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## Rationales for Convergence and Multisector Regulation

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# Rationales for Convergence and Multisector Regulation

## 1. Introduction

The objective of this paper is to critically examine the multiple rationales for ICT and media convergence regulation and multisector utility regulation. With regard to ICT and media convergence, there is focus on the policy and regulatory issues raised by convergence developments at the technical and market levels (convergence regulation), while in the case of multisector regulation, emphasis is on the institutional aspects (regulatory convergence). However, substance and form are interrelated. Multisector regulatory institutions are based on joint cross-sectoral technical and market-based developments and common regulatory issues with respect to infrastructural utilities. In the paper, the conditions that may affect the creation of convergence and multisector regulation, ranging from underlying commonality of inputs and the behavior of regulated firms to considerations that are specific to the regulatory process such as scarcity of regulatory resources and safeguards for regulatory independence are, therefore, examined.

## 2. Definitions of Industry, Sector and Multisector

An industry is defined in terms of substitution possibilities in consumption.<sup>1</sup> Theoretically, complete substitutability would be the test of an industry. In reality, a high degree of substitutability defines an industry. For purposes of regulation, it is more common to define the scope of regulatory agencies in terms of 'sectors', rather than single industries. A sector is a set of closely related industries, which have a degree of substitution possibilities and, furthermore, substantial complementarities. The higher the substitution possibilities, the more likely the term industry will be used over sector.

As consumption or production conditions change, the definitions of industries and sectors will change. For many decades, the telecom industry was seen as distinct from both the data communication industry and the broadcast industry because there were few substitution possibilities. Improvements in packet switching have increased substitutability for circuit switching on the production side. Substitution of IP based services for conventional voice telephony is becoming more feasible on the consumption side.<sup>2</sup> This has led to the classic telecom industry and the data communication industry being seen as converging into one industry. In regulatory terms, this is not as much of a watershed as claimed because the two industries have for a long time been seen as part of the same sector, evidenced for example by the Computer Inquiries initiated by the US Federal Communications Commission more than 30 years ago.<sup>3</sup>

In Canada and the United States, the broadcast and telecom industries have for a long time been regulated by the same federal agencies, albeit by distinct divisions. Bolivia, Brazil, Burundi, Guatemala, Honduras, India, Jordan, Kyrgyzstan, Nigeria, Tanzania, Venezuela and Zambia are among the developing countries said to have convergence regulatory agencies or to be seriously considering them.<sup>4</sup> Recent technological changes have affected the substitutability of cable services, which may be considered a segment of the broadcasting industry, on the production side. This makes

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<sup>1</sup> For discussion of industry (or market) definitions, including the principles developed in anti-trust case law, see Scherer, F. M. and Ross, David (1990). *Industrial market structure and economic performance*, 3<sup>rd</sup> edition (Boston: Houghton Mifflin), pp. 73-79.

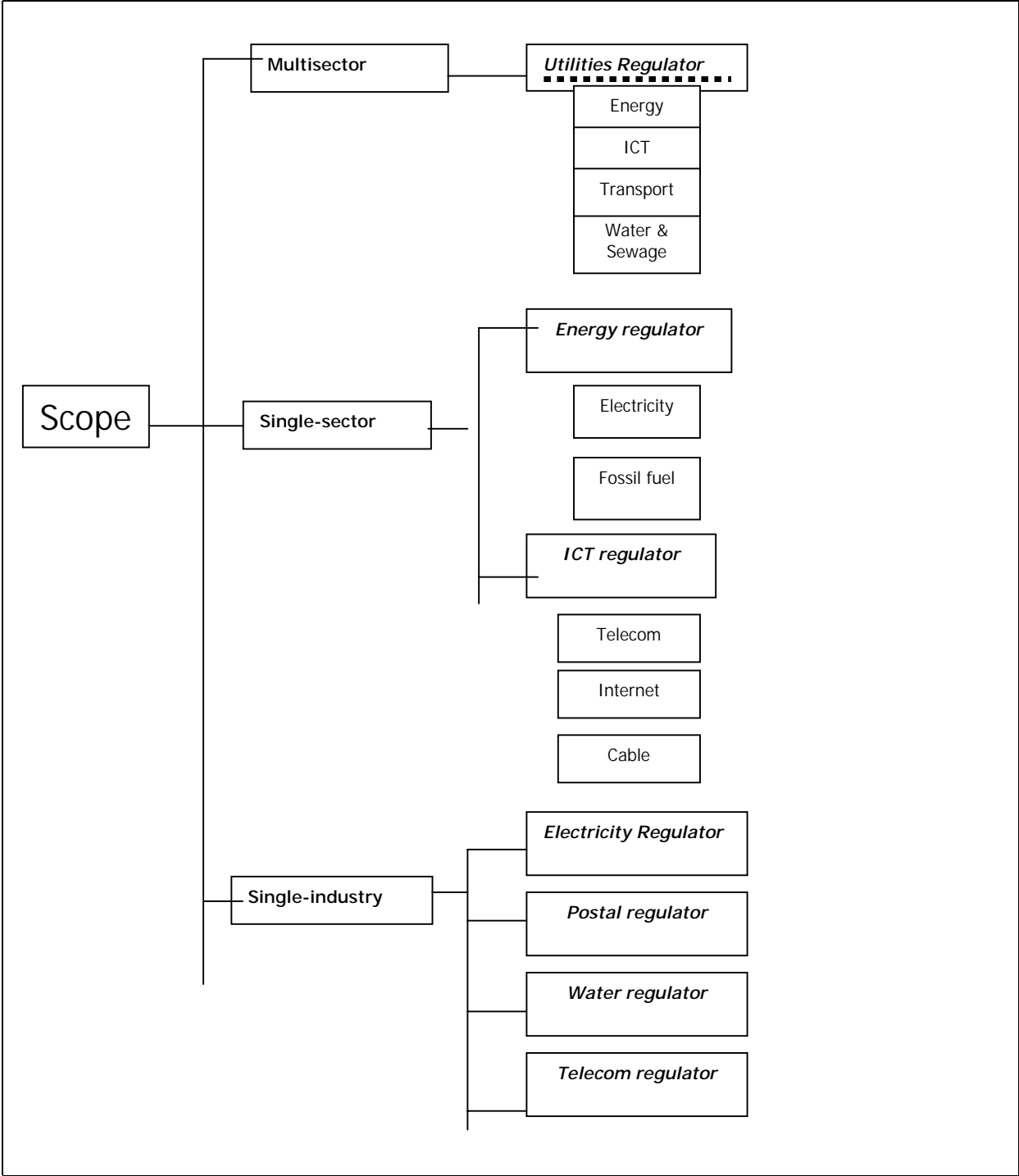
<sup>2</sup> International Telecommunication Union (2001). Secretary General's report to 2001 World Telecom Policy Forum: IP Telephony. At: <http://www.itu.int/osg/spu/wtpf/wtpf2001/sgreport/http://www.itu.int/wtpf/sgreport/index.html>

<sup>3</sup> Federal Communications Commission (1970). Regulatory and Policy Problems Presented by the Interdependence of Computer and Communication Service Facilities: Notice of Proposed Rulemaking and Tentative Decision, 28 F.C.C.2d 291; FCC (1971). Computer I final decision 28 FCC 2d 267.

<sup>4</sup> International Telecommunication Union Bureau of Telecom Development (ITU-D) survey, 2001. At: <http://www7.itu.int/treg/profiles2/cntryprfiles/guide.asp>

a stronger case for industry-level convergence among telecom, data communication and cable industries.<sup>5</sup>

**Figure 1: Scope of regulatory agencies**



Source: Rohan Samarajiva

<sup>5</sup> For a strong claim on telecom-broadcast convergence, see OECD Committee on Competition Law and Policy (1999). *Regulation and competition issues in broadcasting in the light of convergence*, DAF/CLP 99/1. Paris: OECD. At: <http://www.oecd.org/daf/clp/roundtables/comp-broad.pdf>

In the same way that telecom, data communications and cable may be seen as constituting a sector because of the degrees of substitutability and complementarities that exists, other sectors such as energy (gas and electricity) and transport (combining different modes) may be identified. By definition, therefore, multisector regulation must involve industries/sectors that do not have significant substitutability or substantial complementarity.

**3. ICT and Media Convergence/Divergence**

The broad range of industries involved in ICT and media convergence are IT, telecoms, broadcasting and other media dealing with information and entertainment. Figure 2 illustrates the industries involved and the levels of activities from equipment/hardware and transport/software to content/service provision. Each of the different industries can be conceived as encompassing all three levels although they are not entirely comparable. However, Figure 2 illustrates that there are many possibilities for convergence at a horizontal level between different industries as well as vertical integration between different levels. It also illustrates that divergence and disintegration are possible. Industries that formerly have witnessed (some degree of) vertical integration may experience new lines of divisions of labor between different actors in the field. Convergence / integration and divergences / disintegration go hand in hand.

**Figure 2: Convergence/integration and divergence/disintegration**

	IT	Telecom	Broadcasting	Other media
<b>Content/ services</b>	Software based content	Telecom based services and content	Broadcast programs	Film, music, newspapers, etc.
<b>Transport/ software</b>	Software	Network services	Transmission	Cinemas, video rentals, etc.
<b>Equipment/ hardware</b>	IT hardware	Telecom equipment	Broadcast equipment	Reproduction of films, printing, etc.

*3.1 Technology Neutrality*

There is thus both a horizontal and vertical aspect, and both aspects are subject to discussion in the paper. The horizontal level has hitherto been primarily concerned with convergence at the equipment / hardware and transport / software levels (in communications called infrastructure and associated services, in the terminology of the European Union<sup>6</sup>). Often countries have dealt differently - in terms of, for instance, licensing procedures and interconnection rules - with fixed telecom networks, mobile networks, and cable and terrestrial broadcast networks. At present, there is, however, a general shift in the rules and procedures in many countries towards an equal treatment (convergence) of different information and communication infrastructures. The EU is a case in point with its emphasis on technology neutral regulation.<sup>7</sup>

*3.2 Content Issues*

The horizontal level also includes the possible implications of convergence at the content layer. Types of content that, formerly, were dedicated for specific industries can be conveyed on different infrastructures because of the common digital form. This presents new possibilities for end users and new market potentials for producers, but it also presents regulatory problems that have to be solved. One of the problems is related to the provisions for public service in the broadcast area. Should such

<sup>6</sup> See, for instance, European Commission (1999). *The 1999 Communications Review*. COM (1999) 539. Brussels.

<sup>7</sup> European Commission (1999). *The 1999 Communications Review*. COM(1999)539. Brussels.

provisions be extended to the Internet web, or should convergence on the content level lead to an abolition of public service rules? Another issue relates to the extended access to different kinds of illegal or harmful information, for instance racist propaganda, which the Internet facilitates. What are the possibilities of countries to retain control of this? Yet another problem is related to the provisions for media responsibility that exist today for print and broadcast media but do not apply to Internet.

### 3.3 Infrastructure and Content Together?

There is also a vertical aspect – not only in the sense that there are numerous examples of industries integrating or trying to integrate equipment and transport and content provision, but also in the sense that some countries integrate infrastructure regulation and content regulation. India is an example of this. The planned new Communications Commission of India (CCI), the Indian communications regulator, will integrate infrastructure and content regulation in one institution<sup>8</sup>. The UK is another example, in which the government is uniting five existing regulatory bodies dealing with communications into one regulator, OFCOM, with authority in both infrastructural and content questions<sup>9</sup>. Singapore and Malaysia are also examples of countries that have assembled the regulation of infrastructure and content.

In the case of horizontal convergence, it is a matter of converging regulation and possibly converging regulators. In the case of vertical integration, it is mostly a matter of integrated regulators, as infrastructure and content regulation are two rather different fields, although integration of content and infrastructure provision may have implications not only for the industrial structure but also for the content itself. The EU, for instance, draws a sharp line between infrastructure (and associated services) and content. It is, however, a question whether this is possible without leaving aside important issues.

### 3.4 Is Convergence Something New?

Often convergence is described as something relatively new. But industrial convergence and regulatory dealings with convergence issues have existed for many years<sup>10</sup>. In many countries, there has been a deliberate policy to keep different communication fields apart for the reason of limiting media concentration. Formerly, companies have also had the intention of covering several media fields, and the question of benefits of complementarities between different media areas versus the problems of excessive media power is not new. What is relatively new is the technological foundation that digitalization of all media provides for convergence developments and complementarities between media area. What is also relatively new is the general trend towards liberal policies that has been seen during the past 20 years. Together, these developments constitute a new basis for the development of convergence and for the balancing of the benefits of complementarities versus the problems of media concentration and power.

The trend towards liberalization of telecoms is in part an expression of a convergence policy. The introduction of data communications on telecoms networks was an important technological basis for the regulatory changes in telecoms and the motivation of the industrial interests that lobbied for the initial moves in this direction. Companies, first in the US and later elsewhere, argued for changes in the regulatory structure, as they wanted a greater liberty to use the telecom networks for data communications. The newer questions that are put forward today under the heading of convergence first and foremost deal with the development of Internet into a powerful communication infrastructure

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<sup>8</sup> *The Communication Convergence Bill, 2001*. At: <http://indiantelevision.com/indianbroadcast/legalreso/ccb2k1.htm>.

<sup>9</sup> See Department of Trade and Industry: *A New Future for Communications, 2001*, <http://www.communicationswhitepaper.gov.uk>

<sup>10</sup> This has been discussed by, for instance, Winseck, D. (1998). *Re-convergence: A Political Economy of Telecommunications in Canada*. Hampton Press.

and the possibilities for integrating interactive one-to-one telecom and one-way one-to-many broadcast and print media, in addition to novel information retrieval capabilities.

### 3.5 The Main Issue

The main issue in the convergence discussion is, therefore, concerned with the possibilities for exploiting the industrial opportunities in creating a new dynamic ICT sector encompassing hitherto separate sectors<sup>11</sup>. Apart from the broad diffusion and use of the new media and communication (universal access) and the protection of consumers in new media markets, this is the overall issue for convergence policy: to establish a framework for the growth of a dynamic communication and information industry. It is in this perspective that most convergence policies are seen. Regulatory policies with respect to telecoms and broadcasting have, of course, always had an influence on business developments. But with the growing importance of the ICT sector and the even greater importance in relation to other industries and social developments, regulation of converging communication and information industries assumes central importance in the economic development strategies of governments. A skeptical view, of significant import especially in countries with poor governance, holds that the absence or minimal enforcement of regulation is what caused the efflorescence of IT, and that one must be wary of increased intervention, especially by incompetent, if not rapacious, governments.

## 4. Convergence Policy Issues

From a policy and regulatory point of view, convergence in the ICT and media areas raise a number of issues. There are issues that are related to all three levels (equipment/hardware, transport/software and content/services) in the convergence model (Figure 2). The ones that will be dealt with here take up the issues of the general societal importance of convergence policies, the balance between benefiting from industrial complementarities and the problems of media concentration, and access to networks and content. Other issues are related to the infrastructural levels (equipment/hardware and transport/software), where the overall question is to what extent it is possible to subject all infrastructures to the same regulation. At the content level, there are a large number of issues that have to be resolved, including the question of whether all content areas can be treated in similar ways regarding, for instance, what it means for public service provisions in the broadcast area and what it means for media responsibility rules.<sup>12</sup> Other questions deal with privacy protection, security, consumer protection, intellectual property rights, and illegal information.<sup>13</sup> Finally, there is the issue of the possibilities and problems regarding the separation of regulation of infrastructure and content.

### 4.1 General Societal Importance

The general societal importance of convergence policies lies in the large and growing importance of ICT and media industries in societies in terms of size of the industries themselves and the broader social implications. ICT elements are integral components of products and services in many sectors, and information and communication systems constitute infrastructures for many functions in society. Information and communication infrastructures are, for instance, crucial in importance for the many service activities that play an increasing role in social developments. Some countries have, therefore, devised information/network society visions and plans to be prepared for and take advantage of the potentials in the new information and communication technologies and services.<sup>14</sup> Countries strive to establish the best possible economic and regulatory framework conditions for the development of dynamic information and communication industries and innovative use of ICTs.

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<sup>11</sup> See e.g. the UK case, op.cit.

<sup>12</sup> First raised in Pool, Ithiel de Sola (1983). *Technologies of Freedom*. Cambridge MA: Belknap.

<sup>13</sup> Samarajiva, R. (1997). Telecommunication regulation in the information age, in *Telecom reform: Principles, policies and regulatory practices*, ed. W. H. Melody, pp. 421-39 (Lyngby, Denmark: Den Private Ingeniorfond).

<sup>14</sup> See, for instance, the Danish report *Det Digitale Danmark* (Digital Denmark), published by the Ministry for Research, Copenhagen, 1999.

#### *4.2 Benefits and Problems in Media Complementarities*

The balancing of benefits and problems in relation to complementarities and market power is not a new issue. Public policies have been seeking to strike such balances in many areas for a long time, and a large number of countries have for years had regulations limiting cross media ownership.<sup>15</sup> However, technological developments including digitalization of different media areas, political developments in direction of increasing liberalization and a less stringent view on economic power concentration, and increasing business internationalization leading to larger corporations and political support for such tendencies, have altered former balance points between benefits and problems. There is today a political trend towards loosening the restrictions on media concentration, including cross media ownership provisions, in order to take advantage of complementarities between media and technology areas. However, the issue is still there. New balances have to be struck in view of benefits and drawbacks in loosening the ties on media concentration.

#### *4.3 Access to Networks and Content*

Access to networks and content is also an important issue. Many countries have some form of universal service rules in telecoms, or are in the process of developing such rules. Countries often also have provisions for access to public service broadcasting, even though in many countries there is an unfortunate conflation of public-service and government broadcasting. The question is whether and to what degree such access provisions should be extended to new networks and services, reflecting developments relating to convergence, i.e. broadband, Internet, public information services, etc. The arguments in favor have centered on the issues of limiting the social divides and the advantages of a broad take-up of new technological possibilities, including both democratic aspects and the industrial growth potentials in a broad diffusion. Arguments against have mostly been concerned with creating a situation where the mass of users support the most advanced early adopters of new technologies and the dangers of subsidizing technologies that quickly are made redundant by new and more powerful technologies. However, some developed countries have gone beyond the mere provisions for universal service in basic telephony and there is generally open-mindedness in relation to the possible inclusion of new technologies, services and content in some sort of universal access provision.

#### *4.4 Technology Neutral Regulation*

With respect to information and communication infrastructures, there is a general trend in policy discourse towards uniting the regulation of the different infrastructures. Most countries have operated with different rules applying to fixed networks, mobile networks, and broadcast networks. But with the convergence between these networks and the possibilities for conveying similar services over different networks, the foundation for differences in rules are beginning to be questioned. Countries are, therefore, seeking to harmonize regulatory frameworks of different communications infrastructures and based on the principle of technology neutrality. However, there are some problems attached to this approach. In many countries, there are special requirements and user protection rules regarding telephony provided on the fixed public network. But telephony can also be provided on the Internet – yet, Internet telephony<sup>16</sup> is not subject to the same rules as circuit-switched telephony, which a totally technology neutral regulation would require. Also, the levels of competition in the different infrastructure areas may differ, for instance, with greater competition in mobile services than in fixed. Such differences may require different forms of regulation in the two areas.

#### *4.5 Converging Content Regulation*

Similarly, it is an open issue to what extent regulation in the different content areas should converge. In the broadcast area, many countries have public service provisions of some kind, though they may be very different. Some broadcasters have responsibilities for providing services under certain quality obligations but have, at the same time, a number of privileges in terms of, e.g., frequencies for terrestrial transmission. In other media areas, for instance print media, there are no such

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<sup>15</sup> Henten, A. (1999). *Convergence, Synergies and Media Power*. ITU Policy and Regulatory Summit, Geneva, <http://www.itu.int>.

<sup>16</sup> Defined as telephony conveyed wholly or partly over the Internet, and distinguished from voice over IP (VOIP). See, International Telecommunication Union (2001). Secretary General's report to 2001 World Telecom Policy Forum: IP Telephony, para. 1.2. At: <http://www.itu.int/osg/spu/wtpf/wtpf2001/sgreport/>

arrangements, and when content can be used across different infrastructure platforms, the question is what the implications are for the specific public service provisions in the traditional broadcasting area. It will surely be more difficult to maintain a central position for public service broadcasters, but will public service provisions have to disappear? Conversely, is it possible and desirable to extend public service provisions to the Internet web in the sense that public service broadcasters that also have web services become obliged to develop web pages with a public service type of content?<sup>17</sup>

Another example of a similar question relates to the media responsibility rules that print and electronic mass media often operate under. Authors/journalists and the editors are in most countries responsible for what is printed and broadcasted. However, such rules seldom apply to information on the web, and the issue is whether it is possible and desirable to uphold such rules in a situation with a growth of information spread over the web, or whether it is possible to extend rules for content responsibility to new media platforms.

#### 4.6 Other Content Issues

Privacy protection gets a new dimension in a converged Internet environment. Not only is it much easier to transmit files with personal information, it also becomes much easier to collect information on people and their interests and buying habits by means of automatic registration. Security problems involve both the security of information transmitted on networks, i.e. that information is not disclosed and not tampered with, for instance, and the security of payments made on electronic networks. Consumer protection is also an important issue. When buying goods and services on networks, consumers must be protected against low quality products, late delivery or pure and simple fraud. In some countries, there are actually stricter rules protecting customers in e-commerce, but this does not apply to the great majority of countries, and there are certainly problems in relation to international transactions.<sup>18</sup> Intellectual property rights constitute an example of another area, where a converged Internet environment creates many new problems. The Internet provides new possibilities for spreading cultural products – which is a great advantage. But for the holders of intellectual property rights, these new possibilities create new problems with respect to protecting their rights against infringements. Finally, illegal information such as racist utterances and child porn can be spread much wider on the Internet, and the question is how to protect citizens against such information and how to hinder people from spreading it in an international Internet context.<sup>19</sup>

All these issues have existed for many years. They have not been created by the development of convergence in the media and Internet areas. However, convergence and the Internet create a new environment in which these known issues acquire new dimensions. Parts of the issues and the regulatory rules that they give rise to are, therefore, connected with the issue of media convergence, and rules taking account of this should be developed. However, this does not necessarily mean that these issues should be part of a united convergence regulation nor that they should be dealt with by a single regulatory authority.

#### 4.7 Converging Infrastructure and Content Regulation

Having looked at issues that relate to all three levels from equipment/hardware and transport/software to content/services or that relate to either the infrastructural part or the content part, the questions then are

- ◆ whether infrastructure and content issues should be dealt with under a common regulatory framework, or
- ◆ whether problems are created by the separation of the two sets of issues.

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<sup>17</sup> For an early discussion of this issue, see Industry Canada (1995). *Final Report of the Information Highway Advisory Council*, Chapter 3. At: <http://strategis.ic.gc.ca/SSG/ih01070e.html>

<sup>18</sup> For a discussion see, Samarajiva, R. (1997). Interactivity as though privacy mattered, in *Technology and privacy: The new landscape*, eds. P. E. Agre & M. Rotenberg, pp. 277-309 (Cambridge MA: MIT Press).

<sup>19</sup> Hadley, P.D. & R. Samarajiva (1997). Regulation of on-line content in the new trade environment: NAFTA and communication policy, *The Communication Review*, 2(2): 207-33.

In the overview of issues presented, there are three types of issues that are related to all three levels: general information society policies, complementarities vs. concentration, and access to networks and services, but none of these issues requires a common regulatory framework.

In discussions of the separation of infrastructure and content matters, it is often stated that there are companies covering the whole value chain from infrastructure to content provision and that, therefore, it is more appropriate if these companies are regulated by one common regulatory framework. There are companies that can leverage their power in one area to another, and it is true that there will be questions regarding the delimitation between infrastructure and content provision, in the sense that a software tool may encompass both infrastructure and content elements. However, it seems as if these problems are at the fringes of the issue and are minor in comparison with the overall benefits of differentiating between infrastructure and content problems. There is also the question of the influence of initiatives in one area on the other. When, for instance, the terrestrial broadcast infrastructure is dealt with in the same way as the telecoms infrastructure, it may be difficult to uphold the preferential status of public service broadcasters. But this is mainly a question of coordinating the two sides of the media and communication regulation. However, there are problems of adjustment to be discussed in relation to a separation of infrastructure and content regulation.

## 5. Bases of Multisector Regulation

In common usage, multisector regulation is understood to be the functioning of a single regulatory agency that has responsibility for sectors such as telecom, energy, water and transportation. The classic multisector regulatory agencies are the State Public Utility Commissions (PUCs) in the United States, many of which precede the Federal Communications Commission, generally portrayed as the oldest telecom regulatory agency in the world. The original name of the association that represents the PUCs (now known as the National Association of Regulatory Utility Commissioners or NARUC) tells the tale of their origins—the National Association of Railroad and Utility Commissioners.<sup>20</sup> What were once independent agencies mandated to regulate the railroads, gradually accumulated mandates that included energy, telecom, other forms of transportation, water, and in some cases such as Virginia, even insurance.

A natural question that arises in relation to this historical process is what the rationale was for adding mandates to railroad regulatory agencies. Was it because of commonalities in the object of regulation, or was it because of commonalities in the form of regulation? Leaving aside insurance, one may see two common elements in the objects of regulation such as transport, telecom and energy—monopoly associated with rights of way. Common use of rights of way by different infrastructure sectors such as ICTs, energy, water and sewage is perhaps a justification for multisector regulation.<sup>21</sup> Rights of way are scarce and many countries are bound to allocate them fairly because of their WTO commitments.<sup>22</sup> If indeed there is substantial common use of conduits and rights of way, one could argue that the multisectors have converged, and that what exists in fact is a sector.

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<sup>20</sup> <http://www.naruc.org/>

<sup>21</sup> For example, South Africa has justified the mandated participation of the government-owned energy and transport companies in the planned fixed-access licenses on the basis of “optimisation of infrastructure” -- Gush, Hilary (2001, July 26), “South Africa plans two rivals to Telkom next year,” *Total Telecom*. At: <http://www.totaltele.com/view.asp?articleID=42260&Pub=TT&categoryid=627&kw=South+Africa>

<sup>22</sup> “Any procedures for the allocation and use of scarce resources, including frequencies, numbers and rights of way, will be carried out in an objective, timely, transparent and non discriminatory manner. The current state of allocated frequency bands will be made publicly available, but detailed identification of frequencies allocated for specific government uses is not required.” World Trade Organization (1997), *Fourth Protocol to the General Agreement on Trade in Services* (Geneva: WTO), Reference Paper, article 6. At: <http://www.lanka.net/trcsi/wtdocs.html>

## 5.1 Right of way and conduit sharing

Rights of way refers to the permission granted by a property owner or government to build or dig over a specific stretch of land to install some form of permanent infrastructure (a road, railway line, telephone line, underground pipe, and so forth), and subsequently to maintain (and upgrade) that particular infrastructure as required. Historically, rights of way have been granted to monopoly providers of infrastructure because that provision of the service was important to the economy and society. The grant of rights of way was subject to conditions that the provider would not abuse, nor exploit the rights of way beyond the extent that it served public interest of infrastructure provision and that necessary compensation would be paid to the affected property owner.<sup>23</sup> This regulatory framework has been evolving with the opening of infrastructure services to competition. The US Telecom Act requires non-discriminatory access to existing rights of way in specific instances between utilities – except when there is “insufficient capacity and for reasons of safety, reliability and generally applicable engineering purposes.”<sup>24</sup>

The US Telecom Act of 1996 reaffirms “the authority of a state or local government to manage the public rights-of-way or to require fair and reasonable compensation from telecom providers, on a competitively neutral and nondiscriminatory basis, if the compensation required is publicly disclosed by such government.”<sup>25</sup> Although subject to non-discrimination, municipalities are increasingly taking a hard line on the granting of permits due to considerations such as the cost of streets being torn up (in terms of inconvenience, safety and reduction in road life-span) and the sheer number of service providers wanting to lay cable and other conduits. In some US municipalities, telecom conduit space is said to be saturated to the point of causing danger to other conduits such as gas.

Rights of way are a key asset for those who hold them, and access to them is essential for new entrants. Historically granted at minimal cost to encourage infrastructure development, they are becoming increasingly expensive and time consuming to acquire as more and more players vie for them.<sup>26</sup> In the US, for example, rights of way permits can account for 20% of the cost of a fiber build, and can take over a year to acquire.<sup>27</sup> And, of course, discriminatory access to rights of way is a barrier to market entry. Thus, in conjunction with legislation targeted at leveling infrastructure playing fields,<sup>28</sup> there are also incentives for achieving viable technological solutions, in particular with regards to the last mile distribution to the end-user, and also for the municipal business sector.

Utilities can share rights of way and conduits in two ways. *First*, companies can obtain the right to common use of rights of way from other utilities. This includes laying cable or conduits side-by-side or using the actual infrastructure, such as in the case of Power Line Telecom (PLT, or Power Line Carrier [PLC]). *Second*, many non-telecom utilities have their own telecom infrastructures in place (installed for operations, monitoring, maintenance and billing) which can be leased for use by others. The

<sup>23</sup> Melody, W.H. and Møller, D. “Rights of Way as a Foundation for Infrastructure Competition” in W.H. Melody (Ed.), 1997, *Telecom Reform: Principles, Policies and Regulatory Practices*. Den Private Ingeniørfond, Technical University of Denmark, Lyngby. <<http://www.lirne.net/library/tr/chapter10.pdf>>.

<sup>24</sup> FCC. “Telecom Act of 1996”. Sec. 703. Pole Attachments. <<ftp://ftp.loc.gov/pub/thomas/c104/s652.enr.txt>>.

<sup>25</sup> FCC. “Telecom Act of 1996”. Sec. 253. Removal of barriers to entry. <<ftp://ftp.loc.gov/pub/thomas/c104/s652.enr.txt>>.

<sup>26</sup> <http://www.fhwa.dot.gov/realestate/rowutil1.htm>

<sup>27</sup> Gerwig, Kate. “Can They Dig It?”, *tele.com*. March 19, 2001. <[www.teledot.com/article/TEL20010319S0026](http://www.teledot.com/article/TEL20010319S0026)>. Previously, ROWs accounted for about 10% of a fiber build. The author notes that the rule of thumb for building a network is each mile requiring a separate ROW agreement.

<sup>28</sup> See US Telecom Act of 1996, noted above; and for example Directive 90/388/EEC, <<http://europa.eu.int/ISPO/infosoc/legreg/docs/90388eec.html>> as amended by [Directive 96/19/EC](http://europa.eu.int/eur-lex/en/lif/dat/1996/en_396L0019.html) <[http://europa.eu.int/eur-lex/en/lif/dat/1996/en\\_396L0019.html](http://europa.eu.int/eur-lex/en/lif/dat/1996/en_396L0019.html)> which requires that telecom network operators be granted ROWs on a nondiscriminatory basis.

technical features of optical transmission which make it immune to interference from electromagnetic fields generated by electric lines has contributed to the proliferation of telecom capacity owned and operated by electricity utilities. Fiber is installed because of the non-interference qualities, but once installed the electric utility can use only a minuscule portion of the capacity, creating the incentive to lease the extra capacity for telecom use.

The recently heightened importance of rights of way and conduit sharing (including power line telecom, which is perhaps the ultimate expression of common use) is a subject of legitimate interest to regulators, not only in telecom but also in other sectors. The question of whether rights of way and conduits constitute inputs so important that one must consider the possibility that the hitherto distinct sectors are in the process of converging is one that is currently under discussion.<sup>29</sup> The regulatory issues that are posed by these forms of common and joint uses of rights of way and conduits, include the prevention of anti-competitive behavior (e.g., cross-subsidy) by firms with significant market power in their “home” markets and ensuring non-discriminatory access by new entrants to rights of way and conduits as well as consumer-protection issues such as energy disconnections caused by failures to pay telephone bills. These issues do not, by themselves, constitute a case for multisector regulation. However, they do make a strong case for increased cooperation and coordination among infrastructure regulators.

## *5.2 Market Trends and Strategies of Utility Companies*

Mixed-infrastructure use of conduits is not a new phenomenon. In Canada, for example, at the beginning of the 20<sup>th</sup> century, telephone rates and interconnection fell under the purview of the Railway Act – justified by telephone and telegraph lines being part of railway operations. In the Netherlands, [Nederlandse Spoorwegen](#) (NS), the national railway monopoly, was looking for ways to exploit its private network, resulting in the creation of [Telfort](#) – a joint venture of NS and [British Telecom](#) (BT). Grameen, the largest provider of mobile services in Bangladesh, used railway rights of way to build its national network.

In the energy sector, utility companies are consolidating into larger operating companies within all utility sectors as well as across industry boundaries. The entry of utility companies into the telecom market is considered by many to be a natural evolution. The prospect of expanding income and profits from existing assets has prompted energy utility executives to seek to exploit complementarities with telecom companies.

The rationales for participation by energy utility companies in telecom are varied. The primary reasons given for penetrating the telecom space range from the need to improve operational efficiencies to the overall strategic objectives of the company. It is generally assumed that improved efficiencies include economies of scale and scope, eliminating redundant or overlapping activities, efficiencies in procurement, production, marketing, and administration. Strategic objectives include remaining competitive in a rapidly changing environment, building core competencies, acquiring additional managerial and technical expertise, etc. When energy utility executives were questioned on the actual reasons for entering into the telecom market, however, the three reasons provided were “sharing of infrastructure, bundling of opportunities and gaining experienced people.”<sup>30</sup>

Most energy utilities became active in the telecom business by leveraging their often under-used internal telecom assets (network, rights of way, construction expertise, etc.) and selling bandwidth to telecom service providers. The more adventurous companies look beyond mere wholesale provisioning and fiber leasing to direct participation in more profitable services.

Regulatory practice has long rested on ring-fencing specific regulated activities and the associated costs and revenues. Holding company legislation and requirements for separate subsidiaries and

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<sup>29</sup> See, for example, the dialogue on “The next step in telecom reform: ICT convergence regulation or multisector utility regulation?” at <http://www.regulateonline.org/theme2002.htm>

<sup>30</sup> Woods, Bob. “Most Energy, telecom firms converging – KPMG”, April 2001, [http://www.opticallynetworked.com/features/article/0,,10516\\_745781\\_00.html](http://www.opticallynetworked.com/features/article/0,,10516_745781_00.html).

accounting separation have been among the regulatory instruments used to ensure the proper application of regulatory rules and the prevention of undue cross subsidy.<sup>31</sup> The contemporary efforts of utilities, in particular energy operators, to cross industry boundaries therefore pose a problem for regulators. Both obvious responses are unattractive. The conventional response of insisting upon separate subsidiaries is likely to generate criticism on the ground that regulatory convenience is preventing innovation and the realization of economies of scope. The other alternative of following the regulated company could create jurisdictional overlap, unless a multisector regulatory agency is created.

## 6. Multisector Organizational Issues

The classic case for multisector regulation is presented by Schwartz and Satola.<sup>32</sup> They concentrate on developing countries, but their arguments also apply, to some extent, to developed countries that wish to create efficient regulatory organizations. The basic argument is that regulatory skills and the money needed to obtain the skills are in short supply in developing countries (and were possibly in short supply in the US states where multisector regulation first emerged in the 20<sup>th</sup> century). In light of this scarcity of regulatory resources, Schwartz and Satola see the necessity for multisector regulatory agencies. Multisector regulation may also prove useful for developed country governments seeking to economize on regulatory resources.

### 6.1 Are Regulatory Resources in Short Supply?

The market for regulatory skills is no different from other markets; the price is set by the interaction of supply and demand. Given the explosion of regulatory activities across the world in the last decade of the 20<sup>th</sup> century, it is reasonable to expect that

- ◆ Persons with the necessary regulatory skills are in short supply worldwide, the educational system not having geared up for increased production in the short term; and
- ◆ The prices for the persons with skills have been bid up by increased demand.

In addition, there is no worldwide market for regulatory personnel, except in the case of consultants and in a few exceptional cases such as Bosnia-Herzegovina, Hong Kong SAR and Singapore that have purchased skills on the world market. Regulation being considered a part of government, many governments have sought to staff their agencies with citizens and at local market rates rather than international rates. When the market for regulatory skills is conceptualized as a series of insulated national markets, the mismatch between supply and demand becomes exacerbated, especially in developing countries where the educational systems are slower to respond and the overall depth of human resources is shallow. But developed countries are not exempt from this problem. The proportionately smaller number of persons with regulatory skills will be able to demand much higher wages. The regulatory agencies can pay these high wages and recruit these persons. Alternatively or in addition, the regulatory agencies can invest in fast-track training to build up a skilled cadre. For this option to be sustainable, the trained persons would have to be paid adequate wages subsequent to training. Otherwise, they may be attracted by higher-paying employers, depriving the regulatory agencies of the benefits of their investment in training. Another alternative is to purchase regulatory skills on a short-term basis from international consultants through outsourcing. Again, the sustainability of the solution depends on a complementary effort to build up a permanent cadre through recruitment and/or training. All three solutions require money.

Liberalized infrastructure markets result in dramatically higher levels of investments and generate enormous amounts of revenues both for the investors and for the governments. It could be argued

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<sup>31</sup> Rosenberg, E. A., Borrows, J. D., Hunt, C. E., Samarajiva, R. & Pollard, W. E. (1993). *Regional Telephone Holding Companies: Structures, Affiliate Transactions, and Regulatory Options*. NRR1 93-05. Columbus OH: National Regulatory Research Institute; Bonbright, J. C. and Means, G. C. (1932). *The Holding Company: Its Public Significance and Its Regulation*. New York: McGraw Hill.

<sup>32</sup> Schwartz, T. and Satola, D (2000). *Telecommunications legislation in transitional and developing economies*. World Bank Technical Paper No. 489. Washington, DC: The World Bank Group. At: <http://global011.worldbank.org/site/products.nsf>; Also at [www.regulateonline.org](http://www.regulateonline.org) Resources page.

that a small proportion of the investments and/or revenues can be set apart for regulatory outlays, which are after all what makes the investment feasible, without burdening the general treasury funds. The favored method of funding regulatory agencies worldwide, a levy on operator revenues and/or license fees, reflects this thinking. If this method of funding is adopted, the regulatory agency will have the resources to purchase the necessary skills even in the national market, through direct recruitment, training combined with adequate salaries, and short-term outsourcing.

While many regulatory agencies have the revenues, there are barriers to spending the funds as described above. Most governments constrain the levels of government salaries with the good intentions of reducing expenditures on unproductive sectors of the economy and preventing inflationary wage spirals. Regulatory agencies being seen as part of government, the wages they can offer are also constrained. Except in the West European core and North America, procedures intended to prevent corruption as well as the generally archaic systems of public administration found in many countries hinder the use of outsourcing. In most developing countries, outsourcing is possible only in cases where multilateral or bilateral technical assistance funds are available.

In sum, the scarcity of regulatory resources in developing countries is real, but it is caused by retrograde government procedures and policies that prevent relatively simple market-based solutions from being applied. In the absence of a short-term solution to government reform, designers of regulatory instruments for developing countries must take scarcity of regulatory resources as a given.

## 6.2 Case of Europe

Sector-specific ex-ante regulation is new to Europe. Starting from Oftel in 1984, separate regulatory agencies have been created in a majority of European countries.<sup>33</sup> Now that the initial task of establishing regulation is more or less complete, attention is beginning to be paid to the costs of regulation. In the absence of multi-country data, the costs of regulation in the country regarded to be the pioneer of ex-ante sector-specific regulation in Europe, the United Kingdom, will be considered in this section.

A recent study of regulatory costs, conducted for HM Treasury of the UK government by WS Atkins Management Consultants, states that:

The cost of regulation is rising well in excess of inflation, but it is still very small in comparison to the turnover of the regulated industries and to the benefits received by customers. . . . The operating costs of the four utility regulators [energy, telecom, water, railway] have doubled from about GBP 50 million in 1996/97 to roughly GBP 100 million in 2000/01, an increase of 84% in real terms. Between 1990/91 and 2000/01, the average annual increase in operating costs in real terms has been 16.6%, 6.8%, and 7.4% at Ofgem [energy], Oftel [telecom] and Ofwat [water] respectively. At ORR [railway], between 1996/97 and 2000/01 the increase has been 14.4% p. a. . . . Across the regulators, support functions (HR, IT, finance, procurement, communications, quality assurance and estates) accounted for about 22% of total costs in 1999/00. This is nearly double the figure for our comparator group of UK executive agencies and other regulators.<sup>34</sup>

The above quotation illustrates what is likely to become a priority issue for European regulators in the coming years. Those who preach efficiency and accountability are likely to be held to those same standards. The question of efficient use of regulatory resources is not irrelevant to European regulators.

## 6.3 Shared Use of Regulatory Resources Across Sectors

Examination of the actual organization of US state-level multisector regulatory agencies, the Public Utility Commissions (PUCs), does not provide much evidence of economies of regulation, except at the level of the decision-makers, or Commissioners. Generally, staff members specialize in a

<sup>33</sup> <http://www7.itu.int/treg/profiles2/cntryprfiles/guide.asp>

<sup>34</sup> WS Atkins Management Consultants (2001, February). *External Efficiency Review of Utility Regulators: Final Report*, pp. vi-vii. At: <http://www.hm-treasury.gov.uk/mediastore/otherfiles/35.pdf>

particular sector such as telecom or water and work within distinct divisions that are devoted to sector-specific regulation. Resources are shared at the levels of commissioners, who hear cases pertaining to all sectors, the senior staff who manage the agency as a whole, and the legal staff responsible for hearings and related procedural matters. Generally, the different divisions are located in common facilities and use common amenities such as libraries which may yield certain savings. The massive training and information sharing apparatus organized under the National Association of Regulatory Utility Commissioners (NARUC) is organized on a multisector basis, which also may yield certain economies. For example, the basic two-week course that is offered at Michigan State University every August has plenary sessions that address topics that are of interest across all sectors and breakout sessions that deal with items of sectoral interest.<sup>35</sup> Most of the research reports that are generated by the National Regulatory Research Institute at the Ohio State University are sector-specific, but in a few cases, researchers from different divisions within the Institute collaborate to produce multisector reports.<sup>36</sup> It must also be noted that US PUCs do not have jurisdiction over frequency management, cable and broadcasting.

The US PUC model may be useful if there is a shortage of persons suited to be decision makers at the top of the regulatory agencies. Careful analysis of the backgrounds of the approximately 200 commissioners of PUCs is likely to show that they are not selected primarily on expertise in the various sectors, though there is a strong representation of former staff members and lawyers who have spent their careers engaged in regulatory activities.

The ITU survey shows that Europe is currently evenly split between collegial telecom regulatory authorities and single-person regulatory authorities, at least for the 34 countries reporting data.<sup>37</sup> It is unlikely that there is significant difficulty in finding persons to serve as decision makers in regulatory agencies in most parts of Europe. The cross cutting skills of lawyers and managers may indeed be used in multiple sectors. However, it is not certain that legal and specialized managerial skills are those that are most in short supply in developing countries. The case for multisector regulation will be strong if it can be shown that specialized regulatory skills such as those of accountants, economists and engineers engaged in interconnection, cost studies and tariff approvals can be used across sectors. At issue here is not only whether the needs are common across sectors, but also whether, for example, the workload patterns allow staff engaged in tariff reviews, usually an activity that exhibits peak-load characteristics, to engage in multiple tariff reviews that are evenly distributed across a year. If this condition is not satisfied, what is likely to happen is not savings on staff, but the bloating of divisions.

The US PUC experience shows that there may be significant economies in areas such as use of buildings, libraries, and training facilities in common. The Atkins report cited above suggests that the UK regulatory agencies at least could use some new ideas in terms of saving on these types of non-regulatory costs. This does not, however, justify multisector regulation as such, only close collaboration and facility and service sharing among sectoral regulatory agencies.

The other problem with the cost-savings rationale for multisector regulation is the difficulty of actually realizing the promised savings from the common supply of regulation to the different sectors. Unless several infrastructure sectors are reformed simultaneously, which is unlikely in most countries, a multisector regulatory agency would not be created from scratch, but would have to be the result of merging several existing agencies. In most countries it is not possible to dismiss employees in the course of such a merger, negating the realization of the hoped-for economies of regulation. In addition, a merger of two going concerns would create significant morale problems, the avoidance of which may require additional expenditures.<sup>38</sup> The significant increases in the expenditures of the

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<sup>35</sup> <http://www.ipu.msu.edu/Camp%20NARUC.htm>

<sup>36</sup> <http://www.nrri.ohio-state.edu/>

<sup>37</sup> <http://www7.itu.int/treg/profiles2/cntryprfiles/guide.asp>

<sup>38</sup> Towers Perrin (2001, October). *OFCOM Scoping Project: Report to Regulators' Steering Group*. At: <http://www.ippr.org.uk/research/files/team25/project59/Towers%20Perrin%20report.PDF>

merged UK regulatory agency OFGEM, which combined the former Office of Electricity Regulation (OFFER) and the Office of Gas Regulation, reinforces this point.<sup>39</sup>

Schwartz and Satola recognize practical difficulties of achieving economies of regulation through a multisector agency. They propose either that a multisector regulatory agency be established in the first instance, even if only one sector is reformed, or that the first sector-specific agency that is established be given added responsibilities and resources as the other sectors are reformed. They recognize the negative aspects of merging sector-specific agencies.

Despite these qualifications, the multisector solution should not be rejected out of hand. Informed by the debate, it may be possible to devise innovative solutions such as keeping the regulatory staff separate but sharing decision-making bodies; co-locating sector regulatory agencies and allowing and encouraging mutual learning and resource sharing; and creating a new category of regulatory organizations within government that would be subject to the most advanced forms of administrative controls and and managerial incentives.

### 6.3 Pragmatics of Contemporary Sector Reform

One of the main advantages of multisector regulation, according to Schwartz and Satola, is the shield it provides against capture, both by industry and by political forces. The argument is that a multisector regulatory agency is more likely to be independent and, therefore, give more certainty to investors through good governance.

In approaching the problem of workable independence from government for the regulatory agency, it is useful to begin by asking whether the desirability of insulation from political pressures is unique to regulatory agencies. Efficient and unbiased public administration requires a degree of protection from day-to-day political pressures. The civil-service protections written into many constitutions and laws around the world testify to this. Clear separation of the policy-setting function and the implementation function, with political accountability for the former, and administrative/legal accountability for the latter, is a basic element of sound public administration. Additional insulation from political pressure is provided in certain exceptional cases such as investigative bodies dealing with corruption, attorneys general and central banks. So, do infrastructure regulatory agencies warrant such protection?

Added insulation from political pressure is critical where the government as a whole does not work too well. In effect, the independence that is called for serves as a dike to protect the island of good governance that the regulatory agency is intended to be, from the surrounding ocean of bad governance. This is generally seen as a developing country problem. However, closer examination of European regulatory agencies, especially countries where the government continues to hold controlling shares in, and receives dividend income from, incumbent operators, is likely to show that independence from undue government interference is an issue in Europe as well.

Experience has shown that there are two major threats to the independence of sectoral regulatory agencies from the government side. One is the line ministry, which previously combined the functions of policy setting, regulation and operation, but following liberalization has been left with only the task of policy setting, if anything.<sup>40</sup> The second is the ministry of finance or equivalent, which is engaged in the privatization of the incumbent operator or is the major shareholder of the partially privatized incumbent.<sup>41</sup> The multisector solution, by definition, takes the regulatory agency out of the control of

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<sup>39</sup> WS Atkins Management Consultants (2001, February). *External efficiency review of utility regulators for HM Treasury: Final report*. At: <http://www.hm-treasury.gov.uk/mediastore/otherfiles/35.pdf>

<sup>40</sup> See for example the continuing struggle between the Moroccan telecom regulatory agency, ANRT, which has been recognized as one of the exemplary regulatory agencies in the world and the Ministry, SEPTI. Bouzerda, Ali. Head of Morocco telecoms watchdog resigns. *Totaltele.com*, 11 Jan 2002. <http://www.totaltele.com/view.asp?ArticleID=47597&Pub=TT&CategoryID=627>; and Bouzerda, Ali, Moroccan regulator signals resignation, *Totaltele.com*. 03 December 2001. <http://www.totaltele.com/view.asp?ArticleID=46417&Pub=TT&CategoryID=627>

<sup>41</sup> See for example, the tensions in Sri Lanka between the Public Enterprise Reform Commission of the Ministry of Finance and the Telecom Regulatory Commission after the partial privatization of the incumbent in

one line ministry (because there will be more than one) and will give it a reporting relationship to either a ministry devoted to economic reforms of the overall subject of finance, or the president, or prime minister, or the legislature. An alternative solution to the problem of line ministries is to abolish them altogether, as Senegal has done.<sup>42</sup> Japan, which has yet to create a separate regulatory agency, has replaced the well known Ministry of Posts and Telecommunications with a new Ministry of Public Management, Home Affairs, Posts and Telecommunications.<sup>43</sup> Following liberalization, it is difficult to see the rationale for maintaining an entire ministry for policy setting in one field like telecom. The Japanese reorganization suggests that a ministry cannot be justified, even if the regulatory function is retained.

However, the solution to the line ministry problem should not aggravate the finance ministry problem. Unless proper safeguards are set in place, the multisector regulatory agency may be interfered with by other parts of government with vested interests in multiple incumbent infrastructure suppliers.

The question of how the regulatory agency is structured cannot be divorced from a realistic assessment of the process by which reform occurs. Comprehensive sector reform requires one or more champions—those who will make the public case for it; engage in debate with its many opponents and shepherd it through the appropriate governmental processes. Generally, infrastructure reform is championed by either the minister or by the senior civil servant in the line ministry. In cases of privatization, the Privatization Agency may assume a key role,<sup>44</sup> but even here, the process requires the participation of some actors from the line ministry. Not all reform champions are pure altruists. Even those intellectually committed to reform think about their positions in the new order. In some cases, opponents of reform are converted to supporters on the basis of assurances of future roles.

The post-reform roles for the reform champions could be in the operating entity, the regulatory agency or in the ministry. Reform of the operator usually results in greatly reduced powers of direct involvement by the minister. Therefore, it is natural for the minister to seek authority over a specialized entity that will exercise oversight over the entire sector, namely the new regulatory agency. Generally, reform requires the installation of professional specialist managers from outside at the helm of the operational entity, limiting the opportunities for generalist civil servants. Therefore, it is also normal for the civil servants at the helm of the reforms to position the new agency in a way that would enhance their career paths. These factors create conditions that are conducive to the creation of sector-specific regulatory agencies, rather than multisector agencies. They do not determine the ultimate outcome, which is the result of multiple forces, but tilt the balance toward agencies defined in terms of the pre-reform department/agency.

## 7. Conclusions and open issues

The paper is based on the assumption that sector-specific ex-ante regulation of telecom and infrastructure utilities are necessary for the development of these industries, including broad public access. This does not mean that convergence and efficient development of infrastructure utilities will not be seen in countries that mostly rely on general competition regulation and other sets of general regulation. But it means that there generally are societal benefits to be gained by establishing a regulatory foundation for the development of these industries because of a broad range of market failures and the high degree of public interest to which they are subject.<sup>45</sup>

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1997. Samarajiva, Rohan. The role of competition in institutional reform of telecommunications: Lessons from Sri Lanka, *Telecommunications Policy*, 24(8/9), 2000: 699-717. At: <http://www.tpeditor.com/contents/2000/24-8+9.htm>

<sup>42</sup> Pan African News Agency (May 24, 2001). "Workers in Communication Ministry ill at ease." At: <http://allafrica.com/stories/200105140793.html>

<sup>43</sup> <http://www.soumu.go.jp/english/index.htm>

<sup>44</sup> E.g., see Rogozinski, J. (1998). *High Price for Change: Privatization in Mexico*. Baltimore MD: Johns Hopkins University Press.

<sup>45</sup> See William Melody (2002): *Building the Regulatory Foundations for Growth in Network Economies*. WDR Discussion Paper #1. <http://www.regulateonline.org>

The point of departure is, therefore, that sector-specific ex-ante regulation is potentially beneficial. The open questions are how to combine them, on the one hand, in the ICT and media area (convergence), and across utilities (multisector regulation).

The paper deals with both ICT and media convergence regulation and multisector utility regulation, but does not preclude the possibility that both directions can be taken at the same time. Is it an 'and' or an 'or'? In principle, they are not mutually exclusive, however, in practice it may be difficult to combine a multisector infrastructure regulation with a regulation of both infrastructure and content. However, close examination of the North American practice of convergence and multisector regulation would suggest that it may be feasible to structure a regulatory agency that is converged at the top, but organized in separate divisions that correspond to the current separate regulatory agencies in Europe and elsewhere.

The focus generally, and in this paper too, in the ICT and media convergence area is on the object (substance) of regulation, i.e. the extent to which regulation of different areas should be combined, taking technical and market-based convergence developments into consideration. With respect to multisector regulation, the focus is mostly on the organizational aspect. In the former, the subject matter is convergence regulation; in the latter, it is regulatory convergence.

Even though the substance and the organizational aspects of regulation are not necessarily directly related – it is possible to regulate closely interrelated subjects in separate institutions just as well as it is possible to regulate relatively separate issues in crosscutting institutions – combinations of institutions are most often built upon combined issues. This also applies to multisector regulation. As documented in the paper, different kinds of utilities can make use of the same conduits, and mergers and acquisitions may also occur across sector boundaries. Thus it could be argued that a common basis exists for regulatory coordination, if not for joint regulatory organizations.

However, the main arguments for multisector regulatory organizations deal with institutional questions of resource allocation and independence from undue government interference. The first point taken up is the costs of obtaining the requisite expertise. There are two sides to this. The first is the existence of adequate expertise in a national labor market. The second is whether regulatory institutions can afford to, or are allowed to, hire existing experts. The problem is found in to all countries, but in exacerbated form in developing countries. Multisector regulatory agencies may, under certain conditions, allow for a least-worst solution for regulation using a limited pool of qualified persons. If not a fully-fledged multisector regulatory agency, some aspects of the organization may assist European regulatory agencies to combat administrative bloat.

The second point relates to the potential of multisector regulatory agencies to allow for a greater degree of independence from line ministries, again a question that is of obvious importance in developing countries, but not irrelevant in European countries, particularly those that have not yet let go of their incumbents. But the analysis contains a caution about the solution sometimes being worse than the original problem, in terms of making the regulatory agency vulnerable to the improper influence of finance ministries.

With respect to ICT and media convergence, the main questions in the paper are to what extent different communication infrastructures can be regulated in the same manner and to what extent infrastructure and content can be regulated by one common set of regulations. The general trend around the world is to move towards a common infrastructure regulation encompassing formerly more separate infrastructures, e.g. fixed telecom, mobile communications, cable and possibly terrestrial broadcasting. However, there are also some inchoate tendencies towards institutions with responsibility for joint infrastructure and content regulation.

The paper does not provide definite answers to these questions but seeks to raise the policy and regulatory issues of ICT and media convergence as precisely as possible. Indeed, the answers will be different in different countries. There is no one formula that can be used in all countries. Yet, countries will have to approach the issues of ICT and media convergence in a forward looking manner not only for determining new rules for interconnection, universal access and access to scarce

resources, but also for building a regulatory framework for increasing the growth potentials in a networked economy.

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