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THE INTERNET AS A GLOBAL PUBLIC GOOD AND THE ROLE OF GOVERNMENTS
AND MULTILATERAL ORGANIZATIONS IN INTERNET GOVERNANCE

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ABSTRACT

Internet governance¹ is a bottom-up, multi-stakeholder process in which most developing countries play second fiddle to a few developed countries, large Internet corporations, and civil society. Soft power has been diffused to nonstate actors, thus governments and multilateral organizations have been struggling to play an active role in Internet governance. However, the Internet is a global public good (GPG), therefore achieving the welfare-maximizing global provision of the Internet requires collective efforts coordinated by governments and multilateral organizations.

The social attributes of the Internet as a GPG reflect the importance of the Internet for socioeconomic development and the efforts of governments to provide Internet access for all. The economic attributes of the Internet reflect governance challenges associated with nonrivalry and nonexcludability, the presence of significant transnational positive and negative externalities of Internet provision, and the need for government intervention and multilateral cooperation to achieve an optimal supply of the Internet worldwide.

This study examines the social and economic attributes of the Internet as a GPG, argues for an enhanced role for governments and multilateral organizations in Internet provision, and recommends reforms to the Internet governance system to achieve an optimal global supply of the Internet.

¹ This study employs the broad concept of Internet governance that includes technical, infrastructure, legal, *economic*, *developmental* and sociocultural issues, in accordance with Kurbalija (2012, 15) and the outcomes of the World Summit on the Information Society (UN 2005b, para. 59).

1. Introduction

Because of its social and economic attributes and its global reach, the Internet is a global public good (GPG) that requires government intervention and multilateral cooperation to develop efficiently and uniformly worldwide. The GPG nature of the Internet is reflected in a global underuse and undersupply of Internet access (i.e., the global digital divide) and in the presence of significant transnational positive and negative externalities.

From a social standpoint, the Internet presents intrinsic social value and clear characteristics of a merit good and a human right. The social attributes of the Internet as a GPG validate the importance of the Internet for socioeconomic development, and thus, its strategic placement in public policy agendas in all countries. From an economic standpoint, the Internet presents nonrivalry and nonexcludability in consumption, classic problems in undersupply and underuse, and positive and negative externalities that are too significant for countries to overlook. The economic attributes of the Internet as a GPG validate government intervention on all levels of its provision, including the establishment of international rules and standards; the regulation of telecommunication and Internet access markets; the facilitation of access to information and communications technology (ICT); and the implementation of public policies conducive of an optimal supply of the Internet through legislation, taxation, and trade and industrial policies.

The examination of the social and economic attributes that characterize the Internet as a GPG leads to a novel approach on Internet governance. In this view, nonstate actors are undeniably essential for Internet governance, but given the GPG nature of the Internet, governments and multilateral organizations are ultimately accountable for its provision and therefore should hold a distinguished and secure place in Internet governance.

This essay presents in section 2 an overview of the reach and importance of the Internet from the early stages to the current days. The Internet has grown dramatically in reach due to the recognition of its role as a fundamental driver of socioeconomic development. Every social and economic interaction performed through the Internet has perceived gains in productivity and scale due to the reduction of transaction and coordination costs and the creation of new industries and processes. These gains in productivity have not been perceived equally within and across nations due to the global digital divide and to the differences among countries in the readiness to address the positive and negative externalities of the Internet. Given the increasing importance of the Internet as a driver of socioeconomic development, the global digital divide has the potential to intensify the social and income inequality within and among nations, and to marginalize peoples, firms, and governments that remain offline. In the 1990s, the global community began to identify the potential of the Internet as a public good, emphasizing its public features and a role for governments and international cooperation in its provision.

Section 3 describes the construction of the theory of global public goods (GPGs) in the 1990s, including the Internet. It reviews key milestones for the conception of the Internet as a public good and the seminal literatures on GPGs, and examines the social and economic attributes that characterize the Internet as a GPG. Government intervention is validated through the recognition of the social importance of the Internet and the economic constraints that encumber the equitable and effective development of the Internet. This section also examines the principle of subsidiarity and the role of international cooperation in the provision of the Internet.

Section 4 builds on the concept of GPGs to argue for an enhanced role for governments in Internet governance. It describes the essential elements for the development of the Internet and

prescribes supply-side and demand-policies to optimize the supply of the Internet across all nations.

Section 5 presents the current status of multi-stakeholder and multilateral cooperation in Internet governance. It describes the roles of each stakeholder, the gaps in international cooperation and the reasons for these gaps, how the power dynamics and the global governance system affect Internet governance, and why multilateral cooperation is fundamental for the efficient provision of the Internet as a GPG.

Section 6 concludes with recommendations for the reform of the Internet governance system to enhance the role of governments and multilateral organizations in the provision of the Internet as a GPG.

2. The Reach and Importance of the Internet

The Internet is the global computer network of computer networks. Its contents are hosted in billions of computers, devices, and servers around the world that communicate and exchange information over the physical global communications infrastructure. It was created in the 1960s, and by the end of the 1980s it had expanded from a US network of a few private, academic, and public institutions to a global network that included more than 30 countries. It was privatized and officially opened for commercial purposes in 1990, and it exploded in popularity in 1993 with the invention of one of the first user-friendly graphical web browsers.²

Since then, the Internet has evolved extraordinarily in terms of reach and importance. In 1995, only one percent of the world's population was using the Internet, but it took only ten

² See Trinkunas and Wallace (2015, 5-10)

years to reach one billion users in 2005, and ten additional years to reach 3.2 billion Internet users in 2015. Today, the Internet reaches 44 percent of the world's population.³

The Internet's technical features facilitated the rapid rise in use across the globe, but the underlying reason for the global adoption of the Internet was the recognition of its role as the most efficient medium for communications; as a source of data, information, and knowledge; and as a key driver of socioeconomic development. Throughout history, humanity has thrived on technical progress and the dissemination of knowledge, and the Internet greatly facilitates the achievement of both. It speeds up the adoption and diffusion of technology transversally, in every sector and across countries. It maximizes efficiency in human interactions in the form of reduced economic and social transaction costs; instantaneous communications; expanded goods and financial markets; facilitated commercial and financial transactions; an ever-increasing offer of public and private services; and data, information, and knowledge sharing. Human society is becoming increasingly dependent on the Internet for everyday life and work, and this dependence will only grow stronger with new developments in Internet technologies and services, the creation of new Internet-based businesses, and the extinction of outdated legacy technologies and industries.

The Global Undersupply of the Internet (i.e., the Digital Divide)

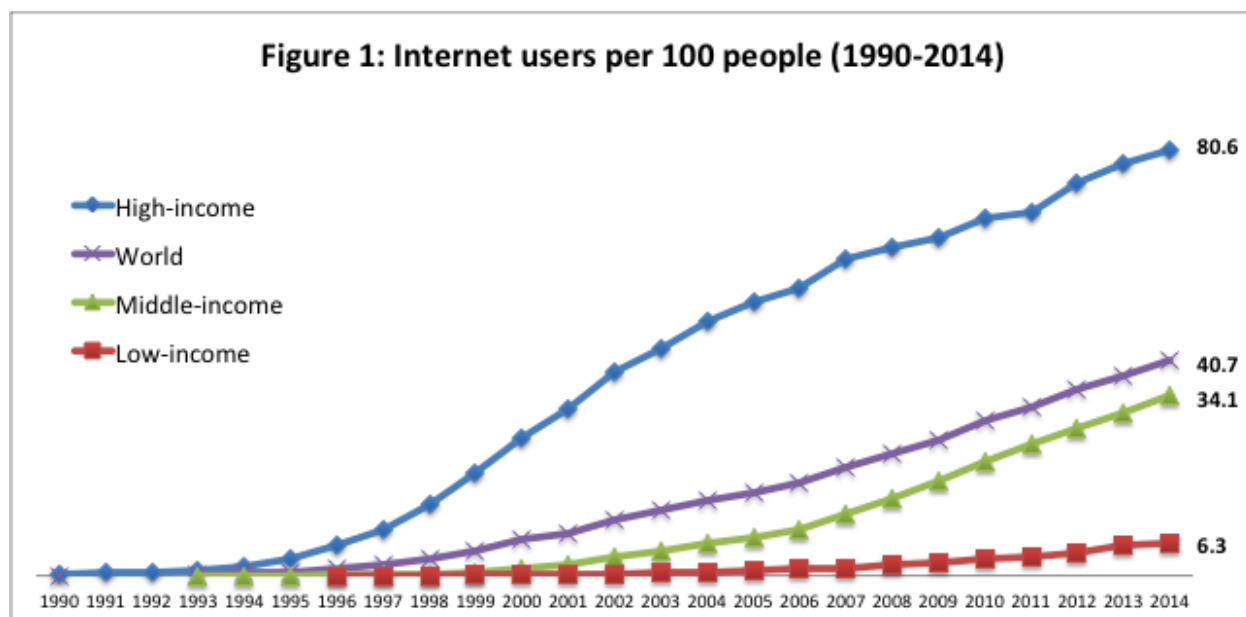
The Internet promotes development through the reduction of transaction and coordination costs and the creation of supply-side and demand-side economies of scale. Thus, as businesses and public services increasingly migrate to the Internet, the rate of Internet penetration becomes a public policy concern and a topic for international cooperation. Having more people online increases the market size, the economies of scale, and the reach of services for firms and

³ Source: ITU statistics website, retrieved March 27, 2016 from <https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx>

governments, enhancing the positive externalities of the Internet for socioeconomic development. But even though the Internet has evolved rapidly, the growth has been highly unequal. Internet access is still unaffordable and not supplied in most poor, disadvantaged, and remote areas of the world, and the global community confronts a profound gap in Internet access within and across countries that marginalizes governments, businesses, and people still outside the Internet, and hinders the aggregate socioeconomic development of the world.

The International Telecommunication Union (ITU 2015, 22) estimates that 18 percent of the population in the developed world and 65 percent of the population in the developing world still do not have access to the Internet. The World Bank (2016, 4) reports that 4 billion people still do not have access to the Internet, 2 billion people do not use a mobile phone, and almost half a billion people live in areas without a mobile signal. In the globalized economy, the global digital divide intensifies the opportunity costs of nonusers and enhances the income inequality gap within and across countries.

Figure 1 (elaborated with data from the World Bank) displays the increasing digital divide in terms of Internet access among high-, middle-, and low-income countries and the world since 1990. At 80.6 percent, high-income countries have more than double the rate of Internet penetration of middle-income countries (34.1 percent), and almost thirteen times the rate of low-income countries (6.3 percent). The Internet has been undersupplied and underused everywhere but in high-income countries.



Source: World Development Indicators (database), World Bank.

The World Bank (2016, 5) argues that the benefits from the dissemination of digital technologies and the Internet are not spreading rapidly enough due to two reasons. First due to a pervasive digital divide that leaves almost 60 percent of the world population offline. Second because the negative externalities of the Internet may be neutralizing its positive externalities.

This overwhelming digital divide and the Internet's increasing negative externalities sparked the attention of the global community in the 1990s. As the importance of the Internet for socioeconomic development became increasingly evident, and as the Internet had been suffering from a severe inequality in access and producing significant negative externalities (e.g., cybercrime, data privacy breach), the global community began envisioning the potential of the Internet as a global public good (GPG) and thus identifying a central role for governments and multilateral organizations in its provision.

3. The Internet as a Global Public Good (GPG)

In the mid-1990s, shortly after its privatization, the Internet became the subject of domestic and international policy concern. Governments, initially in developed countries, began envisioning a potential for Internet-enabled socioeconomic development, thus the issues of human rights, taxation, trade, market regulation, consumer protection, and Internet development entered the policy agenda. The unregulated expansion of the Internet also allowed undesirable behavior such as fraud, cybercrime, and privacy breach to flourish in cyberspace, traversing different countries, jurisdictions, laws, and regulations. Although the Internet had been growing as a bottom-up privately provided good, it began to present high social and intrinsic value, solid economic qualities of *publicness*, and significant transnational positive and negative externalities that were of *global public interest*.

The Global Public Interest on Internet Provision

The conceptualization of the social and economic attributes of the Internet as a global public good (GPG) can be traced to 1994 when the ITU, the United Nations (UN) specialized agency for information and communications technology (ICT), held the first World Telecommunication Development Conference (WTDC-94) in Argentina. In the inaugural speech of the Conference, Al Gore, the then vice-president of the United States, urged the global community to build and operate a Global Information Infrastructure (GII), or in his own words, “a network of networks” that would facilitate information sharing and the ability to connect as a global community (Gore 1994, 1). He then asked ITU Member States “to set an ambitious agenda that will help *all governments*, in their own sovereign nations and in international cooperation, to build this GII [emphasis added]” (2). Purposefully or not, in describing the features and functionalities of the GII, Al Gore was in fact describing the Internet. He also

envisioned a governance framework where governments play a central role both domestically and through international cooperation; therefore, he was delineating the GII (i.e., the Internet) as a GPG whose efficient provision depended on the collective action of governments. Later that year, at the 1994 ITU Plenipotentiary Conference (PP-94) in Japan, Al Gore announced that the 1998 ITU Plenipotentiary Conference (PP-98) would take place in the United States.

WTDC-94 was followed three months after by the 1994 G-7/8 Summit in which the heads of State of the seven largest economies and the president of the European Commission committed to encourage and promote “the development of an *open, competitive and integrated worldwide information infrastructure* [emphasis added]” (G-7/8 1994, *Jobs and growth*, para. 4) and agreed to convene a G-7/8 Ministerial Conference to follow-up on these issues. The 1995 G-7 Ministerial Conference on the Information Society agreed on several important principles, such as a strong role for governments in the interconnectivity and interoperability of global communications, in developing equitable markets and providing universal access, and in promoting international cooperation through the relevant international organizations (G-7/8 1995, para. 8). These G-7/8 outcomes highlight the consensus among the seven richest economies in the world that the provision of the Internet was a fundamental public policy concern.

The year 1998 was a turning point for global Internet governance. In March, ITU Member States at the World Telecommunication Development Conference (ITU 1998a) declared that “the GII, of which the Internet is a precursor, and the global information society (GIS) are evolving and should be responsive to the interests of all nations, especially developing countries” (5, item d, para. 4). In October, PP-98 decisively included the Internet in the scope of the UN.

PP-98 was held in the United States, the country that developed the Internet and spawned it to the world. This time, in the opening address of the Conference, Al Gore left no doubt that the GII was indeed the Internet, but unlike in his speech at WTDC-94, the vice-president did not recognize a central role for governments in Internet governance, but rather proposed a multi-stakeholder, bottom-up governance framework with a strong emphasis on the private sector (ITU, 1998b). This shift from an intergovernmental approach to Internet provision to a market-oriented approach may have been influenced by the US government's unilateral decision to appoint, four months after PP-98, the management of the Internet's critical root zone files to ICANN, a US-based corporation.⁴

Notwithstanding the shift in the US position at PP-98, all 157 ITU Member States signed the Final Acts of the conference recognizing the growing digital divide and adopting strategic goal no. 2 (ITU 1998, 204) on the promotion of global connectivity to the GII. PP-98 also adopted two Resolutions on ITU's role in the management of Internet's technical resources. Finally, PP-98 approved Resolution 73 that instructed the Secretary-General of the ITU to present to the UN a proposal to organize the World Summit on the Information Society (WSIS). The UN became a stage for cooperation on Internet governance issues. The outcomes of PP-98

⁴ Four months after PP-98 (February 26, 1999) the United States Department of Commerce (USDOC) appointed the management of the Internet's root zone files, a critical Internet technical resource, to the Internet Corporation for Assigned Names and Numbers (ICANN), a US-based corporation whose decisions were (are) subordinate to the approval of the USDOC. Governments' participation in ICANN was (is) limited to an advisory capacity in the Governmental Advisory Committee (GAC), but they do not have a seat on ICANN's decision-making board. This unilateral decision by the USA is a milestone in global Internet governance, as it strongly polarized the global Internet governance community into US-supporters (i.e., advocates of multi-stakeholder governance with a diminished role for governments), US-opposers (i.e., advocates of multilateral cooperation with a central role for governments), and some swing States (i.e., advocates of an Internet governance framework with clearly defined roles for State and nonstate actors). More importantly, this decision, although taken over a specific technical element of the Internet's architecture, affected all aspects of Internet governance, including the economic and developmental issues. From this point on, Internet governance became a "battleground" among US-supporters and US-opposers. See Trinkunas and Wallace (2015, 5-10) for more information on the consequences of this unilateral US decision.

reflected a clear, consensual *global public interest* in the technical, economic, developmental, and political aspects of Internet provision.

The Theory of Global Public Goods (GPGs)

The milestone for the concept of the Internet as a global public good came in 1999 from the United Nations Development Program (UNDP), with the development of the theory on global public goods (GPG). The seminal literatures on the Internet as a GPG are the UNDP sponsored books by Kaul, Grunberg, and Stern (1999) and Kaul, Conceição, Goulven, and Mendoza (2003) in which the authors argue that “the Internet is a global public good whose publicness has to be deliberately sought” (1999, xxix), that the Internet infrastructure is a human-made global common (1999, 454), and that the world would greatly benefit from the efficient provision of the Internet (2003, 169). Spar (1999) affirms that “the Internet undeniably has the makings of a public good” (348) and that “the architecture of the Internet is inherently nonexcludable and nonrivalrous” (351). In 2012, Gurnstein proposed that the Internet should be viewed as a GPG “for the development of arrangements and mechanisms to ensure the continuity and development of the Internet in the *global public interest* [emphasis added]” (para. 8).

These statements are founded on two categories of attributes that typify the Internet as a GPG: the social attributes and the economic attributes. The definition of GPGs involves a broader social concept, and a narrow, technical economic concept. The broader social concept includes in the domain of GPGs the goods that present high, intrinsic social value (Kaul et al. 2003, 81-87; Ocampo 2013, 2-8). This concept includes goods that from an economic standpoint are not purely nonrivalrous and nonexcludable, but are provisioned as public goods due to their social and intrinsic value and to societal demands. Conceição (in Kaul et al. 2003) affirmed that “Goods promising high social returns would be prime candidates for investment” (158).

Education and health for example are rival and excludable goods, but considering their high social return and legal status as human rights, their provision falls under the public domain and consume a large percentage of public budgets in most if not all countries. The same reasoning can be applied to the Internet.

The economic attributes of the Internet as a GPG are reflected in nonrivalry in consumption, nonexcludability, the existence of free riders, a global underuse and undersupply, and significant positive and negative externalities. These social and economic attributes require international cooperation to bridge the gaps in use and supply, to manage the shared global communications infrastructure, and to enhance (mitigate) the transnational positive (negative) spillovers of the Internet. The following sections examine the social and economic attributes of the Internet as a GPG, and the need for international cooperation in the efficient provision of the Internet.

3.1 The Social Attributes of the Internet as a Global Public Good (GPG)

The social attributes of the Internet as a GPG pertain to its role as a fundamental enabler of other public goods, merit goods, and human rights, such as knowledge, data, education, the arts, health, equity, peace, security, democracy, freedom of opinion/expression, and freedom of association. They also reflect a vision of the Internet not merely as a revolutionary technology and an enabler of other public goods, but as a fundamental merit good and a human right itself. The social attributes of the Internet underlie the conclusion that ultimately governments are responsible for the provision of the Internet.

For example, Stiglitz (1999, 309) made the case for knowledge as a GPG and observed that there may be significant transaction costs associated with the acquisition and use of knowledge, but once these marginal costs are covered, knowledge becomes a nonrivalrous good.

Herein lies the importance of the Internet for the dissemination of knowledge: it can potentially reduce to zero the marginal costs of the acquisition and use of knowledge. The Internet, for instance, precludes the need for public libraries and print books for the dissemination of knowledge. Stiglitz affirmed that “The Internet is proving to be a tool of immense power in sharing knowledge” (309). Stiglitz also highlighted the power of the Internet in reducing the global knowledge and education gap when he noted that “Today a child anywhere in the world who has Internet access has access to more knowledge than a child in the best schools of industrial countries did a quarter century ago” (309). The International Task Force on Global Public Goods (ITF 2006) emphasized Stiglitz’ arguments by concluding that generating knowledge is one of the six priority global public goods (xviii) and that “digital information technologies [and particularly the Internet] have created new global opportunities for accessing and disseminating knowledge” (66).

There are several examples of the Internet as a fundamental enabler of healthcare through telemedicine and other e-health applications. Spar (1999, 358) noted the important role telemedicine plays in the efficient provision of healthcare in developing countries. In fact, several countries have been providing primary healthcare to remote, rural and underdeveloped areas through the Internet (WHO 2010).

Similar cases have been made by other authors for the Internet as an enabler of other public goods, merit goods and human rights (DeNardis 2014; Kaul et al. 1999; Kaul et al. 2003; La Rue 2011; Nye 2011; Ocampo 2013; Sandler 1999; UN 2003; World Bank 2016). In conclusion, governments have powerful incentives to supply or regulate the provision of Internet because it enables, facilitates, democratizes, and enhances the provision of essential public goods, merit goods, and human rights.

The Internet as a Human Right

As for the Internet as a human right itself; several surveys reflect the general public's opinion that the Internet should be considered a fundamental human right. Table 1 summarizes the results of three major surveys conducted by the British Broadcasting Corporation (BBC), the Internet Society (ISOC), and the Center for International Governance Innovation (CIGI). The ratio of people that believe the Internet should be a basic human right increased from 79 percent to 83 percent from 2010 to 2014. With these results, it can be assumed that the majority of people view Internet access as a public good, consequently enhancing government's responsibilities and obligations in the provision of Internet access.

Table 1: Global public opinion surveys on the Internet as a basic human right

Institution	Year	Respondents	Countries	Regions	Yes, Internet access is a human right (%)
BBC ⁵	2010	27,973	26	All except the Caribbean	79%
ISOC ⁶	2012	10,789	20	All except the Caribbean, Oceania and Central America	83%
CIGI ⁷	2014	23,376	24	All except the Caribbean	83%

Several countries have approved various degrees of legal rights to Internet access in recognition of its intrinsic social value as a public good and its importance to socioeconomic development. In 2011 Frank La Rue, the UN's Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression, submitted a report to the UN Human Rights Council (UNHRC) informing on several developments on this topic. La Rue's

⁵ See "Internet access is a 'fundamental right'", *British Broadcasting Corporation (BBC)*, retrieved June 12, 2016 from <http://news.bbc.co.uk/1/hi/technology/8548190.stm>

⁶ See "Global Internet user survey 2012", *Internet Society (ISOC)*, retrieved June 12, 2016 from <http://www.internetsociety.org/internet/global-internet-user-survey-2012>

⁷ See 2014 "Global survey on Internet security and trust", *Centre for International Governance Innovation (CIGI)*, retrieved June 12, 2016 from <https://www.cigionline.org/internet-survey>

report (2011, para. 65) noted the legislation passed by the parliament of Estonia in 2000 that approved Internet access as a basic human right; the Supreme Court rulings in Costa Rica and France that declared Internet access a fundamental right; and Finland's approval of broadband access to the Internet as a human right. Moreover, Greece in 2008 approved a constitutional amendment ensuring the right of every person to take part in the information society; Spain in 2011 imposed universal and affordable broadband access to the Internet as a legal obligation to Telefónica, the incumbent provider;⁸ and Brazil in 2014 approved a law ("*Marco civil da Internet*" – Civil rights framework for the Internet) to promote the right to Internet access for all (Law 12965, article 4).⁹

The approval of the right to Internet access creates a legal foundation for the provision of Internet access as a public good and as a public service, much like telecommunications in most countries, requiring the enforcement of regulatory measures on Internet provision such as contractual obligations on telecommunication operators to provide fixed and mobile Internet access in remote, rural, and unprofitable areas. For example, the Estonian government launched public Wi-Fi connections after approving the legal right for Internet access. In high-income countries such as Finland and Spain, where the infrastructure is widespread and more developed, the legal right to Internet access includes rollout obligations on operators to provide Internet access at minimum broadband speeds (i.e., above 1 Megabyte per second). In 2016, the City Hall of New York, USA, went a step further and engaged in a public-private partnership with several private firms to provide free gigabit Wi-Fi access (i.e., the "LinkNYC" initiative) through hi-tech totems installed across the city. In the city of New York, the right to Internet access for all is

⁸ See "Rights to Internet access", *Wikipedia*, retrieved June 12, 2016 from https://en.wikipedia.org/wiki/Right_to_Internet_access.

⁹ Official translation to English of the *Marco Civil da Internet* available at <https://www.publicknowledge.org/documents/marco-civil-english-version>.

ensured and high-speed Wi-Fi Internet access will be provided as a public service regardless of the existence of specific laws on the issue.¹⁰

In addition to noting the results of the BBC survey (2011, para. 65), La Rue's report concludes: "Given that the Internet has become an indispensable tool for realizing a range of human rights, combating inequality, and accelerating development and human progress, ensuring universal access to the Internet should be a priority for all States" (para. 85). Governments, as duty-bearers of human rights, are ultimately responsible for the universal provision of the Internet.

3.2 The Economic Attributes of the Internet as a Global Public Good (GPG)

In strict economic sense, the Internet is an impure public good, as its benefits are only partially nonrivalrous and partially nonexcludable. In light of the large asymmetry in access barriers within and among countries, some authors (Barrett 2007; World Bank 2016) acknowledge nonrivalry in consumption but contest the nonexcludability of the Internet, and rather typify it as a club good or as a privately provided good with significant externalities. But the World Bank (2016), despite not recognizing the Internet as a pure public good from an economic standpoint, concedes that "achieving universal and accessible Internet is a legitimate public policy goal" (204). This statement reflects the conclusion on the definition of publicness presented by Kaul et al. (2003): "the defining characteristics of many public goods are not inherent and are often socially endogenous" (86), further enhancing the notion that any good can be provided as a public good if society demands so. Kaul et al. (1999, 2), however, argued that the Internet does fulfill the two basic economic criteria to be considered a GPG: first, it has

¹⁰ See the LinkNYC website: <https://www.link.nyc>.

strong qualities of publicness – nonrivalry and nonexcludability; second, it is universal in terms of countries, people, and generations.

Nonrivalry

Nonrivalry implies that the consumption of a good by someone does not preclude others from consuming the same good, or that, since the marginal cost of providing the good is zero, attempting to exclude someone from enjoying the benefits of a public good is undesirable or more costly than allowing free consumption (Stiglitz 1999, 309). Nonrivalry in the provision of the Internet is sometimes contested because at peak times a high number of users can congest the Internet and temporarily prevent access to other users, and because there are indeed marginal costs in expanding the Internet infrastructure to prevent these congestion problems. But these exceptions can be solved by technical development, economic efficiency, enhanced investments, and effective regulation.

The market for Internet provision, as the market for telecommunications, presents typical characteristics of a natural monopoly such as high entry and sunk costs, large initial infrastructure investments, supply-side economies of scale, limited number of suppliers, market power, concentrated competition, and marginal costs tending to zero. Hence, the Internet is theoretically nonrivalrous in consumption and produces positive externalities due to zero marginal costs in consumption. Eisenach (2015) observed that Internet provision also presents demand-side economies of scale, also known as network effects, which imply that the value of the Internet grows with additional users. Therefore, Internet access not only presents zero marginal costs and economies of scale on the supply-side, but it also produces demand-side economies of scale, validating its nonrivalry in consumption.

As the number of users increase, service providers benefit from gains in scale and a reduction in the individual costs of service. Firms benefit from larger markets, and governments reach more people through public services delivered through the Internet. Eisenach also adds that “Governments often subsidize participation in industries with network effects through direct or indirect government subsidies” (5), therefore making the case for government intervention on Internet access. Governments should promote the expansion of the Internet to enhance its positive externalities, either indirectly through market regulation over private providers, or directly through public investment in infrastructure and public-private partnerships.

Nonexcludability

Nonexcludability implies that no one can be excluded from the consumption of a good once it is provided. Internet access is not, by any means, free of charge: the fees charged by Internet service providers (ISPs) and the costs of access and devices present significant access barriers, particularly in developing countries. However, access to the underlying Internet infrastructure and most contents is readily available to anyone with the basic technical and financial means. Kaul et al. (1999) added that “public goods are, at least partially, nonexcludable. Yet barriers to access are different from excludability” (xxix). The accessibility and affordability of Internet access and devices is a matter of efficiency in supply and demand, sector development, public policies, and effective regulation. Hence, the Internet is theoretically nonexcludable, and therefore gives rise to free riders. Governments should constrain free riding behavior through market regulation, trade liberalization, and fair taxation. However, government intervention must be exercised with caution. As governments levy taxes to compensate for free riders and to subsidize universal service, the costs of services and devices increase for every

user, firms earn lower profits, the Internet reaches less people, and the positive externalities of nonrivalry in consumption may be cancelled out.

The Global Provision Status of the Internet

Conceição (in Kaul et al. 2003, 152-69) argued that assessing the provision status of GPGs is fundamental to achieve the highest social and financial returns from investment; to reduce the costs of inaction and/or corrective actions; and to identify areas for public policymaking. Within his proposed methodology for assessing the provision status of GPGs, he argued that the gaps in Internet access derive from underuse, that is, from access problems reflected in the high prices of Internet access and of devices needed to access the Internet. Although partially accurate, his diagnosis did not reflect the clear undersupply of Internet access in both developed and developing countries, which requires demand-side and supply-side policies for mitigation. The World Bank (2016, 204-228) identifies these demand-side and supply-side gaps in Internet access and prescribes public policy measures to overcome the economic problems related to market power, taxation, trade barriers, free riders, and threats to cyber-security. These policies are discussed further in section 4.

Horizontal and Vertical Free Riders

As noted, the nonexcludability of the Internet gives rise to a free rider problem. The Internet is affected by horizontal (i.e., within the content layer) and vertical (i.e., across the Internet's layers) free riders. One example of horizontal free riders are pirate sites that provide copyrighted content for free (e.g., music, movies, books), reducing the revenue of the creators of contents that would further compensate ISPs for the provision of Internet access. Another example is people that use the passwords of paying subscribers to illegally access paid content on the Internet. Governments should enforce domestic policies to protect intellectual property

rights and increase the affordability of Internet-based content services, to discourage piracy and illegal access, and engage in international cooperation to constrain piracy, illegal access, and other free riding behaviors.

Vertical free riding is one of the current hot topics under debate in Internet policy, and it involves the issue of net neutrality.¹¹ Some ISPs claim that content providers (e.g., Google; Skype; Netflix) are free riders when they are not charged relative to the content they provide over the communications infrastructure. Content providers claim that ISPs would not have paying costumers if there was no content on the Internet; thus, they should not be considered free riders because they essentially create the demand for Internet access. Whichever side one partakes, a fact is irrefutable: ISPs must somehow be compensated to ensure continued investment in the physical infrastructure, to accommodate the ever-increasing demand for Internet coverage and bandwidth. The efficient and universal provision of communications and the Internet, as interdependent GPGs, are under the competence of governments. Governments should clearly define who should finance the communications infrastructure: users, ISPs, content providers, and/or governments themselves; and should mediate a sustainable solution for the vertical free rider debate at the domestic and global level.

Economic Effects of the Internet

As for the economic effects of the Internet, according to the World Bank (2016, 42) the single most important feature of the Internet is the reduction of market failures, such as asymmetry of information and the reduction of transaction and coordination costs, through three main effects. First, the reduction of transaction costs helps overcome information problems. By

¹¹ According to the Merriam-Webster dictionary, net neutrality is “The principle that Internet service providers [ISPs] should enable access to all content and applications regardless of the source, and without favoring or blocking particular products or websites.”

reducing the costs of acquiring and sharing information, the Internet reduces the asymmetry of information among economic agents, avoids adverse selection problems, and benefits consumers and producers. To illustrate how the Internet helps overcome adverse selection, the World Bank report presented the classic example by Akerlof (1970) for the used cars market, which suffers from an asymmetry of information between sellers –who have more information about the quality of the cars on sale– and buyers –who cannot assess accurately the real value of used cars. Today there are Internet sites that provide the whole history of used cars, thus overcoming the adverse selection problem and enabling the accurate pricing of cars. Moreover, the Internet has created many businesses and processes that were not feasible or possible before the Internet due to high transaction costs (e.g., mobile money services enabling credit ratings and financial services for the poor; Airbnb connecting travelers with suppliers of accommodation; online auction sites joining buyers and sellers of almost anything; small local businesses supplying to the global market).

Second, the reduction of transaction costs lends greater efficiency and productivity for existing businesses and processes, and expands industries and services. Coase (1937) claimed that high transaction costs of acquiring inputs to production prevent firms and governments from procuring intermediate goods and services from the market, constraining trade and production specialization, and providing incentives for the internal production of intermediate goods and services. In the presence of high transaction costs, firms and governments have incentives to be larger than necessary and produce internally what would otherwise be best acquired from external suppliers. By reducing transaction costs among existing businesses and processes, the Internet facilitates global and local value chains, fosters increased trade, and enhances productivity horizontally across all industries and services.

Third, the World Bank (2016) notes that “For many internet-based businesses or services, fixed up-front costs can be high, but once the online platform is in place, each additional customer, user, or transaction incurs very little extra cost” (43). The automation of routine human labor reduces transaction and coordination costs and gives rise to various types of economies of scale on both supply and demand. Thus, Internet businesses and services operate at virtually zero marginal costs, injecting nonrivalry in consumption into many goods and services, enhancing the positive externalities of larger scales in production, and enabling reductions in price and/or expansions of supply.

3.3 The Role of International Cooperation in Internet Provision

Due to its social and economic attributes, the Internet requires government intervention and international cooperation to achieve an optimal level of provision. Andersson (cited in ITF 2006), Bryant (cited in Kaul et al. 1999), Kaul et al. (1999; 2003), Ocampo (2013), and Sandler (2004) apply the principle of subsidiarity to define the level at which intervention is most efficient in the provision of GPGs. This concept is introduced to clarify the jurisdiction of the issues surrounding the provision of the Internet and how the subsidiarity principle highlights the role of governments and multilateral organizations in Internet provision.

Ocampo (2013) then presents the three objectives of international cooperation in the social and economic field in the provision of GPGs and the role of governments and intergovernmental organizations, and Barrett (2007) proposes a taxonomy of the types of GPGs and the global incentives to supply GPGs.

The Principle of Subsidiarity

The principle of subsidiarity establishes the appropriate jurisdiction for policymaking and implementation efforts in the provision of GPGs. Andersson (cited in ITF 2006) provided the simplest explanation of this principle: “The principle of subsidiarity—the idea that problems should be solved closest to where they occur—is important in providing global public goods” (103). In Kaul et al. (1999) subsidiarity equates to “moving decision-making on priorities and implementation as close to the local level as possible” (xxviii). Bryant (cited in Kaul et al. 1999) explained that the intention of subsidiarity is to “reduce information problems, promote peer reviews, facilitate more diversified policy advice and ultimately create better-fitting solutions” (477).

Sandler (2004) added that “the political jurisdiction should coincide as closely as possible with the region of spillovers so that those affected by the public good determine its provision decision” (85). Sandler clarified the economic importance of subsidiarity in the provision of GPGs: when the coordinating jurisdiction reaches beyond the range of the public good spillovers, there is a possibility of oversupply; when the coordinating jurisdiction does not reach all affected agents, there is a possibility of undersupply. Another economic reason for the principle of subsidiarity is that it reduces transaction costs by reducing the number of participants in coordination to just those with a stake in the activity.

Because of these economic reasons, Ocampo (2013, 2-8) advocates for the application of strong subsidiarity principles in achieving the three basic objectives of international cooperation with respect to the provision of GPGs: (i) managing the interdependence among nations; (ii) fostering the adoption of common social standards and providing a minimum level of services; and (iii) reducing inequalities among countries.

Managing the Interdependence Among Nations

The first objective of international cooperation is managing the interdependence among nations in the provision of GPGs. Ocampo attributes to this objective the efficient provision of GPGs with regards to addressing their economic attributes, that is, with a view to achieving a welfare-maximizing global supply of goods that are *purely* nonrivalrous and nonexcludable in consumption, or that generate significant externalities. He further includes in the domain of the first objective two additional issues: the management of global/regional commons; and the management of shared infrastructure and networks (e.g., telecommunications and the postal system).

The Internet meets all the criteria proposed by Ocampo for a GPG requiring the management of interdependence among nations: its architecture is inherently nonexcludable and nonrivalrous (Spar 1999, 351); it presents significant positive and negative externalities; it is a human-made global common (Spar 1999, 454); and it functions over a globally shared telecommunication infrastructure. As discussed, the Internet's nonrivalrous features produce transnational supply-side and demand-side economies of scale; therefore, international cooperation aims to maximize these positive externalities by connecting every country and their populations to the Internet. Nonexcludability gives rise to transnational free riders; therefore, international cooperation aims to constrain free riding behavior and include every nation and users as active contributors to the provision of the Internet's infrastructure and services. Nations are interdependent in the provision of the Internet because the information exchanged on the Internet is transmitted through globally standardized transport, routing, and application (i.e., transactional) protocols over the globally harmonized radiofrequency spectrum and the interconnected and interoperable global telecommunications infrastructure.

In the absence of international cooperation to manage the interdependence among nations on Internet governance, the Internet would simply not be operable. ICT devices, websites, and Internet applications and services would not be able to interconnect and exchange information without global standards for the transactional protocols. The Internet would not physically reach every nation and would be limited in its scope and reach without interconnection agreements involving nations and private companies. The Internet would cease to be a public good, much less a global good. Hence, subsidiarity in matters of interdependence among nations in the provision of the Internet determines that policy-making and/or binding agreements should take place at the international level.

International cooperation is fundamental for the provision of GPGs because their basic elements are supplied through the cooperation of several transnational stakeholders, including governments and nonstate actors. The Internet is a seamless, uniform, and open global network of computers because all stakeholders cooperate to make its architecture and services interoperable across borders, networks, devices, and services. Herein lies the importance of managing the interdependence among nations for the efficient provision of the Internet: establishing global standards for the uniform operation of Internet infrastructure, services, and devices. These global standards and agreements are achieved through international cooperation at the multi-stakeholder (i.e., involving nonstate actors) and multilateral (i.e., intergovernmental) level.

The role of governments and multilateral cooperation in the management of the interdependences related to the Internet is firmly established: to negotiate and sign international agreements for the interoperability and interconnectivity of the Internet; to internalize global technical standards into the national legal and industrial frameworks; and to implement domestic

policies to prevent national spillovers from affecting the global provision of the Internet (Kaul 2013, Box 2.3, 55).

Barrett (2007, 20, Table I.1) provides important insights on the application of the subsidiarity principle in managing the interdependence among nations in the provision of GPGs. He proposed a taxonomy of GPGs based on how they are supplied. GPGs are supplied through five main channels: a *single best effort* from a country or a collection of countries; the enforcement of compliance to global standards by all actors, but particularly by the *weakest links*; an *aggregate effort* involving all countries; the enforcement of *mutual restraint* on all countries; and by *coordination* that ensures countries abide by the same rules and do the same things. The provision of the Internet and all its elements encompasses all five of these supply channels at the international level. Table 2 provides (non-exhaustive) examples of the scope of policymaking on Internet issues, the incentives for international cooperation, the key stakeholders involved, the status of financing and cost sharing, and the international organizations where cooperation takes place. Table 2 clarifies the crucial role of multilateral organizations in Internet provision.

Table 2: Barrett's taxonomy of Global Public Goods applied to the Internet

Supply channel	Single best effort	Weakest link	Aggregate effort	Mutual restraint	Coordination
Supply depends on...	Single best unilateral or collective effort	The weakest individual effort	The total effort of all countries	Countries not doing something	Countries doing the same thing
Barrett's example	Asteroid defense	Disease eradication	Climate change mitigation	Non-use of nuclear weapons	Standards for the measurement of time

Internet's example	Transactional protocols (e.g., TCP/IP)	Combating cybercrime	Bridging the digital divide	Non use of cyber-warfare	Radiofrequency spectrum allocation
International cooperation needed?	Yes, to define universal standards	Yes, to establish basic rules and frameworks for cooperation	Yes, to provide technical/regulatory expertise and financial aid	Yes, to agree on what countries should not do	Yes, to ensure interoperability of devices across borders
Incentives for international cooperation	Companies at the technology frontier build the best protocol standards	Attacks can be launched from any country, but particularly from countries with lackluster cyber-security frameworks	Maximizing global demand-side economies of scale	Protection of human rights	Maximizing global supply-side economies of scale
Main (and secondary) stakeholders	Private sector (governments)	Governments (private sector)	Governments (private sector)	Governments (civil society)	Governments (private sector)
Financing and cost sharing needed?	Yes (e.g., promoting international cooperation)	Yes (e.g., building localized response and monitoring centers)	Yes (e.g., rich countries building infrastructure in poor countries)	No	Yes (e.g., promoting international cooperation)
International institutions for provision	IETF, W3C	UN, ITU	ITU, Development banks	UN	ITU

Addressing the Social Attributes of the Internet Through International Cooperation

Even though Ocampo restricts the provision of GPGs to the first objective of international cooperation, he acknowledges that non-economists have expanded the application of the concept of “publicness” to those goods that society defines as of public interest due to their inherent social rather than economic attributes, which Ocampo labels as *Global Social Goods (GSGs)*. This broader concept pertains to the social attributes of the Internet as a GPG, as discussed in section 3.1, or as a GSG, as labeled by Ocampo. According to Ocampo, the second

objective of international cooperation is the provision of GSGs, understood as common social standards and a minimum level of social services for all world citizens.

Recalling section 3.1, the Internet has intrinsic social value for two reasons: it enables and enhances the provision of fundamental merit goods and human rights; and it has been increasingly considered a basic human right itself. Society has defined that Internet access is a common social standard, thus, Internet access should be provided as a GSG by governments and through international cooperation. As discussed, Internet provision suffers from several constraints, reflected in its economic attributes as a GPG; in the gaps in infrastructure, investment, and quality of service; and in the affordability of ICT devices, and Internet access and services. As sections 3.2 and 4 demonstrate, these constraints fall under the domain of governments, and are mostly addressed by national public policies. The role of international cooperation in the provision of GSGs is to agree on benchmark strategies; transfer of expertise, knowledge, and procedures; establish technical, regulatory, social, and economic standards; and define basic common rules to be respected by all stakeholders.

Ocampo's third objective of international cooperation is the reduction of international inequalities, in particular of different levels of economic development among nations. International cooperation aims to mitigate the asymmetries that characterize the international economic system, such as the technological and productive gaps between rich and poor countries. In the case of the Internet, these asymmetries are reflected in the pervasive digital divide that enhances income inequalities within and among countries.

International cooperation is fundamental for the reduction of the global, regional, and national digital divide in many ways. First, through official development assistance (ODA) and the direct transfer of technology, technical and regulatory expertise, and investment capital. This

mode of cooperation enables poor countries to leapfrog stages of development and overcome technical, financial, regulatory, and institutional gaps. Second, through the reduction of the information and knowledge asymmetry between rich and poor countries, enabling poor countries to establish benchmarks policies and regulatory frameworks for the efficient provision of the Internet. Third, through the establishment of rules that creates preferences for developing countries, such as the trade principle of “special and differential treatment”, and the sustainable development principle of “common but differentiated responsibilities”. In the case of the Internet, for example, this could translate to facilitated access to new technologies notwithstanding the existence of intellectual property rights.

4. The Role of Governments in Internet Governance

In 1996, Barlow opined that “By creating a seamless global economic zone, borderless and unregulatable, the Internet calls into question the very idea of the nation-state,” and Negroponte stated that “The Internet cannot be regulated. It’s not that laws aren’t relevant, it’s that the nation-state is not relevant” (both cited in Drezner 2004, 480-1).

There are several problems in these statements. Perhaps Barlow and Negroponte meant them as premonitions of a distant (and improbable) future where nation-states will have ceased to exist and law will no longer be required. It is not, however, the intention of this study to scrutinize handpicked libertarian quotes, but to highlight that these libertarian views are still defended today, twenty years later, to various degrees by several developed countries, large Internet corporations and civil society, which do not recognize or opportunely disregard the social and economic attributes of the Internet as a GPG and thus neglect an enhanced roles for governments and multilateral organizations in Internet governance.

Rodrik (2011), Drezner (2004), and Nye (2011) present more realistic and grounded arguments. Rodrik warns that “As powerful as ICTs are, we should not assume that they will lead us down the path of global consciousness or transnational political communities” (231) and adds that “We may think we live in a world whose governance has been radically transformed by globalization, but the buck still stops with domestic policy makers” (208). Drezner affirms that “States, particularly the great powers, remain the primary actors for handling the social and political externalities created by globalization and the Internet”(478). And even though Nye demonstrated the diffusion of soft power from nation-states to nonstate actors (loc. 2045), he emphasized that “States will remain the dominant actor on the world stage” (loc. 2006). These authors acknowledge the important roles nonstate actors play in Internet governance, but they emphasize that nation-states are ultimately responsible for promoting the issues of global public interest, and therefore for promoting the provision of the Internet.

However, to question the libertarian views on the Internet it would suffice to engage in a logical exercise. Imagine that nation-states are no longer relevant because the Internet has empowered global citizens and created a global community unbounded by physical borders. The creation of such a global community would still require that *every* global citizen is an Internet user. If not far fetched for the reasons expressed in the paragraph above, the libertarian view is at least far from being realized simply because there is an enormous and pervasive digital divide within and among countries. The Internet may indeed become an affordable and universal commodity, maybe even provided for free like in the city of New York, but it will only happen once all nations build national and international frameworks to overcome the Internet’s constraints as a GPG.

Furthermore, these constraints are universal and transcend the political issue of lack of legitimacy of undemocratic countries, as they pertain only to the social and economic attributes of the Internet. In the globalized economy, if undemocratic countries wish to spur inclusive economic growth, they necessarily need to address the Internet's constraints as a GPG.

There are still 4 billion Internet nonusers, and as Figure 1 shows Internet growth has been unequal with the vast majority of nonusers in developing countries. Not surprisingly, Internet uptake has been high only in high-income countries where governments are effective in solving the Internet's constraints as a GPG. Stiglitz (1999) explains that "The central public policy implication of public goods is that the state must play some role in the provision of such goods; otherwise they will be undersupplied" (311). Governments play a key role in the provision of Internet as investors and promoters of infrastructure; as makers and enforcers of legislation; as protectors and promoters of the rule of law; as market regulators; as representatives of the interests of society; and as providers of social welfare.

High-income countries normally present robust foundations for development in the form of effective institutions and regulations; competitive markets; efficient business environment; and accurately prescribed industrial, financial, labor, trade, social, and market policies that enable the private sector as an efficient, though regulated provider of public goods, including the Internet. As a result, in high-income countries telecommunications and Internet infrastructure are efficient and universal; strong market competition drives down prices of telecommunications, Internet access, and devices; efficient financial markets and regulations support continuous investment; and users and the civil society are empowered by effective public institutions and a functioning rule of law. These are traits that middle- and low-income countries severely lack.

Given time, middle- and low-income countries might hopefully develop strong foundations for development and catch up with high-income countries in terms of Internet penetration, affordability, and reliability. But is it not desirable to allow these countries to develop on their own, taking whatever time is necessary to build strong foundations for Internet development. The Internet's positive externalities as an enabler of socioeconomic development are too numerous to disregard, and as Spar (1999) explained "it is in the developing world where the positive externalities from the Internet promise to be most powerful" (358). Furthermore, all governments will rely more on the Internet to improve governance and provide a wider range of public services and public goods to more citizens. All businesses will rely more on the Internet to deliver more products and services, reduce costs, increase market size, increase productivity, create more jobs, and increase returns from scale. Every individual will rely more on the Internet for communication, education, health, work, and leisure. And every country will rely more on ICT and the Internet as enablers for the achievement of *all* sustainable development goals by 2030 (UN 2015, para. 12).

Similarly, the negative externalities have become too significant for governments to overlook. Cybercrime, cyber-warfare, cyber-terrorism, cyber-espionage and privacy breaches increasingly disrupt communications, businesses, finance, commerce, and public services, and present severe threats to global political stability. If developing countries do not effectively build strong foundations and institutions for the provision of the Internet and for the mitigation of cyber-threats, they will become the main sources of attacks and global threats to cyber-security. Moreover, if the digital divide persists, the adverse effects of the increasing global income inequality will only amplify.

Domestic public policies and international cooperation are fundamental to address the social (i.e., high intrinsic value) and economic (i.e., nonrivalry; nonexcludability; the presence of significant externalities) attributes of the Internet as a GPG. In the domestic domain, governments should strengthen the “analog components” for overall productivity and apply specific demand-side and supply-side policies (World Bank 2016, 206-252). These include market regulations conducive of fair competition, infrastructure development, and obligations on universal service; public-private partnerships; improved trade infrastructure and reduced trade barriers and import tariffs; fair tax regulations that finance public investments and institutions; a justice system that applies the rule of law and ensures the fulfillment of contracts; an education system that builds skills required for the use of ICT and the Internet, and the development of national ICT industries; and a legal and operational framework that constrains threats to cybersecurity and promotes the secure flow of data and information.

The central concern of this study is to establish the importance of governments and multilateral cooperation in Internet provision. Notwithstanding the fact that nonstate actors are fundamental stakeholders in all matters related to Internet provision, and that advanced economies delegate the provision of the Internet to the regulated private sector, there are four key areas in which the role of governments is particularly dominant: enacting legislation; fostering competition; enforcing taxation; and implementing trade and industrial policies.

Legislation

The social attributes of the Internet reflect its high intrinsic social value and the increasing demands by society that the Internet should be provided as a public good for all at a minimum level of quality and service. As representatives of societal demands, makers of legislation, and enforcers of the rule of law, governments should first translate societal demands

on Internet provision into law. With the force of a law, governments are able to elaborate and implement policies, establish institutions, and allocate budgets to support the provision of the Internet as a public good. This legislative process should be held through multi-stakeholder consultations to take into account the views of the private sector and civil society, but governments play a crucial role in coordinating these consultations and consolidating all the different views into consensual solutions that enhance the welfare of society as a whole. When governments take decisions, some win, some lose, and many stakeholders leave the process worse off, but governments have the mandate to decide on what makes society as a whole better off, and the coercive power to enforce compliance. Additionally, governments can make everyone better off by compensating the losers.

Market Competition

With regards to fostering competition, telecommunication operators provide the physical links to the global Internet infrastructure either directly to their end users or indirectly via agreements with other ISPs. Those operators compete in typical oligopolistic markets with market power, and therefore have the capability to impose higher prices than the welfare-maximizing equilibrium price, and have incentives to provide service only in profitable areas.

In the national domain, governments enable the efficient provision of the Internet by fostering competition in the telecommunications market, overseeing prices and conditions of service, enforcing specific network rollout obligations in unprofitable areas, and levying fair taxes on businesses and users to subsidize the regulatory framework and investments in infrastructure. In the international domain, governments negotiate international agreements for the harmonized use of the radiofrequency spectrum and of satellites for wireless communications, and for the interconnection of national telecommunications' infrastructure to

the international fiber optics network. These regulatory measures aim at driving access prices down to their welfare-maximizing level and ensuring the universal provision of telecommunications and Internet, including in non-profitable areas. These measures enhance the positive externalities produced by nonrivalry, such as zero marginal costs, and aim to provide universal access for all, including the poor and disadvantage. They also mitigate the negative externalities produced by nonexcludability, such as the existence of free riders that do not contribute to the provision of the Internet.

Taxation

Taxation is instrumental to address the social and economic attributes of the Internet as a GPG and to optimize supply. Taxes serve two functions in the provision of the Internet: an income generation function and a regulatory function. Taxes provide income for governments that is reinvested in the provision of public services, public goods, merit goods, and basic human rights for all, including the Internet. The income function of taxation is clearer in poor countries, where inefficient markets are not able to adequately supply public goods and governments act as direct investors and providers of these goods.

In the case of telecommunication services and Internet access the existence of market power, nonrivalry, nonexcludability, and significant negative externalities gives rise to a regulatory function for taxation. Taxation on telecommunication services and Internet access serves several economic/regulatory purposes: redistributing income through subsidized access to the poor; providing revenue earmarked for regulatory institutions and activities; providing capital for public investment in infrastructure in unprofitable areas and the provision of universal access; compensating for free riders that are unwilling to contribute to the provision of telecommunications and the Internet; and financing institutions and frameworks aimed at

mitigating the negative externalities of telecommunications and the Internet (e.g., cyber-security enhancement; ICT training and skills; the disposal of electronic waste).

Taxation, however, can become a significant cost burden on Internet access if taxes are imposed for the wrong reasons. Miller and Atkinson (2014, 6-24) argue that many governments impose taxes for four reasons other than the income and the regulatory functions: (i) ICTs are “easy” to tax because telecom companies keep extensive real-time, digital records of their services; (ii) ICTs are still seen as luxury items, thus taxation is not frowned upon; (iii) ICTs are high-growth markets that hide the negative effects of taxation on consumption; (iv) as the socioeconomic importance of ICTs increases, the price-elasticity of demand of ICTs has been decreasing, thus demand is becoming more inelastic relative to price and people are consuming ICTs even with price increases due to taxation.¹² In these four cases, taxation is a cost burden that reduces both ICT penetration and the income of people and businesses that use and/or rely on ICTs, affecting particularly poor people and small and medium enterprises. In summary, taxation is a crucial variable in the provision of the Internet, and is fundamentally a public policy tool under the control of governments. Hence, governments must directly engage in international cooperation to clarify the outcomes of taxation on all stakeholders and to apply optimized, successful taxation policies aimed at reducing the number of taxes and fees, reducing the total cost of taxes and fees, and facilitating the payment and collection of taxes.

Trade and Industrial Policy

Trade barriers in goods and services also significantly affect the global and local provision of the Internet as a GPG. Import tariffs and local content requirements, for instance, prevent the acquisition of the best inputs to production; undermine the efficiency of the markets

¹² See Miller and Atkinson (2014, 8, Table 1).

for Internet access and devices; and reduce foreign direct ownership and investment. Legal barriers, content licensing, intellectual property rights' rules, and specific taxes on e-commerce raise prices and prevent users from accessing international contents, goods, and services. Bauer, Lee-Makiyama, Van der Marcel and Verschelde (2014, cited in the World Bank 2016) draw attention to non-tariff protectionist barriers such as data nationalization (i.e., local data storage) requirements, which can “reduce GDP by up to 1.7 percent, investments up to 4.2 percent, and exports by 1.7 percent” (37). Unwillingness to transfer technology from developed to developing countries increases the technical gap and the digital divide. Moreover the affordability, availability, and accessibility of Internet access affect the costs of business operating on the Internet and of using Internet services for e-commerce and cross-border transactions, therefore, protectionist barriers that increase the costs of Internet access and ICT devices transversely increase the costs of doing business in an economy. The lack of ICT and the Internet also reduces overall labor and economic productivity.

Trade liberalization is key to enhance the affordability, availability, and accessibility of Internet access, and it is fundamentally a product of policy decisions and agreements negotiated among governments. The provision of the Internet as a GPG depends on the relatively free flow of ICT devices and of cross-border services delivered online through websites and smartphone applications. Governments can foster the development of Internet access and services by reducing tariff and non-tariff barriers on imports of inputs to the ICT industry; exposing companies to foreign competition and investment; including domestic markets in ICT global value chains; promoting the development of national suppliers of ICT equipment and services; and engaging in trade agreements for the reduction of tariffs, transfer of technology, and liberalization of telecommunications and Internet services. These trade agreements include

bilateral and regional agreements, and multilateral agreements approved in the scope of the World Trade Organization (WTO).

The Information Technology Agreement (ITA) signed in 1996 by 29 WTO members is an example of the importance of government intervention and international cooperation in the provision of ICT and Internet access. The ITA eliminates tariffs on 201 information technology (IT) goods and on inputs to the IT industry (e.g., computers; telephones; software; data storage and manufacturing equipment; telecommunications equipment; semiconductors). Today there are 82 WTO members participating in the ITA, representing 97 percent of the global IT products' trade.¹³ Ezell and Atkinson (2014, 9-20) argue that the ITA was responsible for more than doubling the share of global exports of ICT in developing countries (from 31 to 70 percent) from 1996 to 2012. Additionally, the WTO (2012, 57) reported that the total trade of ICT products increased three-fold from 1996 to 2010, with telecommunication equipments having increased more than five-fold. This reflects an enormous uptake in the consumption of telecommunication devices and in investments in telecommunication infrastructure necessary to access the Internet, which has potentially fostered the reduction of the digital divide in ITA signatories.

Threats to Cyber-Security

Finally, threats to cyber-security are the foremost negative externality of the Internet, as they undermine the use and supply of Internet by reducing trust in Internet services and increasing costs to businesses and governments. These threats are usually conducted by anonymous agents through several international connection points. Governments play a key role in restraining threats to cyber-security by upgrading national legislation that addresses undesirable behavior in cyberspace; promoting regulations and institutions that increase the

¹³ "Information Technology Agreement (ITA)" website, retrieved June 19, 2016 from https://www.wto.org/english/tratop_e/inftec_e/inftec_e.htm

resilience and stability of national and international networks; and engaging in international cooperation for the establishment of a harmonized and cooperative global framework to improve cyber-security and constrain cyber-crime and other criminal online activities.

Developing countries could enhance these policymaking areas by themselves, but as discussed in Ocampo (2013) the third objective of international cooperation is bridging the inequality gaps among rich and poor countries. Developing countries do not need to invent from scratch new institutions, regulatory frameworks, laws, toolkits, and financial models to build strong foundations for Internet provision: countries at the technological frontier have already invented the best existing practices. However, developing countries do require the cooperation of advanced countries in a level playing field to present their specific issues and adapt existing solutions. They also require the transfer of technology, financial aid, and expertise. These goals are achieved by multilateral cooperation.

5. The Status of Multi-Stakeholderism in Internet Governance

The social and economic attributes of the Internet as a GPG produce global challenges and transnational externalities that are of global public interest, thus international cooperation is crucial to optimize Internet provision at a global level. Such international cooperation involves the collaboration among governments, private companies, civil society, intergovernmental organizations, international organizations, and the academia in a comprehensive, complementary manner, each in their own competence and contributing with specific expertise, capabilities, and functions. Multi-stakeholder governance is a key principle of Internet governance, and fundamental for the provision of the Internet as a GPG.

Multi-Stakeholderism: The UN Consensus versus the Reality

The UN's World Summit on the Information Society (WSIS) recognized the importance of multi-stakeholderism and enshrined it in a multilateral, consensual outcome. The "Tunis Agenda for the Information Society" (UN 2005a, para. 35-6), one of the outcome documents of WSIS, established the role of each key stakeholder in Internet governance, taking into account their normative functions, their legal competencies, and the principle of subsidiarity.¹⁴ In summary:

- governments have the sovereign right of policy-making in Internet-related public policy issues;
- the private sector should promote the technical and economic development of the Internet;
- civil society should act at the community level;
- multilateral organizations (MOs) should facilitate the coordination of Internet-related public policy issues;
- international (i.e., non-governmental or multi-stakeholder) organizations should promote the development of Internet-related technical standards and relevant policies;
- the academic and technical communities should contribute with the above stakeholders to the evolution, functioning, and development of the Internet.

These roles are confirmed by the vast literature available on the subject (e.g., DeNardis 2014; Drezner 2004; ITF 2006; Kaul et al. 2003; Mueller 2010; Nye 2011). Every stakeholder plays a fundamental role in Internet governance, and the absence of any stakeholder presents a gap that cannot be fulfilled by the others. The roles identified by WSIS for governments and MOs (i.e., respectively, policy-making in Internet-related public policy issues and the facilitation of the coordination among governments in Internet-related public policy issues) should be particularly emphasized. As discussed, governments and MOs are essential to address the social

¹⁴ See appendix A for the full text of paragraphs 35 and 36 of the "Tunis Agenda for the Information Society."

and economic attributes of the Internet as a GPG. Governments and MOs are also fundamental enablers and facilitators of the work of the other stakeholders and the overseers of compliance. They lay the foundations, institutions, and common rules and standards to be observed by the private sector, civil society, international organizations, and the academic and technical communities. They also enforce and ensure the compliance of all stakeholders with the rule of law.

The Gaps in Governmental and Multilateral Participation in Internet Governance

Yet as a result of the Internet's historic technical development, early private success, and international power struggles, Internet governance has been conducted as a bottom-up, multi-stakeholder process strongly resistant to the involvement of governments and MOs in the roles identified by the WSIS. Undeniably nonstate actors do play a crucial role in Internet provision through their expertise, agenda-setting abilities, and power to monitor and enhance accountability, however, Edwards and Zadek (2003) illustrated the problems with the sole involvement of nonstate actors in international cooperation for the provision of GPGs.

First, nonstate actors lack legitimacy to represent society as a whole: they represent the interests of their immediate constituents, and are accountable only to these constituents. Second, global nonstate networks are asymmetrical and often dominated by organizations based in industrial countries. Third, the quantity and diversity of businesses and civil society groups make it impossible for each one to participate equally. Fourth, different types of nonstate actors have different mandates, interests, and characteristics, and these differences make it dangerous to generalize about the role of nonstate actors in securing global public goods. Fifth, corporations may also try to undermine public policies that enhance the delivery of global public goods (e.g., going against market regulation on telecommunications and the provision of Internet). Sixth, the

sheer number of nonstate actors presents practical problems in terms of the logistics for their participation in multi-stakeholder meetings, and in the efficiency of decision-making processes involving hundreds if not thousands of stakeholders. Edwards and Zadek (2003) summarize the issue as follows:

the role of nonstate actors is not to replace governmental or intergovernmental decision-making but to complement it. Nonstate actors can present and deliberate on policy positions, but it is up to elected governments to balance different interests and arrive at policy decisions. Nonstate actors have a right to a voice but not necessarily to a vote in global governance. (216).

These problems are amplified in the case of Internet provision, since most developed countries, Internet firms, and the civil society view the participation of governments and MOs as detrimental to Internet provision. But given the social and economic attributes of the Internet as a GPG, it is necessary to enhance the Internet governance framework by duly recognizing and empowering all governments and MOs.

Drezner (2004, 482-90) provides important insights on the reasons why nation-states and MOs are marginalized in international cooperation for the provision of the Internet as a GPG. He claims that global governance has a higher chance for success if great powers have converging interests. In cyber-security, for example, there are converging interests in constraining cyber-crime and cyber-terrorism, but there are diverging interests in the establishment of rules for cyber-warfare and data privacy. Some nations (i.e., the owners of hard power with means for cyber-warfare and data surveillance) are favored by fewer regulations while others are favored by stricter regulations. Therefore, in the absence of consensus between great powers, there is no international coordination and the global community resorts to private solutions.

Another example is content censorship. Every nation exerts content censorship to various degrees, despite protests from corporations and civil society. In 2011, Egypt shut down the

country's entire web domain for five days to repress the Arab spring. In 2015-16, court rulings in Brazilian states shutdown the "Whatsapp" instant messaging application in the entire country for days, disrupting users and businesses. The United States blocks child pornography. France blocks Nazi memorabilia. These examples support Drezner's argument (2004, 498) that it is the nation-states' prerogative to let private actors take the governance lead, but nation-states will intervene to advance their desired end. Furthermore, as discussed, there are policy areas that fall under the strict competence of governments and in which they are not likely to surrender sovereignty, such as legislative power, taxation, trade policies, and enforcing the rule of law, and these areas are key for the efficient provision of the Internet.

There are numerous international multi-stakeholder organizations that engage in Internet governance, but they basically reflect the power struggles and asymmetries that take place in MOs. In essence, great powers are able to actively participate in both multi-stakeholder organizations and MOs, but in the absence of consensus among governments, great powers favor multi-stakeholder organizations where they exert influence over the outcomes either directly or through nonstate actors. This presents a problem for developing countries, which do not have financial or human resources to participate in these nongovernmental organizations, and therefore do not influence the harmonization of global standards and do not benefit from international cooperation. Nongovernmental organizations are important and helpful, but as Dervis (2005) noted, "the role and power of nongovernmental organizations is not sufficiently comprehensive or even legitimate to substitute for real reform" (61).

It is paradoxical that nation-states have for decades agreed on the importance of cooperation for economic development and have established intricate frameworks to achieve this goal, but Internet governance, as essential as it is for economic development and social inclusion,

is still a very contentious field with meager multilateral consensus. It is also paradoxical that developed countries have promoted larger, decentralized, bottom-up multi-stakeholder frameworks for Internet governance, while they have turned to smaller, focalized multilateral elite governance frameworks (e.g., G7/8, G20) in search of facilitated decision-making processes for other important global issues.

But it is not surprising. Internet governance is a field where developed countries strongly manifest their political agendas and private interests, similarly to their stances on free trade. They own the largest corporations, civil society organizations, and latest technologies, thus they favor fewer regulations and are resistant to transferring technology and surrendering their comparative advantages. Developing countries, however, need to impose larger regulations and benefit from the transfer of technology, financial resources, and expertise to develop their own industries. As developing countries constitute the majority of votes in MOs and therefore favor MOs, rich countries turn to informal, private solutions.

Both sides should aim for compromise solutions. Developed countries should empower MOs as relevant venues for Internet governance, thus increasing the legitimacy of Internet governance through the larger representation of developing countries. Developing countries should aim to conciliate their views with the concerns of developed countries, to achieve consensual agreements that produce mutual benefits. Nonstate actors should continue to provide their crucial expertise, agenda-setting abilities, and monitoring functions at the national level and in multi-stakeholder organizations and MOs. Multi-stakeholder organizations, in turn, should continue to provide valuable technical inputs to MOs. And MOs should effectively use the inputs provided by nonstate actors and multi-stakeholder organizations to enhance the legitimacy, reach, and efficiency of their outcomes. But the crux of the issues is the empowerment of MOs,

as these are the favored venues for the great majority of nation-states, and particularly by the developing ones.

Governments basically pursue five specific objectives through international cooperation: strengthening national policy-making; governing the global Internet infrastructure; facilitating the cross-border exchange of goods and services; bridging the digital divide within and among nations; and mitigating the negative transnational externalities of the Internet. The global Internet governance system should be reformed to achieve these five key objectives for the efficient provision of the Internet as a GPG.

6. Achieving Effective Multi-Stakeholderism in Internet Governance

Achieving an optimal global supply of the Internet depends on the establishment of an efficient and inclusive multi-stakeholder Internet governance system, with empowered governments and multilateral organizations (MOs). Ocampo (2013) proposed six criteria for rethinking the global structure of international cooperation for the provision of GPGs: (i) strong subsidiarity principles; (ii) reliance on a dense network of global, regional and national institutions; (iii) reliance on small but representative decision-making bodies that help overcome the tension between inclusiveness and effectiveness; (iv) equitable participation of developing countries in decision making; (v) effective instruments of monitoring international commitments; and (vi) guaranteeing the coherence of the system. These are applicable to the Internet governance system.

Edwards and Zadek (2003, 200) presented two key challenges to the provision of GPGs: (i) effectively involving nonstate actors; and (ii) “ensuring that nonstate involvement is structured to avoid the dangers of special interest politics” (200), to prevent stalemates and behaviors that favors one group over another. They added that “These two tasks must be

approached together and will require a radical overhaul of the rules of global governance to ensure that state and nonstate capacities are combined effectively” (200). The measures to implement this “radical overhaul” in the scope of Ocampo’s six criteria for global cooperation in the provision of global public goods are presented as follows.

First, subsidiarity is important to ensure that decision-making reaches all relevant stakeholders, so they effectively contribute and take benefit of the provision of the Internet. As the Internet is a GPG, the resources critical to its provision should be managed in the international domain. The management of the Internet’s domain names system (DNS), generic top-level domains (e.g., .com; .edu), and country code top-level domains (e.g., .br; .uk; .fr) is performed by ICANN, a non-profit organization based in the United States. ICANN markets itself as a multi-stakeholder organization, but the public sector and governments are under-represented. The Governmental Advisory Committee (GAC) of ICANN, composed of governments, acts as an advisory body to the board of ICANN, but its decisions are non-binding and the ICANN board can decide to disregard them. Furthermore, ICANN is subject to the laws of the State of California and the United States, and its decisions are subordinate to the approval of the US Department of Commerce. ICANN’s current structure harms Ocampo’s principles of subsidiarity and of equitable participation by developing countries. ICANN should be internationalized; it should be bound to international law; and governments and MOs should have an active role in policy-making along with other nonstate actors.

Second, the existing network of regional and international nongovernmental and MOs must be reviewed, to foster greater collaboration and the official exchange of outcomes. The importance of both types of organizations should be mutually recognized, and channels for participation provided. Nongovernmental organizations should recognize the importance of

governments and MOs and allow them to participate in their decision-making processes. MOs (e.g., UN, ITU, WTO, World Bank) should adapt to the new reality of more influential and participative nonstate stakeholders in the provision of the Internet. MOs should provide opportunities for nonstate actors to clarify whom they represent and how they are held accountable to their constituents. MOs should provide open and inclusive channels for the inputs of nonstate actors to the policy debates among governments. These may take the form of online public consultations and physical multi-stakeholder meetings the day(s) before official intergovernmental meetings and conferences. Finally, MOs should hold multi-stakeholder forums that “encourage honest debate among governments, business, and civil society organizations around the same table, without fear of co-optation” (Edwards and Zadek 2003, 217). These forums should provide official outcome documents as inputs for intergovernmental policy-making meetings and conferences. For example, the UN and the ITU hold several multi-stakeholder forums related to Internet governance, such as the Internet Governance Forum (IGF), the WSIS Forum, and the Regional Development Forum, but only the last two provide official outcome documents to be used by policy-making bodies. The IGF should provide recommendations and consensual outcome documents as official inputs to decision-making multilateral conferences and summits. These conferences and summits should formally contain agenda items for discussions on the official outcomes of legitimate, recognized multi-stakeholder forums and organizations.

Third, the policy-making process should be streamlined to increase efficiency and produce consensual decisions. As discussed, multi-stakeholderism holds several practical problems in terms of logistics and the large and increasing number of relevant nonstate actors. Consensus among thousands of stakeholders is simply not realistic and practical; neither is to

expect that sovereign nation-states will accept the participation of corporations and civil society on an equal footing to governments. Therefore, consensus should be a gradual and continuing process, starting from bottom-up regional multi-stakeholder organizations whose outcomes feed into regional and global intergovernmental policy-making bodies such as the UN, the ITU, WTO, and the World Bank.

Fourth, it is imperative that developing countries are assured an equitable participation in policy-making, as these are the countries where the Internet is most undersupplied. However, the multi-stakeholder model presents several difficulties to the implementation of this principle. As discussed, most active nonstate actors are based in industrial countries, thus, allowing their participation on an equal footing results in the over-representation of the interests of industrial countries. While the interests of nonstate actors may translate to gains for society as a whole, and their ideas may certainly be useful and applicable in several circumstances, their participation reduces the availability of time in meetings and conferences for developing countries to have an active voice. Nonstate actors should present their views in separate, dedicated forums that produce official outcomes to be discussed by governments in MOs on an equal footing. To foster the participation of developing countries, it is inevitable that final policy-making take place at MOs.

Fifth, the creation of effective instruments to monitor international commitments is crucial to ensure compliance in issues related to the interdependence among nations. Countries that host critical infrastructure elements and resources, such as submarine fiber optics cables and satellites, must ensure the resilience and interconnectivity of the Internet's global infrastructure. The future discussions on global policies for cyber-security and data privacy will require a strong monitoring framework to ensure compliance to cyber-security standards, mutual restraint on

cyber-warfare and cyber-espionage activities, and international collaboration to curb cyber-crime and cyber-terrorism.

Finally, ensuring the coherence of the global Internet governance system is important to avoid duplication of efforts, to strengthen coordination, and to enhance the collaborative efforts of nonstate actors, nongovernmental organizations, governments, and MOs.

7. Conclusion

The Internet presents clear social and economic attributes of a global public good. The social attributes of the Internet reflect society's consensus that the Internet is a fundamental driver of socioeconomic development, and therefore should be provided for all. The pervasive digital divide threatens to intensify the increasing global income inequality and hold back the world's pursuit for sustainable development. Governments should provide Internet access as a public good, to take benefit from the gains in economic productivity and social inclusion. Multilateral cooperation is essential to address the social attributes of the Internet as a GPG through the establishment of common standards and a minimum level of Internet access for all, and the reduction of inequalities and the digital divide.

The economic attributes of the Internet manifest themselves in the global underuse and undersupply of the Internet, in the inequality in access, in the existence of free riders, and in the positive and negative externalities of Internet provision. Governments and multilateral cooperation are essential to enhance the global supply-side and demand-side economies of scale, include free riders as contributors to the provision of the Internet, and build strong foundations for the equitable development of the Internet within and among countries.

Governments and nonstate actors have a direct interest in promoting universal access to the Internet, but the social and economic attributes of the Internet as a global public good make it

inevitable for governments to take center stage in Internet governance, particularly on issues such as legislation enforcement, market regulation, taxation, and trade policies. The transnational features of the Internet as a global public good accentuate the importance of international cooperation and the roles of multilateral organizations in the management of the interdependences among nations. The efficient global provision of the Internet will only be achieved if governments and multilateral organizations are empowered and fulfill their roles in Internet governance.

Multi-stakeholder governance is a key feature of Internet governance, and it should be strengthened. But multilateral cooperation should be empowered, to lend legitimacy and to enable the participation of the whole world in Internet governance on an equal footing.

But the global Internet governance system requires mindset and structural reforms. Mindset reforms pertain to the recognition that the Internet is a GPG, therefore, its provision falls under the competence primarily of governments. As a global good, there is interdependence among nations in its provision, therefore, intergovernmental cooperation and collaboration is inevitable and necessary. These facts are validated by the theories on global public goods, international relations, and economics. Developed countries, large Internet corporations and the civil society should transform their mindset and recognize that the Internet is a GPG, and that without intergovernmental debate and collaboration poor countries are unlikely to bridge the digital divide.

One way forward is strengthening multilateral cooperation in less contentious and mutually beneficial areas of Internet governance, such as bridging the digital divide. As an example, if rich countries are not willing to engage in multilateral discussions or transfer technology, they could provide direct aid for the development of communications'

infrastructures in developing countries, as they do for water, sanitation, electricity, and other essential GPGs. Such aid should be provided in terms of direct investments and transfer of expertise, not through unconditional grants. Such a measure presents clear mutual benefits: it increases the market size for corporations in rich countries, and it develops essential infrastructure in developing countries. If countries are successful in bridging the global digital divide and boost the Internet's positive externalities, perhaps the mutual benefits in constraining the negative externalities will become clearer, thus, building potential for multilateral cooperation in other areas such as cybersecurity and net neutrality.

Structural reforms are required to effectively and efficiently include nonstate actors in the provision of the Internet as a GPG. They should be an integral part of the decision-making process at multilateral bodies such as the UN, ITU, WTO, and the World Bank. However, nonstate actors lack legitimacy to represent society as a whole and therefore cannot be regarded on the same level as sovereign nations, which represent their entire populations. There are thousands of nonstate actors with different and specific agendas; therefore, simply including them carelessly into existing multilateral organizations is not efficient or feasible. These nonstate actors originate mostly in developed countries; thus, developed countries' interests are over-represented. Developing countries do not have the financial and human resources, the technical developments, and the expertise to develop efficient Internet provision on their own or to participate in all nongovernmental and intergovernmental organizations. There is an asymmetry in the Internet governance system that must be addressed.

There are several important nongovernmental, multi-stakeholder organizations where nonstate actors prevail. They produce fundamental outcomes that should be taken into account in policy-making bodies. As policy-making is the competence of governments, these outcomes

should be formally discussed in intergovernmental organizations. The Internet is a global public good; therefore nation-states are ultimately accountable for the provision of the Internet and should hold a distinguished and secure place in Internet governance.

Further research could examine the following specific topics: the coherence of the Internet governance system as a whole and the implications of overlaps and duplication of efforts on transaction and coordination costs; the gains in affordability through the reduction/elimination of trade barriers; the economic efficiency of fair taxation in telecommunication and Internet markets; the economic and political barriers to the establishment of a global cyber-security framework; the economies of scale in the standardization of telecommunication and Internet services; the effects of zero-rating policies on digital inclusion; and the economic effects of net neutrality on Internet provision.

References

- Akerlof, George A. 1970. "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism." *Quarterly Journal of Economics* 84 (3): 488–500.
- Andersson, Gun-Britt. 2006. "In pursuit of Global Public Goods." *Magazine for Development and Cooperation*. Available at www.inwent.org/E+Z/content/archive-eng/05-2006/foc_art1.html.
- Barrett, Scott. 2007. *Why cooperate? The Incentive to Supply Global Public Goods*. New York: Oxford University Press.
- Bauer, Matthias, Hosuk Lee-Makiyama, Erik Van der Marcel, and Bert Vershelde. 2014. "The Costs of Data Localization: Friendly Fire on Economic Recovery." *ECIPE Occasional Paper 3/2014*, European Centre for International Political Economy, Brussels.
- Bryant, Ralph C. 1995. *International Coordination of National Stabilization Policies*. Washington, DC: Brookings Institution.
- Coase, Ronald H. 1937. "The Nature of the Firm". *Economica* 4 (16): 386–405.
- DeNardis, Laura. 2014. *The Global War for Internet Governance*. New Haven: Yale University Press.
- Dervis, Kemal. 2005. *A better globalization: Legitimacy, Reform, and Governance*. Washington, DC: Brookings Institution Press.
- Drezner, Daniel W. 2004. "The global governance of the Internet: Bringing the State back in." *Political science quarterly* 119 (3), 477-98.
- Edwards, Michael, and Simon Zadek. 2003. "Governing the Provision of Global Public Goods: The Role and Legitimacy of Nonstate Actors." In *Providing Global Public Goods: Managing Globalization*, edited by Inge Kaul, Pedro Conceição, Katell Le Goulven, and Ronald U. Mendoza, 200-24. New York: Oxford University Press.
- Eisenach, Jeffrey A. 2015. *The economics of zero rating*. Research paper for the National Economics Research Associates (NERA).
- Ezell, Stephen J., and Robert D. Atkinson. 2014. "How ITA expansion benefits the Chinese and global economies." *Information Technology and Innovation Foundation (ITIF)*. Washington, DC: ITIF.
- G-7/8. 1994. *Summit Communiqué*. Naples: G-7/8.

- G-7/8. 1995. *Chair's conclusions*. Ministerial Conference on the Information Society. Brussels: G-7/8.
- Gore, Al. 1994. "Inauguration of the First World Telecommunication Development Conference (WTDC-94): Remarks." *Speech delivered at the 1994 World Telecommunication Development Conference*. Buenos Aires: ITU. Retrieved March 27, 2016 from <http://handle.itu.int/11.1004/020.1000/4.144.57.en.104>
- Gurnstein, Mike. 2012. *Towards the Internet as a global public good* [blog post]. Retrieved March 24, 2016 from <https://gurstein.wordpress.com/2012/12/20/towards-the-internet-as-a-global-public-good/>
- ITF (International Task Force on Global Public Goods). 2006. *Meeting Global Challenges: International Cooperation in the National Interest*. Final Report. Stockholm, Sweden.
- ITU (International Telecommunication Union). 1994. "Final Acts." *ITU Plenipotentiary Conference 1994 (PP-94)*. Kyoto: ITU.
- _____. 1994a. "Final Report." *World Telecommunication Development Conference 1994 (WTDC-94)*. Buenos Aires: ITU.
- _____. 1998. "Final Acts." *ITU Plenipotentiary Conference 1998 (PP-98)*. Minneapolis: ITU.
- _____. 1998a. "Final Report." *World Telecommunication Development Conference 1998 (WTDC-98)*. Valetta: ITU.
- _____. 1998b. "Minutes of the Opening Ceremony (doc. 98-E)." *ITU Plenipotentiary Conference 1998 (PP-98)*. Minneapolis: ITU.
- _____. 2015. *Measuring the information society report 2015*. Geneva: ITU.
- Kaul, Inge. 2013. "Meeting Global Challenges: Assessing Governance Readiness". In Hertie School of Governance, *The governance report* (33-58). Oxford: Oxford University Press.
- Kaul, Inge, Pedro Conceição, Katell Le Goulven, and Ronald U. Mendoza (Eds.). 2003. *Providing Global Public Goods: Managing Globalization*. New York: Oxford University Press.
- Kaul, Inge, Isabelle Grunberg, and Marc A. Stern. (Eds.). (1999). *Global Public Goods: International Cooperation in the 21st Century*. New York: Oxford University Press.
- Kurbalija, Jovan. 2012. *An Introduction to Internet Governance, Fifth Edition*. Geneva: DiploFoundation.

- La Rue, Frank. 2011. "Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression", *United Nations Human Rights Council, Seventeenth session, Agenda Item 3*. Geneva: UNHRC.
- Miller, Ben, and Robert D. Atkinson. 2014. "Digital Drag: Ranking 125 Nations by Taxes and Tariffs on ICT Goods and Services." *Information Technology and Innovation Foundation (ITIF)*. Washington, DC: ITIF.
- Mueller, Milton. 2013. *Networks and States: The Global Politics of Internet Governance*. Cambridge, MA: The MIT Press.
- Nye, Jr., Joseph S. 2011. *The Future of Power*. Perseus Books Group. Kindle edition.
- Ocampo, Jose A. 2013. *Global Economic and Social Governance and the United Nations System*. Working Paper. IPD-ECLAC project on global governance.
- Rodrik, Dani. 2011. *The Globalization Paradox: Why Global Markets, States, and Democracy can't Coexist*. Oxford University Press. Kindle edition.
- Sandler, Todd. 2004. *Global Collective Action*. Cambridge: Cambridge University Press.
- Stiglitz, Joseph E. 1999. *Knowledge as a Global Public Good*. In *Global Public Goods: International Cooperation in the 21st Century*, edited by Inge Kaul, Isabelle Grunberg, and Marc A. Stern, 308-25. New York: Oxford University Press.
- Spar, Debora L. 1999. *The Public Face of Cyberspace*. In *Global Public Goods: International Cooperation in the 21st Century*, edited by Inge Kaul, Isabelle Grunberg, and Marc A. Stern, 344-63. New York: Oxford University Press.
- Trinkunas, Harold, and Ian Wallace. 2015. *Converging on the Future of Internet Governance: The United States and Brazil*. Washington, DC: The Brookings Institution.
- UN (United Nations). 2003. *Geneva Declaration of principles*. World Summit on the Information Society. Geneva: United Nations.
- _____. 2003a. *Geneva Plan of Action*. World Summit on the Information Society. Geneva: United Nations.
- _____. 2005. *Tunis Commitment*. World Summit on the Information Society. Tunis: United Nations.
- _____. 2005a. *Tunis Agenda for the Information Society*. World Summit on the Information Society. Tunis: United Nations.
- _____. 2015. A/RES/70/125: *Outcome document of the high-level meeting of the General Assembly on the overall review of the implementation of the outcomes of the World Summit on the*

Information Society. United Nations General Assembly, 70th Session. New York: United Nations.

World Bank. 2016. *World Development Report 2016: Digital Dividends*. Washington, DC: World Bank. doi:10.1596/978-1-4648-0671-1. License: Creative Commons Attribution CC BY 3.0 IGO

_____. Various years. World Development Indicators (database). Washington, DC: World Bank, retrieved April 27, 2016 from <http://data.worldbank.org/data-catalog/world-development-indicators>.

WEF (World Economic Forum). 2016. *Internet Fragmentation: An Overview*. Geneva: WEF.

WHO (World Health Organization). 2010. *Telemedicine: Opportunities and Development in Member States*. Geneva: WHO.

WTO (World Trade Organization). 2012. *Fifteen years of the Information Technology Agreement*. Geneva: WTO.

Appendices

Appendix A: Paragraphs 35 and 36 of the Tunis Agenda for the Information Society (UN, 2005a)

35. We reaffirm that the management of the Internet encompasses both technical and public policy issues and should involve all stakeholders and relevant intergovernmental and international organizations. In this respect it is recognized that:
- a. Policy authority for Internet-related public policy issues is the sovereign right of States. They have rights and responsibilities for international Internet-related public policy issues.
 - b. The private sector has had, and should continue to have, an important role in the development of the Internet, both in the technical and economic fields.
 - c. Civil society has also played an important role on Internet matters, especially at community level, and should continue to play such a role.
 - d. Intergovernmental organizations have had, and should continue to have, a facilitating role in the coordination of Internet-related public policy issues.
 - e. International organizations have also had and should continue to have an important role in the development of Internet-related technical standards and relevant policies.
36. We recognize the valuable contribution by the academic and technical communities within those stakeholder groups mentioned in paragraph 35 to the evolution, functioning and development of the Internet.