish to launch negotiations on non-tariff barriers under either the expanded ITA or some other multilateral instrument. At the regional level, it remains to be seen whether initiatives like RCEP will also seek to minimize the impact of technical barriers to trade.

On the affordable access side of the equation, this is largely a matter for national governments, who must ensure that their domestic telecommunications markets remain competitive. The global downward trend in costs for both fixed and mobile data access seems to demonstrate some success in this area. Most FTAs today contain chapters on telecommunications services that seek to entrench principles of fair competition in this sector. In addition to this, the WTO Telecoms Reference Paper that many WTO members have signed up to, represents a visionary document setting out internationally recognized best practices in the regulation of telecommunications services. Efforts to expand the number of WTO members who

Figure 4.11: Crafting digital trade rules in the service of development



Source: Huawei

commit to the Reference Paper and help developing countries with technical assistance to faithfully implement these commitments would also represent another step the global trading community could take to boost affordable access in as many countries as possible.

On the digital literacy side, this is again largely an area where domestic governments can lead but the international community can help. There is also a meaningful role for international development assistance in this space in the absence of accessible and affordable market solutions. The impact that trade rules can have are limited but nevertheless important. Ensuring the free flow of data, so that internet users in developing countries can access and exploit the many information and knowledge-sharing platforms available to them is an important contribution trade rules can support. The cross-border supply of education services is also possibly an issue where trade rules and liberalization of these areas can help to raise digital literacy levels.

There are also areas of cross-cutting importance which have been discussed above in some detail but which we will re-iterate here in brief. Any policy interventions that increase the cost of doing business in the digital economy have to be carefully weighed against the importance of the policy objective being pursued. Governments should not fear entering into international treaty commitments in the area of data localization, mandatory access to source code or ensuring the cross-border flow of information, provided such commitments are qualified by reasonable and precisely defined public policy exceptions. Likewise, striking the right balance between privacy protection and the free flow of data is an area where trade agreements can be supportive of domestic legislative and regulatory agendas, particularly in the form of mutual recognition arrangements such as we have seen recently between the world's largest digital economies, the United States and Europe, in the form of Privacy Shield. Where developing countries can prove that their privacy regimes meet adequacy requirements, they should be permitted and

encouraged to accede to such arrangements, and trade rules can also be leveraged to support this objective.

Finally any trade rules that help to further reduce trade costs are to be actively supported, since in the zero-tariff world that dominates much (albeit not all) of international trade in ICT products, trade costs now represent an important element and can significantly erode companies' margins. In this vein, the WTO Trade Facilitation Agreement that recently entered into force is to be applauded and

efforts to ensure the proper and comprehensive implementation of its commitments are to be wholeheartedly supported.

Because developing countries stand to be some of the biggest winners from any expansion of the digital economy (in China, the e-commerce market is predicted to double by 2020), developing countries should also be at the forefront of crafting this new generation of trade rules to govern the digital economy.

4.4 Key Points for this Chapter

01

The various new trade agreements being negotiated are predominantly focused on addressing only one aspect of the digital economy (e-commerce), and need more input from the broader digital economy constituencies being affected.

TiSA and RCEP are a timely opportunity to incorporate broader interests. In addition, because uniform rules will tend to make global business more efficient for the global ICT industry, innovative approaches should also be pursued at the WTO, where a possible Digital Trade Agreement could be negotiated.

02

03

Huawei's guiding principles underlie our approach, namely our support for free trade and our dedication to competing fairly to promote the healthy development of the global ICT industry, and this is also the basis for Huawei's thought leadership.

Trade rules have an important role to play in supporting development outcomes and expanding the reach of the digital economy so that more of the world's people can leverage its many benefits.

04

The next Chapter sets out Huawei's vision for an optimal trade regime for the digital economy

CHAPTER FIVE | A VISION FOR AN OPTIMAL TRADE REGIME FOR THE DIGITAL ECONOMY

This Chapter outlines what an optimal framework for the digital economy could look like, namely one that is characterized by a level playing field and non-discriminatory access to commercial opportunities in a spirit of fair and open competition. It also addresses the importance of global investment rules and trade in achieving the goal of bridging the digital divide. It then discusses how the domestic policy frameworks and corresponding international trade agreement rules can be formulated and implemented in such a way that both meets reasonable regulatory objectives and does not act as a disguised restriction on international trade, or in a manner which unfairly favors one set of industry players to the detriment of others. This Chapter discusses the potential benefits of rules that enable innovation, that encourage deployment of ICT solutions in order to bridge existing digital divides, that promote technology neutrality, an open internet, flexible and compliant approaches to increasing domestic value-add requirements among others. Finally this Chapter makes a set of compelling policy and economic arguments in favor of the positions taken.

5.1.	Huawei's Position on International Trade.....	75
5.1.1.	Open Cooperation	75
5.1.2.	Fair and Open Competition.....	76
5.1.3.	Respect for Intellectual Property Rights.....	77
5.1.4.	Minimizing the North-South Divide by Focusing on Strengths and Value.....	77
5.2.	What Makes the Digital Economy so Special and Why are Special Trade Rules Needed?	80
5.2.1.	The Role of Commercial Middlemen: The End of Conventional Intermediation.....	80
5.2.2.	Diminishing Information Asymmetries.....	82
5.2.3.	The Long-Awaited Level Playing Field	83
5.3.	Emerging Consensus and Remaining Differences	84
5.3.1.	Low-Hanging Fruit and Quick Wins	84
5.3.3.	Policy Areas of Ongoing Contention.....	85
5.3.4.	The Need for Narrowly Formulated Exceptions Clauses	87
5.4.	Key Points from this Chapter	84

5.1. Huawei's Position on International Trade

As a company operating in more than 170 countries and territories, as well as providing a very diverse range of goods and services up and down the entire value chain of the digital economy, our position on international trade in general was established years ago, although it continues to evolve in the face of technological advancements, new risks and ever-emerging challenges. Huawei is a collaborative industry contributor and we cooperate openly, support free trade and compete fairly to promote the development of a healthy global ICT industry. We are also a company that places the highest possible premium on compliance and have entrenched the need to comply with all applicable laws and regulations into our strategic decision-making processes and our day-to-day operations. We describe these values in more detail below, before discussing what makes the digital economy such a particular force for enhancing global welfare and thus why it is so important that national governments share the same vision for the digital economy's future trade governance.

5.1.1. Open Cooperation

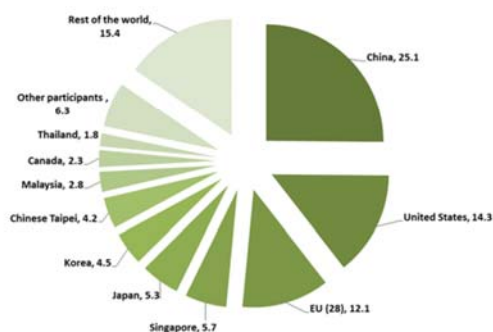
For a relatively young company, Huawei has an established track record of industry cooperation on a range of technical and policy issues such as

5G or cloud computing, as well as spectrum allocation and ultra-broadband. We are present and actively engaged in all the major standard-setting organizations. We participate in global thought leadership activities such as the World Economic Forum, the WTO Public Forum and UNCTAD's e-Trade for All initiative. We have also begun to play an increasingly active role in industry organizations that elaborate and advocate policy positions in different areas of national legislation and international cooperation, such as the Silicon Valley Leadership Group and Digital Europe. Going forward, we see many opportunities for us to expand and deepen our industry advocacy and consider doing so an important element of our thought leadership. One recent but important example of Huawei's engagement with industry partners and government stakeholders should suffice to demonstrate the win-win approach Huawei takes to open cooperation in international trade.

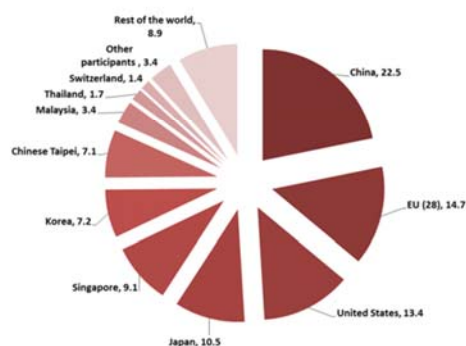
The WTO Information Technology Agreement, originally signed in 1996, has been one of the underpinnings of the growth in the digital economy over the last two decades, with the original list of 29 signatories growing to 82, thereby effectively covering a reported 97 percent of world trade in information technology

Figure 5.1: Global imports and Exports of ITA products

Share of imports of products covered by the ITA, by WTO Member, 2011-2013 (%)



Share of exports of products covered by the ITA, by WTO Member, 2011-2013 (%)



Source: WTO

products (**Figure 5.1**). The ITA's scope extended to a broad range of high-tech goods including computers, telecommunications hardware, semi-conductors, software, scientific instruments, high-tech manufacturing and testing equipment, as well as parts and components of all of these products. Despite such broad coverage, after a decade and a half, the ITA had become somewhat outdated in terms of product coverage following the rapid technological advancements made over the same period. For this reason, in May 2012, as the Agreement turned 15 years of age, product expansion negotiations were launched. We at Huawei recognized the importance of these negotiations, not only to our own bottom line but to the global industry as a whole. Working together with our partners in the private and public sectors, both within China but also in the other countries involved in the negotiations where we are present, we supported the process of formulating offers and requests and ultimately succeeded in getting 34 of our own products included in the list of 201 new ICT products that will qualify for duty-free market access in the fifty-four WTO members that ultimately signed the new agreement in December 2015. As importantly, Huawei aligned itself with its global industry partners in advocating for a strong ITA update. According to the WTO, "[a]nnual trade in these 201 products is valued at over \$1.3 trillion per year, and accounts for approximately 7% of total global trade today". This was thus a significant win for Huawei, but it was also a win for the global ICT industry as well as consumers of these products worldwide.

5.1.2. Fair and Open Competition

Huawei has come from very humble beginnings to become a global ICT industry leader. From the very earliest days of the company we have been exposed to the sometimes harsh winds of competition as we began in China facing already

We are no stranger to competition, nor do we fear it. In order to operate in the many markets where we partner with our customers, we essentially only need two things: predictable market access, and to be treated the same as other market actors.

entrenched foreign ICT giants, leaving us to scramble for market share in rural markets. We then took the hard-won lessons we had learned into other markets, expanding globally while partnering with operators and governments to build the backbone telecommunications infrastructure in countries and regions with some of the toughest geographic and climatological conditions on earth. We are no stranger to competition, nor do we fear it. In order to operate in the many markets where we partner with our customers, we essentially only need two things: predictable market access, and to be treated the same as other market actors (non-discrimination). We are in favor of fair and open competition, where all players are afforded market access under the same terms and treated equally by regulators. These two conditions form the bedrock of our understanding of fair and open competition.

We recognize the extreme competitiveness of global product markets in the technology sector and the rapid pace of change to which these markets are subject, with industry titans regularly rising and falling. We recognize that this is a global market in which a company's relative strength is dictated by its ability to innovate and stay at the forefront of technological developments, providing customers and consumers with the latest cutting-edge technologies, products and solutions. The high level of competition in our industry has allowed us as a company to understand the importance of customer-centricity and pushes us to continually strive towards and achieve our ambitious growth targets. We are well aware that a lack of competitive forces leads to complacency and stagnation, which is something we can simply not allow ourselves to succumb to if we want to stay relevant and maintain our successful growth course.

We view trade and investment liberalization as important drivers and facilitators of these global competitive forces. As such, we as a company

advocate in favor of closer economic integration between all of the countries and territories in which we operate, as well as in favor of more open goods and services markets globally. We recognize that over the last two decades of our own growth story, we have benefited enormously from the open markets and conducive business environments we have encountered as we expanded globally, selling equipment, nurturing local talent, investing in domestic capacity, engaging in research and development, as well as establishing global supply chains across 170 countries. We recognize that our global success has been as much about our ability to innovate as it has been our ability to trade with and invest in the many markets with which we engage.

We also recognize, however, that cut-throat competition in the absence of clear market rules can be detrimental to market players, to markets themselves and even to consumers. That is why we at Huawei place a heavy emphasis on operating within the rules of the markets where we do business. We have a very strong compliance focus in our operations and have instituted internal procedures and oversight to ensure all our officers comply with local market rules. We feel strongly that markets with transparent and, predictable rules that are enforced fairly against all actors irrespective of their nationality, are the best markets to do business in, not just for Huawei but for all industry players. We are not afraid of healthy competition on a level playing field, and always seek to strike a reasonable balance between competition and cooperation, to maximize benefits for our partners in government and

industry, for the global ICT sector and, most importantly, for consumers worldwide.

5.1.3. Respect for Intellectual Property Rights

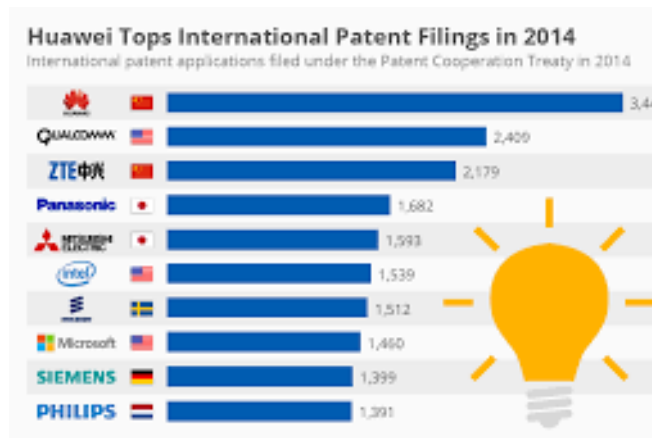
We view respect for intellectual property rights, and the non-discriminatory enforcement of IPRs as an indispensable precondition for the smooth conduct of business across international borders and for a company such as Huawei to be able to operate in both its home market as well as foreign markets. We are now a company at the forefront of innovation across all of our goods and services offerings. As such, we have also become a global leader in patent filings (**Figure**

5.2). We are the number one filer of patents in the United States from mainland China. Within China, we are the number one filer of patents overall, and have filed close to 50,000 patents. Outside of China, we have almost 37,000 patents granted to us. We also have patent licensing agreements with all the other major

industry players, subject to which we allow them to use our patents and vice-versa: an example of industry cooperation for the benefit of the global industry and consumers. We see respect for intellectual property rights as an inalienable part of our broader compliance mandate and have several hundred IP lawyers working to ensure such compliance both in our Shenzhen headquarters and in our frontline offices globally.

Intellectual property rights were created several hundred years ago in national legislatures, and were in fact the subject of some of the earliest international treaties concluded on matters of international economic law in the modern era. Both domestic laws and international trade agreement commitments have long sought to

Figure 5.2: Comparison of company patent filings (2014)



Source: Statista

strike a balance between different public and private interests. It is this balance which the advent of new technologies in the digital and information age is increasingly threatening to disrupt. Nowhere is this more in evidence than in the field of copyright. The capabilities that digitization and the internet have created for making easy and flawless copies of artistic works which can then be instantly disseminated to billions of users worldwide has been extremely disruptive to a range of industries that for many decades functioned relatively well under the existing rules protecting intellectual property rights. This is something that domestic lawmakers and international trade negotiators have grappled with and addressed in various ways and subject to different pressures and constraints. What seems to be emerging now is a fragile and delicate balance that allows those actors that make access to the internet possible (Internet Service Providers or ISPs) and those that provide platforms on which content is made available, (search engines like Google, databases like SlideShare, websites like YouTube) to evade liability for infringement if they agree to remove any copyright-infringing material once it is notified to them (so-called “notice & take down” rules).

These rules seem to have struck a workable balance for now, although some stakeholders feel they either don’t provide enough protection to content owners, while others feel that lawmakers and trade negotiators have long been too beholden to the needs of industry rather than the general public in this particular area. The protests that erupted in the United States and the ensuing international outrage which was expressed from many sides in 2012 over two proposed bills, the Stop Online Piracy Act (SOPA) and the Protect Intellectual Property Act (PIPA), both of which were being championed by the Motion Picture Association of America, the

The capabilities that digitization and the internet have created for making easy and flawless copies of artistic works which can then be instantly disseminated to billions of users worldwide has been extremely disruptive to a range of industries that for many decades functioned relatively well under the existing rules protecting intellectual property rights.

Recording Industry Association of America, and the Entertainment Software Association, but which were opposed by a whole slew of internet companies (Craigslist, Flickr, Google, Mozilla, Reddit, Tumblr, Twitter, Wikipedia and WordPress to name a few of the more prominent

ones), shows what can happen when one set of players tries to tip this fragile consensus in its favor. This conflict eventually culminated in the unravelling of the Anti-Counterfeiting Trade Agreement (ACTA) as the European Parliament rejected the ratification of the

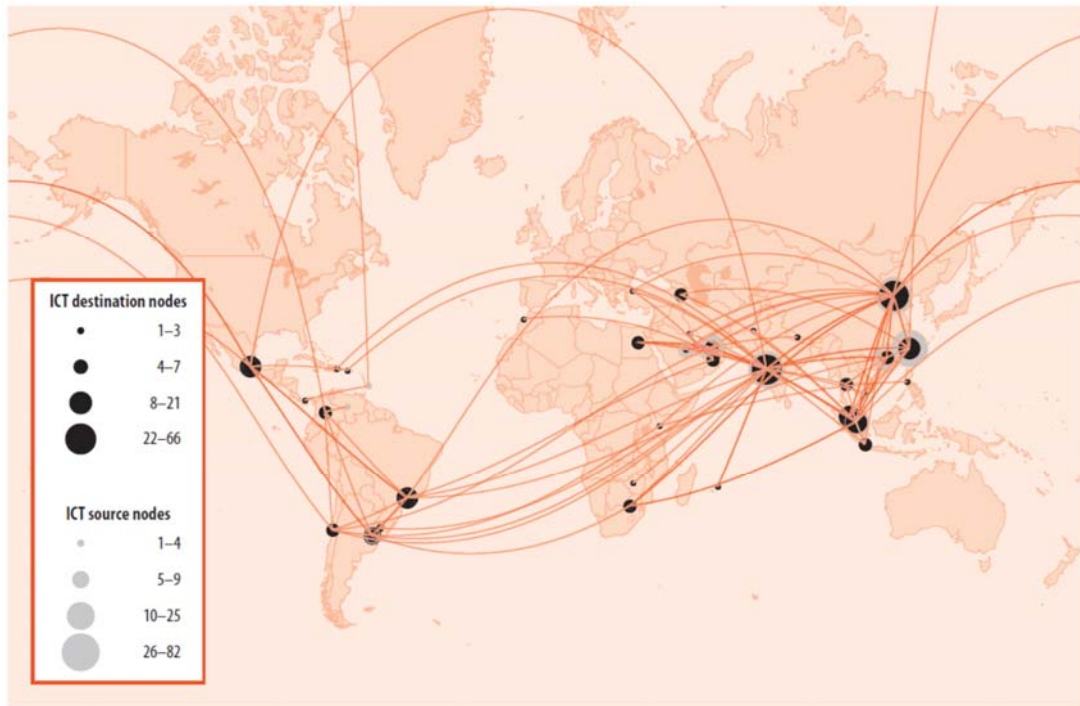
agreement in 2012, which still has a bearing on the negotiation of provisions relating to IPRs in FTAs.

5.1.4. Minimizing the North-South Divide by Focusing on Strengths and Value

The traditional paradigm tended to view international trade liberalization as juxtaposing the (often frustrated) market access interests of developing countries, particularly in primary commodities but also in textiles and clothing, versus the demands of developed countries to bring an ever-increasing number of sectors and policy areas within the scope of multilateral trade rules.

However, recent developments show that the North-South divide is a concept of the past. Bilateral FTAs are overwhelmingly North-South, especially between Asia and North Atlantic economies of the EU and the US. Moreover, the failure of TTIP and the significant difficulties encountered by EU FTAs with other OECD economies like Canada and Japan show that North-North FTAs are considerably more difficult to conclude, despite closer regulatory coherence. In today’s trade policy environment, economic and policy similarity is not a given recipe for success. TTIP has shown that regulatory divergence on digital issues can be particularly difficult to bridge.

Figure 5.3: Geography of cross-border investments in design development and testing (DDT) within the Global South, 2003–14



Source: Global Innovation Index

Meanwhile, the TPP (which included developing countries like Vietnam and Malaysia, alongside more advanced economies like the US and Japan) at least managed to reach conclusion, despite considerable differences in legal and constitutional structures amongst the agreement's signatories. In addition to this, ASEAN and China have succeeded in concluding advanced FTAs with increasing levels of ambition, not least with regional partners like Australia and New Zealand.

Supply-chains and industrial partnerships reach across the equator and span East and West (**Figure 5.3**), as dissimilar economies can offer know-how, markets and complementarities that firms cannot find at home, with less likelihood of running into direct competition in the countries they expand their value chains into. As economies seek to develop their comparative strengths and maximize the economic value of FTAs, they are more likely to seek their partners across the traditional North-South divide

5.2. What Makes the Digital Economy so Special and Why are Special Trade Rules Needed?

As has been pointed out by the OECD and other organizations like APEC that follow and propose policy and regulatory developments in connection with the growing importance of ICTs, it is becoming increasingly futile to talk of the digital economy in abstraction from the real economy since the digital economy is rapidly becoming simply 'The Economy'. Nevertheless, there are a few things that make the digital economy unique, three of which are outlined in more detail below, namely 1) what it has done to the nature of intermediation between producers and consumers; 2) what the internet economy has done to information asymmetries; and 3) how the digital economy represents a much more level playing field than was ever achieved by the conventional economy. This sub-section also discusses why the digital economy needs its own set of trade rules to ensure the gains experienced up to now are not lost in future.

5.2.1. The Role of Commercial Middlemen: The End of Conventional Intermediation

Traditional business tended to have four or five layers between manufacturers and consumers: production, exporters/importers (sometimes also the producer itself), wholesalers, retailers, and ultimately consumers. The digital economy has shifted a lot of retail and even wholesale activities online. If one understands retailers and wholesalers as intermediaries between those that make the products (producers, manufacturers, entrepreneurs), and those that purchase them (consumers, but also other producers in the case of components or parts necessary for the production of a separate end-product), then it becomes obvious that some intermediation activities have become completely redundant, while others have had to adapt to the technical changes wrought by digitization and the internet. Take the example of an airline. Airlines have long had their own ticket offices where it was possible to book and

Some intermediation activities have become completely redundant, while others have had to adapt to the technical changes wrought by digitization and the internet.

purchase flights, and they have also used travel agents to sell tickets to customers (passengers) on their behalf. These distribution channels have not changed fundamentally, although in today's world there is usually no real need to walk into or call the airline office or travel agency. Today, most sources of market intelligence seem to indicate that an ever increasing share of travel is being booked online, both for leisure and business, with some sources reporting as many as three in four, or 75% of airline tickets (in the U.S. at least) being purchased online. The same is true of course for hotels. Classic intermediaries such as travel agents have had to either shutter operations all together, move online, or move into very niche segments of the travel market. An overwhelming majority of smaller travel agents have certainly succumbed to market pressures, so that the brick and mortar travel agents that do remain are almost invariably part of larger chains that can still exert some market power thanks to their size and scale, and which themselves all have an online presence by means of which they likewise do a lot of business.

But this trend is not just happening in the world of travel. Other areas of the economy are also going digital. Proper Cloth is a U.S. e-commerce company that is in the very conventional business of selling shirts. They have out-intermediated the old job of tailor by setting up a very intuitive and functionally innovative website that helps customers take their own measurements (thanks to a series of small and easily downloadable instructional videos), select fabrics, collars, buttons and other individually customizable touches all by means of very effective visualization software, and which then allows users to purchase and pay for the shirt online. The shirts are then made to order (in Malaysia) and shipped to customers at their real-world addresses. What's more, Proper Cloth's

customer base is global, comprising any country with a functioning postal system, since the shirts come by regular mail. The same is of course true for Amazon, although purchasing a book at Amazon involves very little to zero customization. Amazon is credited with almost single-handedly disrupting the retail bookselling industry and many hold it responsible for bankrupting what was for many years America's largest national and global bookstore chain, Borders, thereby removing this particular intermediary from the market altogether.

In China the online retail sector is vastly superior to the traditional brick and mortar sector. China is the world's largest e-commerce market, and sales are increasing every quarter. Many products, particularly consumer electronics, can really only be bought in very large

stores located in corresponding clusters, but are actually much more easily acquired online, with same day delivery a reality in many urban centers for purchases made before 11 am, or next day delivery for any purchases made after that. Even very large retailers like Walmart are for all intents and purposes unable to compete with online portals like JD.com. The implications of this for the country's retail sector, but also for its urban architecture (e.g. the impact on the many shopping malls in the country) is only slowly being understood by private businesses, property developers and government planners. One important ramification is that shoppers will primarily be attracted to malls for food and dining options (something that can of course be ordered online but not consumed in digital form), and that retailers will have to try and woo shoppers that do come to the mall primarily to eat and socialize into making impulse buys. This is yet another way in which the digital economy is beginning to exude subtle but profound

changes to the lives of city dwellers in the real world. But also for people in rural communities, the digital economy has long shifted the balance of power in terms of intermediation and allowed millions to join global value chains (as buyers or sellers) in a way that previously required overcoming the tyranny of distance.

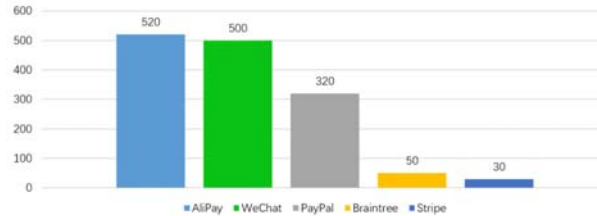
Of course the biggest intermediation industry is arguably banking and financial services. Banks and other firms in the financial sector have been some of the earliest and most enthusiastic adopters of information technology and now represent some of the most entrenched players

in the digital economy. Information and communication technologies have allowed banks to move a lot of services online, helping them to achieve efficiency gains in terms of headcount reduction, economies of scale

in IT and other cost savings. It was the CEO of Citibank, who, in 2015, joked that banks had taken so enthusiastically to ICT that today a bank was essentially "a technology company with a banking license". What this means for most of us as customers is that we now do the lion's share of our banking via our laptops or smartphones. Although banks are still entrenched as financial intermediaries between those with excess capital (depositors) and those seeking to borrow, the structural interface and the underlying power dynamics of the relationship between banks and their customers have been profoundly transformed thanks to the digital economy, new entrants into the online and mobile payments spaces (**Figure 5.4**).

The decline in use of conventional intermediaries and the shift towards online transactions between parties that in many cases have never met and will never meet, requires trust and confidence and an effective means of redress when things don't come out as advertised. To

Figure 5.4: Estimated online payment transactions in China in USD billions (2016)



Source: Remitsy

this end, the new set of emerging trade rules specifically include provisions and obligations that would require countries to adopt legal frameworks that are facilitative to electronic transactions, that provide online consumer protection, and that guarantee a certain degree of protection for users' personal information. The TPP also set out a number of principles on access to and use of the internet for electronic commerce, which would, *inter alia*, require governments to accept the notion of free trade (described as "access and use") in services and applications available on the internet. Likewise, different international trade agreement frameworks (UNCITRAL, TPP, UNESCAP) are actively promoting the transition towards paperless trading in support of the changing nature of intermediation in trade administration procedures. We discuss potential fault lines when it comes to an international consensus on the emerging set of trade agreement obligations governing trade and the digital economy below, but for all intents and purposes the rules discussed in this paragraph generally seem to enjoy a broad consensus among most countries, meaning they are not particularly controversial since most governments recognize the obvious economic benefits of e-commerce.

5.2.2. Diminishing Information Asymmetries

A lot has been written about the game-changing implications of having virtually the entirety of humankind's accumulated knowledge easily accessible from a device that most people carry around in their pockets. In fact, for most of us living and working in the modern information economy, the challenge is not access to information *per se* but managing the overwhelming amount of it we are constantly bombarded with every waking minute. To be sure, the digital economy is one in which there is much more transparency and information about products and markets. Prices can easily be compared, product reviews can be read, and

For most of us living and working in the modern information economy, the challenge is not access to information *per se* but managing the overwhelming amount of it we are constantly bombarded with every waking minute.

consumer decisions are much more informed. In many ways, this has handed a lot more power back to users and consumers, and has made it much more difficult to sell under-performing or over-priced products and services. But making so much information available online has also created vulnerabilities that previously barely existed and has also given rise to a massive internet scam industry that regularly defrauds unwitting individuals and insufficiently protected institutions out of billions. So the changing nature of information asymmetries works both ways. The dark side of this equation aside, we now live in a world where we can make educated decisions about a whole range of unprecedented choices, and where we can access the information and tools available online to better navigate the challenges we face in the real world, and to connect much more easily with other online actors, either for social or commercial purposes.

The international trade rules emerging to reinforce the benefits and safeguard against the negative externalities of these changing information asymmetries come in different forms. On the one hand we have tentative provisions on the free flow of information, which seek to ensure that all internet users in all countries have a largely similar internet experience or at least access to the same information and tools online. We have discussed this somewhat in Chapter Four and will return to this topic again below, but for now it suffices to say that different countries take different views on what free flow of information actually means, and what constraints (if any) this principle should be subject to. Another provision that one finds emerging in different tentative proposals for trade rules on the digital economy is one that seeks to obligate countries to adopt or maintain measures on unsolicited commercial electronic email messages (spam). This latter provision is one that is intended to minimize the downsides of information overload or prevent the internet and online communications from

being exploited to the detriment of users. Nobody likes spam and trade rules have slowly come around to addressing this problem. There are newer forms of commercial advertising that do not seem yet to be addressed (e.g., the re-targeting pixel on Facebook), and this shows that technology is always ahead of rules. Nonetheless, like the rules on adopting legal frameworks that are generally facilitative of e-commerce and rules on spam seem to be largely uncontroversial for most countries.

5.2.3. The Long-Awaited Level Playing Field

Much has also been made about the internet as the “great equalizer”, i.e. a technology that allows SMEs or even micro businesses to compete on a level playing field with multinational

corporations in seeking out and winning customers in their home markets and abroad. Although the internet and the possibilities afforded by online connectivity have not totally removed power

asymmetries between large well-resourced players and smaller actors, it has opened up a new world of possibilities for many businesses, and has allowed new and innovative business models to emerge that were largely unthinkable (or at least not thought of) in the conventional (pre internet) economy. Equally important is the reality that the internet has effectively given everyone using it a megaphone with which to reach a mass audience, which was a privilege enjoyed by only an entrenched and influential few in the pre-internet era. Online connectivity furnishes content creators with numerous ways of disseminating original or derived content to a potential audience that today comprises billions of internet users. Websites like YouTube, WordPress, Reddit, Instagram, Medium and many others provide users the chance to upload and disseminate their own content in a way that is completely unprecedented in human history.

Take for example a comparison between the paths to recognition enjoyed by authors such as

It was the internet, and Amazon’s Kindle Store that allowed Andy Weir’s book “The Martian” to see the light of day and gave the author unprecedented artistic freedom to write and publish it as he saw fit.

J.K Rowling on the one hand, who wrote the incredibly successful Harry Potter series of fantasy fiction novels (beginning in 1997 when the internet and e-publishing was just getting started), and Andy Weir on the other hand, who in 2011 wrote the science fiction novel “The Martian”, that then went on to become a New York Times best-selling novel and a Hollywood blockbuster in 2015 starring Matt Damon. J.K. Rowling followed the conventional path that so many authors have trodden before her. She sent the manuscript for the first Harry Potter book (“Harry Potter and the Philosopher’s Stone”) to a reported eight publishing houses before the ninth (Bloomsbury) finally agreed to publish it and paid the author an advance of 2500 pounds for the right to do so. Contrast this with the route

that Andy Weir chose when writing “The Martian”. Having already experienced rejection by literary agents for a previous book, Weir opted to publish “The Martian” online in installments, making them accessible for free on his own website. In response to

the demand by fans, he then published a version of the book available on Amazon’s Kindle store for 99 cents (the minimum allowed). The Kindle edition of the book quickly became a best-seller in the science fiction category, selling a reported 35,000 copies in three months. It was at this point that publishing houses started to take an interest. In 2014 Weir was ultimately able to sell print rights to the Crown Publishing Group for an amount reported to be in excess of 100,000 dollars. It was the internet, and Amazon’s Kindle Store that allowed Andy Weir’s book to see the light of day and gave the author unprecedented artistic freedom to write and publish it as he saw fit.

The legal conditions required for the above-described level playing field dynamic to function optimally are also being addressed in part by the new set of emerging international trade rules discussed in this White Paper. The above-mentioned principle of free flow of information is an important precondition for this dynamic to

work. Another important element, at least for commercial actors, is the ability of e-commerce companies to decide for themselves where to store and process customer data. Take the example of Proper Cloth discussed above. If Proper Cloth were required to store and process data in every country in which someone avails themselves of its services, this would add enormously to Proper Cloth's operating costs, and would probably require the company to stop servicing customers in most countries that enforced such a requirement. This would essentially deny the company the chance to exploit the benefits of the level playing field dynamic discussed here. Another related set of rules are the ones emerging on mandatory disclosure of source code. These rules seek to place limits on the ability of governments to require software companies to disclose their source code as a condition for doing business in

a given country and are discussed in more detail in Chapter Four (as well as below). Requirements like these artificially raise the costs of doing business in those markets where they are enforced, thereby leading to fragmentation of the internet and undermining the level playing field dynamic. The same is true for different national standards and rules on privacy that effectively impede the cross-border flow of personal user data, which is also starting to be addressed in international trade agreements and in more detail below. In the next section, we discuss the different degrees of consensus and discord emerging between major economies on the new set of trade rules for the digital economy and where we as a company see the balance of interests ultimately emerging for the benefit of the global ICT industry, as well as internet users and digital consumers all over the world.

5.3. Emerging Consensus and Remaining Differences

In the previous Chapter of this White Paper we discussed the emerging set of trade rules governing the digital economy. Without wishing to rehash this discussion, this section discusses where the international consensus seems likely to land on some of the more contentious of these rules. Different governments have different views on the best way to regulate international trade for the digital economy. We discuss and propose various policy approaches that go a long way to accommodating the differing positions governments have chosen to take on a very limited number of these issues.

5.3.1. Low-Hanging Fruit and Quick Wins

A number of policy areas of importance to the smooth functioning of the digital economy already enjoy broad-based consensus, with the only real differences between countries being the degree to which they have already succeeded in implementing facilitative legislative frameworks in furtherance of these principles. Among the rules discussed in the previous Chapter (Chapter Four), this category encompasses such issues as 1) making the moratorium on customs duties on electronically transmitted products permanent; 2) rules on

electronic authentication and electronic signatures; 3) online consumer protection; 4) unsolicited commercial electronic messages (spam); 5) paperless trading; and 6) increasing cooperation in the areas of transparency, improving internet governance generally and cybersecurity. These so-called "Tier 1 Disciplines" demonstrate that there is already a lot on which the vast majority of stakeholders already agree.

Another issue that enjoys widespread consensus is the principle of non-discrimination, meaning that goods and services in the digital economy should be subject to the same regulatory treatment irrespective of their origin or the nationality of the service provider in question. The principle of non-discrimination is one of the most fundamental underpinnings of the multilateral trading system and has been for over 60 years. It is inconceivable and wholly undesirable that this principle should not apply with equal effect in the digital economy. All of the various rule-making initiatives on the digital economy discussed in Chapter Four include binding language on this principle, meaning that sooner or later it will become a hard (i.e., binding and enforceable) international legal obligation.

In many ways it has already achieved this status, since most trade in ICT products is subject to GATT rules and thus the relevant provisions on Most Favored Nation and National Treatment. Digitally traded services also enjoy the protections afforded by the WTO's General Agreement on Trade in Services.

Other principles being advocated in fora like the OECD and APEC can also be said to enjoy broad consensus, although different countries take different approaches in how they interpret the scope of these principles as well as the extent to which they limit their application on various public policy and national security grounds (we discuss exceptions in more detail below). These principles would include keeping the internet open, accessible, truly global, decentralized and dynamic, promoting and enabling the cross border delivery of services, encouraging multi-stakeholder cooperation in the development of policies and standards, limiting internet intermediary liability, ensuring a healthy competitive environment on markets for goods and services in the digital economy, and promoting investment and competition in the development and operation of high-speed networks.

As a globally active ICT company, providing goods and services at multiple points along a diverse range of digital value chains, we see every reason to fully support these principles and advocate in favor of their realization at all levels and in all countries. A robust and well-functioning digital economy with market power evenly distributed between providers and users is one which we believe will continue to foster technological progress and innovation, as well as continuing to be a driver of economic growth and wealth creation with net welfare-enhancing socio-economic benefits for all. We will continue to work with our industry partners, with our public-sector stakeholders and with our customers in furtherance of these principles.

Different countries take different approaches in how they interpret the scope of these principles as well as the extent to which they limit their application on various public policy and national security grounds.

5.3.2. Policy Areas of Ongoing Contention

A narrow set of obligations are emerging where different views have manifested themselves in different countries. These so-called "Tier 2 Disciplines" essentially embody differences in regulatory approaches and policy priorities. The free flow of information is generally recognized by all as desirable, but governments disagree with regard to the scope of this principle. Should it apply to all information or only information that is essential for the conduct of business (i.e., facilitative of a specific transaction or set of transactions)? Even if the answer would be the latter, is personal information also to be seen as

covered by such a necessity test?

It is also generally recognized that restrictions on the free flow of information should be allowed as long as they are justified on necessary and legitimate public policy grounds and not administered or applied in a way that is unnecessary to the objective in question, or that would constitute a means

of arbitrary or unjustifiable discrimination or for protectionist ends. At Huawei we are generally supportive of the principle of free flow of information and view it as an essential precondition for the proper-functioning of the internet. The symbiotic relationship between the infrastructure and devices that we manufacture and sell, and the data that flows over this infrastructure and originates or terminates on these devices (which we help our customers to store, process, understand and manage), relies upon information being able to flow freely between different actors, between different countries, and across different technologies and platforms. Having said that, as a good global corporate citizen that always prioritizes compliance with all applicable laws and regulations, we equally recognize the sovereign right of governments to make exceptions to this principle where such exceptions are justified on recognized and legitimate public policy grounds,

where such proposed actions are proportionate to the objective in question and where they do not constitute an arbitrary or unjustifiable act of discrimination or a disguised restriction on international trade.

Another area of limited contention is an emerging consensus on banning so-called data localization requirements (also discussed in some detail in Chapter Four). A number of major ICT markets and players in the digital economy like India, the EU, China, Indonesia, Brazil, Korea, Russia, Vietnam, and Turkey have become enthusiastic adopters of data localization policies, particularly in the wake of the Edward Snowden revelations and the ensuing climate of mistrust these revelations have given rise to. Certain interests in the EU have also distinguished themselves on this issue with proposals such as the “Schengen Cloud”. The global technology industry (particularly U.S. internet companies), seem to have rallied around and are forcefully advocating for as binding and comprehensive a ban on data localization as possible. This has largely been achieved in the TPP, but again subject to the same exceptions language discussed immediately above in the context of the principle of the free flow of information.

It follows that where there are forced data localization requirements, there will be distortions to cross-border data flows. The intensity that has surrounded this debate is understandable. It may seem that very large and populous markets like the EU, India, China, Brazil and Turkey could become self-sustaining, able to meet domestic demand on reliable and economical cloud computing infrastructure: Yet, as we have seen in Chapter Four, these policies come at hefty societal and macroeconomic costs. How they measure against existing WTO rules remains largely untested. These facts notwithstanding, sovereign governments must retain the right to impose conditions on certain types of data (e.g. government data, national security, personal records) being stored or processed outside of their jurisdictions –

It follows that where there are forced data localization requirements, there will be distortions to cross-border data flows.

provided that such conditions are imposed in a transparent, multi-stakeholder and inclusive manner consistent with agreed rules. Also, any conditions to international transfer should be imposed only to the extent necessary, applied in a non-discriminatory manner, be reasonable, proportional and not more trade-restrictive than necessary to achieve the legitimate public policy objective in question. In this sense, the constraints to which governments should be subject in this policy area should be the same as those by which they have already agreed to be bound under the general exceptions clause of the WTO GATS under Article XIV.

Another area of international rule making for the digital economy where broad consensus seems elusive is the issue of mandatory disclosure of source code (also discussed in some detail in Chapter Four). Although a hard obligation with very limited exceptions had been agreed in the TPP and looked likely to find its way into the TTIP

and TISA rules that may one day emerge, some governments are quite comfortable making such demands of software companies that operate in their markets and are unlikely to allow their regulatory autonomy in this regard to be

constrained by an international trade agreement obligation that seeks to effectively ban such demands unless made in relation to critical national infrastructure. For Huawei, we see this issue more in terms of the protection already provided in the WTO TRIPS Agreement with respect to copyright (since software must be protected as literary works under the Berne convention), rather than as an issue of regulatory sovereignty or digital trade governance *per se*. The binding nature of TRIPS obligations for all WTO members notwithstanding, regulations mandating the obligatory disclosure of source code could be justified for reasons of network integrity or national security, and could even be conducive to restoring much of the trust that has been lost in the Post-Snowden era. Provided such regulations are enacted in a transparent, multi-stakeholder consultative process, and then

applied in a non-discriminatory, good-faith manner, and only to the extent necessary to achieve the legitimate public policy objective in question, we cannot foresee why any software vendor could reasonably be opposed to such requirements.

5.3.3. The Need for Narrowly Formulated Exceptions Clauses

The best way to align the differences in approaches among countries is to establish basic principles and then provide for an appropriate degree of regulatory autonomy for governments and regulators that may have their reservations about the universal desirability of such principles in practice and in the light of specific public policy priorities. This is largely the approach that was followed in the TPP for principles such as the free flow of information, data localization and mandatory disclosure of source code as discussed above. We essentially support this approach although we also have our concerns, given that any determination on whether or not an exception has been justifiably and fairly invoked must inevitably be made (where two countries disagree on the matter) in the context of international trade litigation. This issue is also worrisome in that some governments advocate that the national security test, in particular, should be self-defining. Any litigation can be a long and drawn out process even at the best of times but especially in the context of FTAs, which generally have a much more infrequently-used track record when it comes to these provisions than say, the WTO, where many agree that the organization's dispute settlement system is the jewel in the organization's crown.

Because of the ease with which they can be used as a means of disguised protectionism, exceptions clauses in trade agreements, whether they be general exceptions or exceptions to specific principles or obligations, should be narrowly formulated and be accompanied with

Exceptions clauses in trade agreements should be narrowly formulated and be accompanied with explicit requirements in terms of necessity, proportionality, non-discrimination and multi-stakeholder consultation.

explicit requirements in terms of necessity, proportionality, non-discrimination and multi-stakeholder consultation. This should be the case also for the national security exception, which we note has been increasingly invoked in the post-9/11 era and in the aftermath of the Snowden revelations. We recognize the sovereign right of all countries to protect their citizens and the integrity of their borders, territories and critical infrastructure, but governments should be held to a certain set of standards in invoking the national security exception, and these standards should be equivalent to those that already apply for the invocation of general exceptions clauses in say, the GATT or GATS, together with a proportionality and necessity test, and subject to the constraints provided by multi-stakeholder consultation.

It would be short-sighted to seek to cherry-pick, by exempting say, privacy and other areas of political sensitivities from the GATT/GATS two-tier test for exceptions, as this would undermine the value of trade commitments and could easily lead to an increasing number of exceptions from commitments that are subjective – rather than objective – and that are self-assessed and may very well be unjustified. In this context, we also understand multi-stakeholder consultation to be a mechanism by which companies and other stakeholders affected by the application of a restrictive measure that is being contemplated, can be afforded ample opportunity to express their position on the proposed measures and to suggest alternative policy responses that would achieve the same regulatory objective but be less trade restrictive. We recognize that this is a bold demand to make, particularly in the present climate, but nevertheless feel that given the rise in digital protectionism the world has experienced over the last several years, and given the overriding importance of digital trade as a driver of such phenomenal and transformative economic growth, this bold new approach is more than warranted.

5.4 Key Points for this Chapter

01

Continued and inclusive growth of the digital economy will best be served by a set of rules that emphasize non-discrimination, orderly competition, transparency, proportionality of regulatory responses, international best practices in domestic regulation, partnership and cooperation, respect for intellectual property rights and a level playing field for all industry players.

Governments have the sovereign right to enact rules governing digital trade, but this right is best exercised through global consensus and global rules and policies, and such rules should be exercised in a spirit of open and transparent international cooperation and while observing the principle of non-discrimination.

02

03

All elements of the global ICT industry and all sectors affected by the digital economy should engage with governments in a constructive and mutually beneficial manner so as to achieve win-win outcomes for governments' development policy and digital connectivity objectives, as well as for the health and vitality of the global ICT industry.

As an emerging industry leader across a broad swathe of the digital value chain and as a global company with vast economic reach, Huawei takes very seriously its role in encouraging, fostering and nurturing an optimal and conducive business and regulatory environment for the digital economy and will work constructively and openly with industry partners and government stakeholders to achieve this objective

04

The next and final Chapter sets out our findings and conclusions from this exhaustive study of the emerging set of trade rules for the digital economy.

CHAPTER SIX | FINDINGS AND CONCLUSIONS

This section presents our findings and conclusions. We essentially conclude that the current emphasis on trade rules and trade negotiations for the digital economy focuses too narrowly on e-commerce to the detriment of other important issues such as various non-tariff barriers that different negotiating fora have addressed with varying levels of ambition but only modest success to date. Because of Huawei’s sheer size and our vast global footprint, we are uniquely positioned to operate across a broad spectrum of the digital economy, but this is both a source of strength as well as posing problems as there may be significant misalignments with how our different customers and stakeholders view the best approach with respect to their own interests. Nevertheless, rules that benefit the global ICT industry as a whole will also benefit Huawei, since a rising tide lifts all boats. The unprecedented growth and success of the internet as a platform for global commerce, communication, and self-expression has been underpinned by the relative openness of regulatory regimes it has enjoyed in the first 25 years since it rose to prominence in the mid-1990s. We must all be vigilant to maintain that openness in a world where the forces of anti-globalization are starting to raise their voices and question the very foundations on which the remarkable economic growth of the last half century has been achieved.

6.1. Huawei’s thought leadership is timely.....91

6.2. These new trade rules will impact Huawei’s interests.....91

6.3. Huawei should be part of the conversation91

6.4. Huawei has much to contribute to this dialogue..... 92

6.5. Huawei’s interests are broadly aligned with the rest of the global ICT industry 92

6.6. We all win in a world where the internet is global, open and accessible..... 92

6.7. Governments must and will remain the arbiters of the public policy exception 92

6.8. National security is vital but cannot be used to justify every policy intervention93

6.9. Regardless of who exercises leadership, these rules ultimately belong in the WTO93

6.1. Huawei's thought leadership is timely

Even before the fate of the TPP became questionable, the timeliness of the present White Paper was never in any doubt. Trade rules specifically designed for the digital economy have been taking shape since 1998 (the year of the WTO's Work Program on Electronic Commerce). But it has only been in the last six years or so that regulatory interventions by policymakers outside of the United States have seen internet companies mobilize in an effort to directly bring about a set of targeted negotiated

outcomes on issues such as the free flow of information, data localization and mandatory disclosure of source code. These efforts although stalled in for a such as the TPP and TiSA, are nevertheless likely to come to fruition at some point in the next few years, perhaps at the WTO, or in RCEP, or in the context of future bilateral agreements. The consensus on where the balance lies between internet freedom and regulatory autonomy now seems to be up for grabs all over again.

6.2. These new trade rules will impact Huawei's interests

Ever since before the conclusion of the Information Technology Agreement (1997) and the elucidation of the above-mentioned WTO Work Program on Electronic Commerce (1998), and particularly as negotiations began in earnest on the TPP (starting in 2010), the global ICT industry and internet companies have been working hard to achieve binding and enforceable trade rules that would maximize the industry's freedom of action, underpin transparency and predictability, and reduce both trade barriers and trade costs for them. These efforts have culminated in a number of early successes (the ITA itself), and ongoing trade and investment liberalization in the form of various FTAs. As part of the global ICT industry and as a company that does business in some 170 countries, Huawei's interests are of course affected in positive ways

by these developments. But the enactment of new rules which have the potential to alter the underlying environmental conditions in which the global ICT industry operates must be carefully studied by a company the size of Huawei. This White Paper has made an initial attempt to do just that. We have found for example, that our Carrier Network business is likely to benefit from further tariff reduction or zero-duty commitments negotiated and being implemented now under the ITA Expansion initiative at the WTO. We also predict that negotiations on non-tariff barriers (NTBs) being contemplated as part of the ITA Expansion work could be of great benefit to us in future, particularly on issues like conformity assessment procedures and electromagnetic compatibility.

6.3. Huawei should be part of the conversation

Because we operate across such a broad swathe of the digital economy and are now an undisputed industry leader in network equipment and devices, we need to make our voice heard, either directly or indirectly, loudly or softly, but should not remain silent. This is even more so the case now that leadership on the negotiation of mega-regional trade negotiations has shifted from the TPP to RCEP. As a China-based multinational, we at Huawei are uniquely placed to contribute to the conversation in the next few years. This White Paper represents a first milestone in this direction. The previous set

of initiatives launched in an effort to write new rules for the digital economy (TPP, TiSA, and TTIP) was to a very large extent influenced by a narrow set of industry players and government actors. With the finalization and ratification of these initiatives now in doubt, this represents a unique moment in history for other voices to be heard and to become part of the conversation. Even if our views and perspectives may not differ radically from those expressed by other actors in the digital economy, it is still important that our voice be heard.

6.4. Huawei has much to contribute to this dialogue

Precisely because of our size, the breadth of our activities and the extent of our reach, we are a company that is uniquely positioned to offer insights into what rules are likely to contribute towards an optimal trade regime for the digital economy. In addition to these attributes, Huawei is fortunate to count among its 170,000

employees, dedicated experts on global trade rules based in Shenzhen as well as in important regional trade-policy capitals such as Brussels and Washington DC. We are in a position and at a unique moment in time where we can provide thought leadership on these important emerging issues.

6.5. Huawei's interests are broadly aligned with the rest of the global ICT industry

Huawei is deeply entrenched in global digital value chains and we have long worked closely with suppliers, partners, customers and other stakeholders in many countries, and across many different product and services markets within the digital economy. As such, we are undeniably a significant part of the global ICT industry, and our prospects rise and fall in conjunction with the general welfare of the global ICT industry as a whole. This means that what's good for the

global ICT industry and for the digital economy is almost certain to be good for Huawei, and what's bad for the global ICT industry and the digital economy in general is likely not going to benefit Huawei either. As the saying goes: "a rising tide lifts all boats" and this saying is very applicable when it comes to policies, measures and trade rules that have an impact on trade flows in the digital economy.

6.6. We all win in a world where the internet is global, open and accessible

Disproportionately restrictive policies enacted for protectionist purposes or without taking into account the realities of the global internet are likely to create negative externalities both within and beyond the borders of the authorities that enact them. In the same way, trade rules that

promote an open, accessible and global internet promote the exchange of ideas, grant open access to the latest ideas and innovation and provide a global public good that benefits the whole ICT industry and all players in the digital economy, including Huawei.

6.7. Governments must and will remain the arbiters of the public policy exception

Huawei recognizes and is completely supportive of the very important role governments can and must play as watchdogs and overseers of the public interest. We also recognize that governments must act when doing so is required to safeguard legitimate public policy interests. However, like many in the industry, and as governments have recognized in fora like APEC,

the OECD and the G20, the invocation of public policy exceptions should be done in good faith and subject to certain agreed limiting principles, such as proportionality, least-trade restrictiveness of measures, and the effectiveness of any measures taken in achieving the purported public policy objectives for which they were imposed.

6.8. National security is vital but cannot be used to justify every policy intervention

We live in a world today where both the public at large as well as governments have become increasingly aware of not only the benefits of a better connected world, but also the risks that greater interconnectivity brings with it. As such, governments are legitimately starting to take a broader and deeper view of what constitutes critical national infrastructure and are becoming increasingly vigilant against potential

cybersecurity threats. Be this as it may, we believe that the national security exception cannot be used as a blank check to justify measures that are essentially protectionist in intent and nature. This is a very sensitive topic, and we also recognize that it must be treated as such. Equally, it should be subject to disciplines which are agreed and reviewable.

6.9. Regardless of who exercises leadership, these rules ultimately belong in the WTO

We view the different initiatives to develop new rules in the context of various FTAs and plurilateral initiatives as a very positive development that we wish to wholeheartedly support. We also recognize that a strong and effective body of rules governing much of the economic activity in the digital economy already exists in the form of the WTO Agreements. The application of those “analog rules” in today’s

digital economy has been highlighted. Given the WTO’s track record in the negotiation and enforcement of these rules, we view it as essential in the medium to long term that any new or updated rules that are enacted to govern the digital economy be brought under the auspices of the WTO and particularly its overriding principle of non-discrimination and its dispute settlement procedures.

REFERENCES AND FURTHER READING

This White Paper is the result of research across a wide range of sources and a number of interviews and discussions with experts from both within and outside of Huawei. Below we have provided as comprehensive a list as possible for the sources we consulted in putting together this White Paper.

1. Adlung, R. (2006, October). Services Negotiations in the Doha Round: Lost in Flexibility? *Journal of International Economic Law*, 9(4), 865-893.
2. Advisory Committee for Trade Policy and Negotiations (ACTPN). (2015). *The Report of the Advisory Committee for Trade Policy and Negotiations*. Washington D.C: SCTPN. Retrieved from <http://www.commoncause.org/fact-sheets/the-political-money-behind-trans-pacific-partnership.pdf>
3. Ahmed, U., & Aldonis, G. (2015). *Addressing Barriers to Digital Trade*. Geneva: E15 Expert Group on the Digital Economy. Retrieved August 02, 2016, from <http://e15initiative.org/wp-content/uploads/2015/09/E15-Digital-Economy-Ahmed-and-Aldonas-FINAL-2.pdf>
4. Baldwin, R. (2016). *The Great Convergence: Information Technology and the New Globalization*. Casmbridge Massachusetts: Belknap Press of Harvard University.
5. Bank, D. (2003, January 15). Microsoft to Let Governments See Source Code for Windows. *The Wall Street Journal*.
6. Barfield, C. (2015). *When Tech and Trade Collide: Digital Policy Challenges and Solutions for 2016 and Beyond*. American Enterprise Institute. AIE.
7. Barray, A. (2015, June 20). *TTIP is unlikely to happen anytime soon and here's why?* Retrieved May 1, 2016, from Vocal Europe: <http://www.vocaleurope.eu/2015/06/20/ttip-is-unlikely-to-happen-anytime-soon-and-heres-why/>
8. Bauer, M., Lee-Makiyama, H., van der Marel, E., & Verschelde, B. (2014). *The Costs of Data Localization: Friendly Fire on Economic Recovery*. Brussels: ECIPE. Retrieved June 3, 16, from http://www.ecipe.org/app/uploads/2014/12/OCC32014__1.pdf
9. Benkler, Y. (2006). *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. Yale University Press: New Haven and London.
10. Berden, K., & Francois, J. (2015). *Quantifying Non-Tariff Measures for TTIP Paper No. 12 in CEPS-CTR project "TTIP in the Balance*. CEPS-CTR.
11. Broadband Commission for Sustainable Development. (2016). *The State of Broadband: Broadband catalyzing sustainable development*. Geneva: ITU and UNESCO.
12. Brodsky, I. (2008). *The History of Wireless: How Creative Minds Produced Technology for the Masses*. St. Louis, Missouri: Telescope Books.
13. Brynjolfsson, E., & McAfee, A. (2014). *The Second Machine Age: Work, Progress and Prosperity in a Time of Brilliant Technologies*. New York: W. W. Norton & Company.

14. Bullock, D., & Couleau, A. (2014, July 8). *Transatlantic Trade and Investment Partnership (TTIP), Part 2: TTIP, Regulatory Harmonization and Non-tariff Barriers to Trade*. Retrieved May 1, 2016, from Policy Matters: <http://policymatters.illinois.edu/transatlantic-trade-and-investment-partnership-ttip-part-2-ttip-regulatory-harmonization-and-non-tariff-barriers-to-trade/>
15. Business Software Alliance. (2012). *Lockout: How a New Wave of Trade Protectionism is Spreading through the World's Fastest-Growing IT Markets – And What to Do about It*. BSA.
16. Bygrave, L. A. (2010). *Privacy and Data Protection in an International Perspective*. Stockholm: Stockholm Institute for Scandinavian Law. Retrieved August 02, 2016, from https://www.researchgate.net/publication/265240559_Privacy_and_Data_Protection_in_an_International_Perspective
17. Carr, N. (2013). *The Big Switch: Rewiring the World from Edison to Google*. New York, London: W. W. Norton & Company.
18. Castro, D. (2013). *How Much Will PRISM Cost the U.S. Cloud Computing Industry?* Washington D.C.: The Innovation Technology & Innovation Foundation. Retrieved August 02, 2016, from <http://www2.itif.org/2013-cloud-computing-costs.pdf>
19. Chander, A. (2013). *The Electronic Silk Road: How the Web Binds the World Together in Commerce*. Yale University Press.
20. Common Cause. (2015). *The Political Money Behind the Trans-Pacific Partnership*. CommonCause.org . Retrieved from <http://www.commoncause.org/fact-sheets/the-political-money-behind-trans-pacific-partnership.pdf>
21. Crawford, S. (2013). *Captive Audience: The Telecom Industry and Monopoly Power in the Gilded Age*. New Haven and London: Yale University Press.
22. Crosby, D. (2016). *Analysis of Data Localization Measures Under WTO Services Trade Rules and Commitments*. Geneva: E15 Initiative, WEF & ICTSD. Retrieved August 02, 2016, from <http://e15initiative.org/publications/analysis-of-data-localization-measures-under-wto-services-trade-rules-and-commitments/>
23. Curtis, J. M. (2016). *Trade and Innovation: Policy Options for a New Innovation Landscape. E15 Expert Group on Trade and Innovation – Policy Options Paper*. Geneva: E15Initiative. Geneva: International Centre for Trade and Sustainable Development (ICTSD) and World Economic Forum. Retrieved August 02, 2016, from http://www3.weforum.org/docs/E15/WEF_Innovation_report_2015_1401.pdf
24. Czernich, N., Falck, O., Kretschmer, T., & Woessmann, L. (2011). Broadband Infrastructure and Economic Growth. *The Economic Journal*, 121(May), 505-532.
25. David Dean, S. D. (2012). *The Internet Economy in the G-20: The \$4.2 Trillion Growth Opportunity*. Boston Consulting Group. Retrieved December 15, 2016, from

- https://www.bcgperspectives.com/content/articles/media_entertainment_strategic_planning_4_2_trillion_opportunity_internet_economy_g20/
26. Dong, J. (2014, October 9). Silicon Valley tech execs: Surveillance threatens digital economy. *Palo Alto Online*.
27. Dutta, S., Lanvin, B., & Wunsch-Vincent, S. (2016). *The Global Innovation Index 2016: Winning with Global Innovation*. Geneva and Beijing: Cornell, Insead, World Intellectual Property Organization.
28. eBay. (2013). *Commerce 3.0 For Development: The promise of the Global Empowerment Network*. Washington D.C.: eBay. Retrieved August 02, 2016, from https://www.ebaymainstreet.com/sites/default/files/eBay_Commerce-3-for-Development.pdf
29. Erixon, F., & Weigel, B. (2016). *The Innovation Illusion*. New Haven: Yale University Press.
30. Erixon, F., & Weigel, B. (2016). *The Innovation Illusion: How so little is created by somany working so hard*. New Haven: Yale University Press.
31. Flies, B. A., & Sauve, P. (1997). *Of Chips, Floppy Disks and Great Timing: Assessing the WTO Information Technology Agreement*. Paris: Organization for Economic Development and Cooperation.
32. Google. (2010). *Enabling Trade in the Era of Information Technologies: Breaking Down Barriers to the Free Flow of Information*. Google. Retrieved from https://static.googleusercontent.com/media/www.google.com/en//googleblogs/pdfs/trade_free_flow_of_information.pdf
33. Goswami, A. G., Mattoo, A., & Saez, S. (2011). *Exporting Services: A Developing Country Perspective*. World Bank. Retrieved June 3, 2016, from <http://elibrary.worldbank.org/doi/abs/10.1596/978-0-8213-8816-7>
34. Greenwald, G. (2014). *No Place to Hide: Edward Snowden, the NSA, and the U.S. Surveillance State*. New York: Metropolitan Books .
35. Grossman, G. M., & Rossi-Hansberg, E. (2006). The Rise of Offshoring: It's Not Wine for Cloth Anymore. *Proceedings - Economic Policy Symposium - Jackson Hole*. Retrieved August 02, 2016, from <https://www.princeton.edu/~erossi/RO.pdf>
36. Hammond, K. J. (2013, May 01). The Value of Big Data isn't the Data. *Harvard Business Review*. Retrieved June 3, 2016, from <https://hbr.org/2013/05/the-value-of-big-data-isnt-the> (visited on 3 June 2016)
37. Hill, J. F. (2012). *Internet Fragmentation: Highlighting the Major Technical, Governance and Diplomatic Challenges for U.S. Policy Makers*. Cambridge, MA: John F. Kennedy School of Public Policy. Retrieved August 02, 2016, from http://belfercenter.ksg.harvard.edu/files/internet_fragmentation_jonah_hill.pdf

38. Hill, J. F. (2014). *The Growth of Data Localization Post Snowden: Analysis and Recommendations for U.S. Policymakers and Business Leaders*. Cambridge, MA: John F. Kennedy School of Government. Retrieved August 02, 2016, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2430275
39. Hogan Lovells. (2016). *Legal Analysis of the EU-US Privacy Shield: An adequacy assessment by reference to the jurisprudence of the Court of Justice of the European Union*.
40. Huawei Technologies Co. Ltd. (2016). *Global Connectivity Index*. Shenzhen: Huawei Technologies Co. Ltd. Retrieved November 15, 2016, from http://www.huawei.com/minisite/gci/pdfs/Global_Connectivity_Index_2016_whitepaper.0614.pdf
41. International Telecommunications Union. (2016). *Measuring the Information Society Report 2016*. Geneva: ITU.
42. International Telecommunications Union. (2016). *White Paper on Broadband Policy and Regulation in Asia-Pacific Region: Facilitating Faster Broadband Deployment*. Geneva: ITU and Huawei. Retrieved November 15, 2016, from http://www-file.huawei.com/~media/CORPORATE/PDF/event/itu-telecom-world-2016/white_paper_on_broadband_regulation_and_policy_in_asia_pacific_region_2016.pdf
43. International Trade Center in partnership with Alibaba Group. (2016). *E-Commerce in China Opportunities for Asian Firms*. Geneva: ITC.
44. International Trade Centre (ITC). (2015). *International E-Commerce in Africa: The Way Forward*. Geneva: ICT.
45. International Trade Centre (ITC). (2016). *Bringing SMEs onto the E-Commerce Highway*. Geneva: ITC.
46. Katz, R. L. (2013). Measuring digitization: A growth and welfare multiplier. *Technovation*, 33(10-11), 314-319.
47. Katzer, D. W. (2005). Exercises in Futility: Post-War Automobile-Trade Negotiations between Japan and the United States. *University of Massachusetts - Amherst Economics Department Working Paper Series*. Retrieved August 02, 2016, from <https://www.umass.edu/economics/publications/2005-16.pdf>
48. Kendrick, K. (2015, February 2015). Risky Business: Data Localization. *Forbes Capital Flows*.
49. Khanna, P. (2016). *Connectography: Mapping the Future of Global Civilization*. New York: Random House.
50. King, B. (2013). *Bank 3.0: Why banking is no longer somewhere you go but something you do*. Singapore: John Wiley & Sons.

51. Kolsky Lewis, M. (2013, September 2). The TPP and the RCEP (ASEAN+6) as Potential Paths Towards Deeper Asian Economic Intergration. *Asian Journal of WTO and International Health Law and Policy*, 8(2), 359-378.
52. Kommerskollegium. (2016). *Trade Regulation in a 3D Printed World - A Primer*. Stockholm: Swedish National Board of Trade. Retrieved June 3, 2016, from http://unctad.org/meetings/en/Contribution/dtl_eweek2016_Kommerskollegium_en.pdf
53. Koutroumpis, P. (2009). The economic impact of broadband on growth: A simultaneous approach. *Telecommunications Policy*, 33(9), 471-485.
54. Kressel, H., & Lento, T. V. (2007). *Competing for the Future: How Digital Innovations are Changing the World*. Cambridge, UK: Cambridge University Press.
55. Kroenke, D., & Auer, D. (2009). *Database Concepts*. New Jersey: Prentice Hall.
56. Lacey, S. (2011). *Implementation of National Broadband Plans: Agreed Regulatory Principles and Their Evolution*. Washington D.C.: SSRN. Retrieved August 02, 2018, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2072855
57. Lacey, S. (2012). *Trade Rules and their Limits: Internet Restrictions as Actionable Trade Barriers*. Washington D.C.: SSRN. Retrieved August 02, 2016, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2072854
58. Lee, T. B. (2015, November 29). *How the TPP could impact regulation of everything from cars to medical devices*. Retrieved from Vox Policy and Politics: <http://www.vox.com/2015/11/29/9760918/tpp-ecommerce-chapter>
59. Lee, T. B. (2015, November 6). *The Trans-Pacific Partnership Explained*. Retrieved from Vox Policy and Politics: <http://www.vox.com/cards/trans-pacific-partnership>
60. Lessig, L. (2006). *Code Version 2.0*. New York: Basic Books.
61. Losse, K. (2012). *The Boy Kings: A Journey into the Heart of the Social Network*. New York: Free Press.
62. Marans, D. (2016, January 27). How the Presidential Election Could Endanger Obama's Big Trade Deal. *The Huffington Post*.
63. McGreggor, J. (2010). *China's Drive for 'Indigenous Innovation' A Web of Industrial Policies*. US Chamber of Commerce.
64. McKinsey Global Institute. (2011). *Big data: The next frontier for innovation, competition and productivity*. McKinsey. Retrieved June 3, 2016, from <http://www.mckinsey.com/business-functions/business-technology/our-insights/big-data-the-next-frontier-for-innovation>
65. McKinsey Global Institute. (2011). *The great transformer: The impact of the internet on economic growth and prosperity*. McKinsey. Retrieved August 02, 2016, from <http://www.mckinsey.com/industries/high-tech/our-insights/the-great-transformer>

66. McKinsey Global Institute. (2014). *Global flows in a digital age: How trade, finance, people, and data connect in the world economy*. McKinsey. Retrieved August 02, 2016, from <http://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/global-flows-in-a-digital-age>
67. Meltzer, J. P. (2015). *A New Digital Trade Agenda*. Geneva: E15 Expert Group on the Digital Economy WEF & ICTSD. Retrieved August 02, 2016, from <http://e15initiative.org/wp-content/uploads/2015/07/E15-Digital-Economy-Meltzer-Overview-FINAL.pdf>
68. Meltzer, J. P. (2015). *A New Digital Trade Agenda E15 Expert Group on the Digital Economy Overview Paper*. Geneva: International Centre for Trade and Sustainable Development (ICTSD) and the World Economic Forum. Retrieved from <http://e15initiative.org/wp-content/uploads/2015/07/E15-Digital-Economy-Meltzer-Overview-FINAL.pdf>
69. Mercurio, B. (2014). *TRIPs, Patents, and Innovation: A Necessary Reappraisal*. Geneva: E15 Expert Group on Trade and Innovation, WEF & ICTSD. Retrieved August 02, 2016, from <http://e15initiative.org/wp-content/uploads/2015/09/E15-Innovation-Mercurio-FINAL.pdf>
70. Michael, H. J. (1990-91). Vital Interests and the Law of GATT: An Analysis of GATT's Security Exception. *Michigan Journal of International Law*, 558-620.
71. Mitchell, A., & Hepburn, J. (n.d.). Don't Fence Me In: Reforming Trade and Investment Law to Better Facilitate Cross-Border Data Transfer. *Yale Journal of Law and Technology (Forthcoming)*. Retrieved 11 15, 2016, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2846830##
72. New Zealand Ministry of Foreign Affairs and Trade. (2016, February 5). *Text of the Trans-Pacific Partnership*. Retrieved from Official Website of the Ministry of Foreign Affairs and Trade of New Zealand | TPP Portal: <https://www.mfat.govt.nz/en/about-us/who-we-are/treaty-making-process/trans-pacific-partnership-tpp/text-of-the-trans-pacific-partnership>
73. Nolte, S. (2016). *The Expansion of the Information Technology Agreement: An Economic Assessment*. European Union . European Commission.
74. Olsen, M., Schneier, B., & Zittrain, J. (2016). *Don't Panic: Making Progress on the "Going Dark" Debate*. Cambridge, MA: The Berkman Center for Internet and Society. Retrieved August 02, 2016, from https://cyber.law.harvard.edu/pubrelease/dont-panic/Dont_Panic_Making_Progress_on_Going_Dark_Debate.pdf
75. Organization for Economic Cooperation and Development. (2013). *Measuring the Internet Economy: A Contribution to the Research Agenda*. Paris: OECD Publishing. Retrieved 12 15, 2016, from <http://dx.doi.org/10.1787/5k439jg6r8jf-en>
76. Organization for Economic Cooperation and Development. (2013). *The Internet Economy on the Rise: Progress since the Seoul Declaration*. Paris: OECD. Retrieved

- August 02, 2016, from <http://www.oecd.org/internet/internet-economy-on-the-rise.htm>
77. Organization for Economic Cooperation and Development. (2014). *OECD Principles for Internet Policy Making*. Paris: OECD. Retrieved August 02, 2016, from <https://www.oecd.org/sti/ieconomy/oecd-principles-for-internet-policy-making.pdf>
 78. Peng, S. (2013). Is the Trade in Services Agreement (TiSA) a Stepping Stone for the Next Version of GATS? *Hong Kong Law Journal*, 43(2), 611-632.
 79. Peng, S.-Y. (2015). Cybersecurity Threats and the WTO National Security Exception. *Journal of International Economic Law*, 18(2), 449-478.
 80. Plummer, M. G., & Petri, P. A. (2015). *The Economic Effects of the Trans-Pacific Partnership: New Estimates*. Washington D.C.: Peterson Institute for International Economics. Retrieved from <http://www.iie.com/publications/wp/wp16-2.pdf>
 81. Putz, C. (2016, February 5). The Ratification Race is On. *The Diplomat*.
 82. Schneier, B. (2006). *Data and Goliath: The Hidden Battles to Collect your Data and Control your World*. New York, London: W.W. Norton & Company.
 83. Schneier, B. (2016). *Data and Goliath: The Hidden Battles to Collect Your Data and to Control Your World*. New York: W. W. Norton & Company.
 84. Schwab, K. (2016). *The Fourth Industrial Revolution*. Geneva: World Economic Forum.
 85. Segal, A. (2016). *The Hacked World Order: How Nations Fight, Trade, Maneuver and Manipulate in the Digital Age*. New York: Public Affairs.
 86. Singh, H. V. (2016). *New Industrial Policy and Manufacturing Options for International Trade Policy*. Geneva: E15 Expert Group on Reinvigorating Manufacturing: New Industrial Policy and the Trade System WEF & ICTSD. Retrieved August 02, 2016, from <http://e15initiative.org/publications/new-industrial-policy-manufacturing-options-international-trade-policy/>
 87. Spence, M. (2011). *The Next Convergence: The Future of Economic Growth in a Multispeed World*. New York: Farrar, Straus and Siroux.
 88. Stair, R., & Reynolds, G. (2001). *Principles of Information Systems*. Boston: Course Technology.
 89. Suffolk, J. (2015). *Cyber Security Perspectives - Bound Volume 2012, 2013, 2014*. Huawei Technologies Co. Ltd.
 90. Telles, R. (2016). *Digital Matching Firms: A New Definition in the 'Sharing Economy' Space*. Economics and Statistics Administration, Office of the Chief Economist. Washington DC: Department of Commerce. Retrieved June 3, 2016, from <http://www.esa.gov/sites/default/files/digital-matching-firms-new-definition-sharing-economy-space.pdf>

91. The Asia Foundation. (2017). *Six Stories, Six Paths to Development: Online Platforms as Drivers of Inclusive Growth*. Bangkok: Asia Foundation.
92. United Nations. (2016). *The Sustainable Development Goals Report*. New York and Geneva: UN.
93. United Nations Conference on Trade and Development. (2016). *Data protection regulations and international data flows: Implications for trade and development*. Geneva: UNCTAD. Retrieved August 02, 2016, from http://unctad.org/en/PublicationsLibrary/dtlstict2016d1_en.pdf
94. United Nations Conference on Trade and Development. (2017). *World Investment Report 2017: Investment and the Digital Economy*. Geneva: United Nations.
95. United States International Trade Commission. (2013). *Digital Trade in the U.S. and Global Economies*. Washington D.C.: USITC. Retrieved August 02, 2016, from <https://www.usitc.gov/publications/332/pub4415.pdf>
96. United States International Trade Commission. (2014). *Digital Trade in the U.S. and Global Economies Part 2*. Washington D.C.: USITC. Retrieved August 02, 2016, from <https://www.usitc.gov/publications/332/pub4485.pdf>
97. United States Trade Representative. (2016). *National Trade Barriers Estimate Report*.
98. Weber, R., & Burri, M. (2012). *Classification of Services in the Digital Economy*. London: Springer.
99. World Bank. (2015). *Potential Implications of the Trans-Pacific Partnership Agreement*. World Bank Group. Retrieved from <http://www.worldbank.org/en/publication/global-economic-prospects/GEP-Jan-2016-Implications-Trans-Pacific-Partnership>
100. World Bank Group. (2016). *World Development Report 2016 Digital Dividends*. Washington DC: World Bank Group.
101. World Trade Organization. (2016). *World Trade Report 2016*. Geneva: WTO.
102. Wu, T. (2010). *The Master Switch: The Rise and Fall of Information Empires*. New York: Vintage Books.
103. Wunsch-Vincent, S. (2006). *The WTO, The Internet and Trade in Digital Products EC-US Perspectives*. Hart Publishing.