

Converging media/Diverging experiences

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This is the era of converged media. Over 6.2 million people visit Internet video repository YouTube daily, and since 2003, 220 million have registered to use free VoIP software Skype. With the expansion of 3G and introduction of wireless broadband networks, which together serve more than 200 million users internationally, converged media is free to become mobile. It is also becoming respectable to talk of the multimedia experience; late last year, the revered Economist magazine felt compelled to title their feature on convergence ‘Your television is ringing.’ Among other observations, the Economist points out that the regulatory challenges of convergence are significant and well recognized by governments internationally. This recognition has resulted in a search for the Holy Grail for communications regulators: how should regulatory regimes, based in a pre-convergent era adapt to respond to convergence?

A significant amount of work has begun on answering this question. Although no one has found the silver bullet, it is fair to say that there exists a growing literature about how regulators should respond. These ideas – generated at think tanks, in academic venues, sometimes by equipment manufacturers and service providers, as outcomes of international treaties or related debates, such as the WTO agreement on telecommunications, and in conferences like this one – form a global pool of possible responses. This global pool of ideas, sometimes conflicting, and in some cases relatively harmonized follow from the one fixed starting point that any regulatory response must acknowledge: the universal and ubiquitous technical artifact of IP-based networking.

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Even if the technical characteristics of an artifact are relatively stable and universal, which is the case in IP networking equipment, the technology itself might vary from place to place. This local specificity of technology, what Hughes in his study of electrical networks called 'style', depends on local geographic, political, economic, and social conditions. Hence, any 'universal response' to convergence, abstract from local specificity, runs the danger of remaining insensitive to the conditions that might lead it to success or failure (which also will be locally defined).

Consequently, we cannot abstract convergence, its effects and responses to it, from political economic realities and legacy institutional and infrastructure frameworks in responding countries. Convergence enters and affects unique markets differently, and the results differ, even if they follow from the same ideas or have the same intentions. For example, in a country like India, where terrestrial broadcasting has been the monopoly of the state, the implications of telco entry into television broadcasting with IPTV is significantly different from the United States, where private broadcasting is well established. Further, the process of implementing regulatory reform depends on political order; both South Korea and India have had different agencies battle over jurisdiction. Yet, they exhibit different dynamics in part due to the public-private mix in place in Korea's regulatory structures, as opposed to an established post-colonial bureaucratic regime in India.

It is also not sufficient to suggest that things are different everywhere you look. To be useful, it is necessary to arrive at an understanding of how things might be different and why. When a government considers the notion of convergence, it is considering a fundamental shift in the way it organizes the sectors of broadcasting, telecommunications, and computing. Given the political and economic importance of these sectors, considerations about convergence include considerations about power, culture, technology, and order. Hence, it is useful to consider the role of local forces in the implementation of convergence and the development of relevant regulation (which we consider as a general term including law, policy, and other types of rules governing the operation of economic activity).

Some governments have already made significant progress in responding to convergence. Developed countries such as Canada, the United States, the United Kingdom, and Japan, as well as nations that have already embarked on such a path to boost ICT sector development such as Malaysia and Singapore, have implemented regulation to respond to convergence. As is often the case with policy diffusion, developing countries are now considering responses to convergence within their jurisdictions based on the experiences in these policy innovating states. Yet, the conditions and local forces in the US, Japan, or UK are fundamentally different from those in India, Laos, or Chile. In their transition from the global pool to local implementation, convergence will take different meanings and sometimes have unforeseen or even, for an outsider, ridiculous implementations.

In order to bring into relief the factors that affect how convergence enters into a market, it is useful to undertake a comparative study of different countries' that have had differing experiences with convergence. No two countries provide a better possibility for comparative analysis than the United Kingdom and India. These countries are usefully comparable because both India and the UK have a rich history of public broadcasting, a competitive cellular mobile telephony market, and similar legal and political structures. However, there are significant differences in terms of regulatory structure and socio-economic development. UK created a combined broadcasting-telecom/content-carriage regulator, the Office of Communication (Ofcom), in 2003 and implemented a service-neutral licensing regime. However, the Government of India in 2006 proposed the separation of the current combined carriage regulator, the Telecom Regulatory Authority of India (TRAI), into two bodies – one that would regulate broadcasting content and carriage, and the other that would focus on telecommunications carriage. Further, India has also only recently tasted success in the communications industry, while the UK is seeing significant innovation in both market structure and technology in a mature market. Consequently, **this paper compares India and the United Kingdom to identify what factors, such as legacy establishments and infrastructures, influence the meaning and implications of convergence.** Specifically, we are interested in understanding how local factors made a difference in regulatory response to convergence.

The purpose of this analysis is to help better understand how convergence translates from ‘global’ ideas and ‘technology’ into local implementation. Given the importance of policy convergence to many investors and stakeholders – domestic and international – we illuminate some of the possible factors that might interact with ideas and technologies to result in diverging experiences. This examination and its results will also be useful in discussions about regulatory reform responding to convergence. Both path-dependence and the instant political realities surrounding the communications industry are critical components of any discussion regarding how convergence might enter and affect a market. We develop a set of principles to help in the analysis of convergence and its regulatory implications, helping to strengthen policy interventions by making them responsive to the local situation, yet simultaneously allowing regulators around the world to benefit equally even if their approaches are different.

From idea to implementation: Transformation into the local

It is no longer revolutionary to suggesting that an idea or technology could take on different meanings and implementations in different places and at different times. In the field of telecommunications policymaking, there are sufficient examples of how concepts such as liberalization, efficiency, or universal service can be, and usually should be, modified in their transfer from abstract proposal to specific program. Indeed, moving an idea or technology from one country and applying it in another might be doomed to fail if not for adaptations to overcome and accommodate local specificities. The adaptation of regulatory responses to convergence requires an understanding of the adaptation of both technology and law, and here we turn our attention to our theoretical framework that will allow us to consider convergence moving from global to local.

Technology: Local style and substance

In his study of the history of electricity generation and distribution, Hughes writes about how technology transfer from one place to another involves reconfiguration according to locally specific political, geographic, and social conditions. Hughes is concerned with the style of systems as they evolved and grew through this stage. The regional systems compared in the book had similarities because of “an international pool of technology from which the industrial nations

drew.” Hughes suggests that technology transfer was “not so much from point to point or place to place as from place to pool to place. The common technology of the pool was shaped to suit the place.” Thus, although the underlying technology was similar, “differences found in the evolving regional systems – the essence of style – stemmed mostly from the non-technological factors of the cultural context.” Hughes concluded that, “out of local conditions comes a technology influenced by time and place, a technology with a distinctive style.”

With few (and increasingly rare) exceptions, electronic communication technologies invade markets where legacy networks exist. There are differences in the composition of legacy networks. In the United Kingdom, new communication networks often encounter older extensive cable television, wireline telephone, and wireless telephony networks. For a country like India, which has seen a recent spurt in infrastructure development, urban areas tend to have most of the same networks as in the UK, but in a rural area, it is likely that any deployment will truly be green-field. As Sawhney points out, the presence of older communication networks often influences the development of newer ones. He also points out that “each country has its own infrastructure development pattern,” or in Hughes’ terms, each country has its own style of infrastructure development.

When the forces of convergence act on the communications industry in a given country, the technological style will vary depending on the infrastructure available. For example, while IPTV over cable television is as likely in an urban or rural area in the UK, the poor quality of the relatively sparse rural cable television networks in India will probably see IPTV offered over wireless broadband. As an other example, specific considerations about unbundling local loops as a competitive measure to spur broadband deployment is relevant in the United States (or UK) where wireline telephone service is prevalent, with 95 per cent (or 92 per cent) of households having telephone service. It is not as relevant in India, where only an estimated 25 per cent of urban and 5 per cent of rural households have wireline telephones. However, cable Internet or telephony might be more relevant, depending on the state of the infrastructure, since about 50 per cent of urban and 15 per cent of rural households have cable connections. Any abstract idea regarding convergence will interact

with these local realities: it is probably useless discussing unbundling of local loops in India, but spectrum sharing is possibly more relevant.

Our focus is not only on the technical aspects of convergence, but also about how legal frameworks have changed to respond to convergence. Hence, it is useful to consider similar literature in the arena of law.

Legal responses to convergence: The absent 'revolution'

In their monograph about the political gridlock on the information superhighway, which the title suggests resembles the famed Gordian Knot, Neuman, McKnight, and Solomon suggest that the only way out might be to 'cut' the knot. Yet, they are careful to suggest early on that, "we share a strong skepticism of dramatic and simple resolutions proposed for complex political and economic problems." Even so, they believe the metaphor is apt, and "attempt to persuade [their] readers that [their] conviction is well founded and... judgment sound." Unfortunately, cutting the knot seems unlikely, and possibly the opposite of what actually happens.

The introduction of the Internet and the consequent dawn of convergence are, according to many accounts, revolutionary and hence deserving of a revolutionary legal and policy response. Yet, it was probably as (if not less) revolutionary as the introduction of telegraphy, termed the Victorian Internet in one account; the radio, which caused immense stock market frenzy; and the television. In each case, there was little revolution in the rules. From an American perspective, Bar and Sandvig describe, that policymakers treat new media by using older policies embellished with exceptions and additions. "Thus," they explain, "policy treats cable television as an extension of broadcast television, itself viewed as an extension of radio, and case law amends freedom of speech over time." They suggest that, "policymakers looking to resolve convergence challenges have favored incremental adaptation of past rules rather than fundamental redesign of the policy regime." It seems then, that policymaking is more tying knots than cutting them.

In order to understand what to do, it is thus first required of us to embrace the complexity of the policy problem: the knot confronts and we have, unlike Alexander the Great, no sword. Fortunately, frameworks exist which allow us to approach the problem, in all its complexity, and understand how the processes of convergence

policymaking might work. In her analysis of law as a process, Moore suggests that, “legal theory and practical affairs are far apart,” and that, “neither politicians nor social scientists can fully, nor, often, even satisfactorily predict the consequences of legislation.” According to the tradition of legal anthropology, in which Moore works, congruence between idealized legal principles and the law in practice is, without exception, absent. She suggests that, “to study rule-orders in action, it is necessary to deal simultaneously with the explicit rules, the occasions on which they are communicated and invoked, and with actual behaviour addressed by the rules, the contexts in which it takes place, and the ideas and assumptions that accompany it.” Based on her research in both ‘primitive’ and ‘modern’ settings, she finds that social processes prevent the total regulation of society while reshaping and transforming efforts at partial regulation. There are constant situational pressures to manipulate, circumvent, remake or replace the rules often matching the forces attempting order. Specifically, she explains, the piecemeal historical process of the construction of legal systems and the multiple sources of regulation and arenas of action both act together to prevent the full rationalization of any legal system.

Here, we are concerned with how global ideas about convergence translate into local settings. For an academic, WTO or World Bank official, or other innovator who wishes to influence a client country or policymaking agency to adopt certain rules or orders in response to convergence, Moore’s findings about the partial effect of law in society are very relevant. As she points out, “if partial rule by rules is all that can ever be managed, the fact has considerable import for planning and regulation.”

When a new rule enters an existing legal system, it interacts with older rules, and seldom ‘cuts the Gordian Knot’, but instead adds new layers and acts incrementally, as Bar and Sandvig suggest. India is a useful example here: the foundation of all telecom regulation is the Indian Telegraph Act written by the erstwhile British Government of India in 1885. Since then, it has been incrementally adjusted and modified and has even survived an attempt, in the early 2000s, at replacement. Even with the replacement of acts or regulations, the surrounding and interacting legislation and rules, and judicial interpretations and negotiations will impose contingency.

Global ideas about convergence also have to contend with multiple sources and arenas of regulation. These include the different government agencies within recipient countries, other international bodies (such as the ITU, World Bank, or IMF), local courts and commissions, and informal rules or understandings in the site of implementation. These ideas will pass through negotiations and interpretations based on these agencies' influence (what Moore calls a processual characteristic, "the ability to generate rules and coerce or induce compliance to them.") Ideas about convergence move from local context to a global pool and then back into local context. During these moves, these ideas transform, adapting to local conditions and social processes. Ultimately, these ideas about rules can change, be re-interpreted, ignored, or replaced by incremental layering on top of existing rules, or by other sources of rules and ideas.

Plura fusus unum: From one to many

Both Hughes' work on technology and Moore's work on law tell us that technique and regulation transform as they are implemented. In both cases, there is a source – for Hughes the 'global pool' and for Moore the rules of a coercive body – from where ideas and technologies enter an arena and in doing so interact with local forces. In both cases, cultural forces play a significant role in the transformation.

In the case of convergence as analyzed here, there exists one singularity: the technical aspects of IP networking. Beginning with this, we propose that a fundamental change due to these technical aspects is the separation of networks from services. This leads to the phenomenon of convergence (we specifically define it below), and some common global understanding about the implications. These might be 'convergence will change the structure of the telecom sector,' 'new business models will arise,' or 'hopefully we can make some more money from this.' However, from this point on, however, there is a divergence in opinion and implementation. This divergence has to do with how different stakeholders interpret the technology, which, in turn, depends on their individual conditions.

While a service provider in a developed country might view convergence through the lens of available unbundled wireline local loop, an operator in South Asia might focus more on the interactions

with their wireless broadband on 3G business. Policymakers also will have different interpretations. While some might see convergence as a way to break monopolies, others might be wary of a new era where monopoly rents might reduce or secure jobs might be threatened. The markets into which convergence enters differ. Depending on perceptions of demand and need, which policymakers and service providers base their decisions on, the enthusiasm for convergence might vary.

Ideas about regulation accompany technologies. In the case of IP networking, the challenge for all regulators is the separation of facilities and services that the technology allows – and this breaks down the aforementioned pairs with which regulators are so used to dealing. In this scenario, it is possible to see a growing call for more flexible and open regulatory schemes. One of the most common regulatory principles suggested is neutrality: that regulators and their rules should be technology and eventually service agnostic. Yet, as we shall see, even this reasonably accepted idea is received and treated completely differently in different locations; while the United Kingdom has, on the face of it, embraced neutrality, India seems to be reconsidering its earlier decisions and moves towards it.

Defining convergence

Information and communication technologies have evolved over an extended period. While postal systems and the press evolved through history, other technologies developed relatively recently. Telegraphy was commercially operational in the 1830s, and telephone service began in the 1870s. The television made its debut in the 1930s. Since then, the pace of innovation has increased, but every new communication technology (with rare exceptions) developed around a new infrastructure network. A consequence was that services (voice, video, and text data) and facilities (telephone, television/cable, telegraph/teletext networks) formed unique and exclusive pairs. Not only were the physical infrastructures separate, but so were the businesses. In most countries, there were telephone companies, television broadcasters or cable providers, and data service or email providers. Their business models, regulation and legal frameworks, and end-devices were mutually exclusive.

In the most general sense, convergence represents the end of these divisions. It is an umbrella term indicating the merging of different end-user devices, access and carriage networks, services, and the firms that provide them. From a technological perspective, the main cause of an increased interest in convergence is the possibility of separation of the traditionally tied-together facilities and services. The reason for this, of course, is digital communication but more correctly, IP based packet switched networking. The other factors driving convergence include the availability of broadband networks and the availability of low-cost high-power computing devices that can handle multimedia.

It is now possible for a cable company to offer telephony and Internet services with IP networking, or for a telephone company to provide a bundle of television over IP and Internet services – the so-called triple-play model. However, this is only one aspect of convergence; it is also inclusive of mergers or acquisitions between firms in traditionally separate sectors. The most famous example of this is the failed AOL-Time Warner merger in 2000. Since then, a number of businesses have sought collaborations or consolidations that allow them to expand their portfolios to respond to reducing revenues or changing user demand. In Brazil, incumbent telephone companies Telemar and Telefonica have plans to acquire pay-TV operator Way TV and cable television company TVA. In the UK, cable operator NTL purchased Virgin Mobile in 2006. End-user devices are also merging: while the home personal computer now can make phone calls, video conference, and access television services, the ubiquitous mobile phone also has graduated from voice to video and data. A classification of convergence thus depends on the mode of combination – networks, firms, or access devices combine. Yet, the outcome is always the offer of multiple services to the consumer by the ‘converged’ entity. Thus, the driving force behind convergence is the possibility of providing different services through one relationship.

In this paper, we will focus on service convergence, the provision of multiple services over one access network using IP equipment. Current jargon terms this ‘triple play’ – offering voice, video, and data over one network. The underlying shift in the organization of communications technology is the separation of content and facilities. With the means of delivery and the service separate, it is possible to have different services travel over the same facility. Hence, with triple

play, it is possible for cable, phone, or wireless networks to serve voice, video, or data to a consumer. This shift changes the rules of the game, because it brings down separation between who might operate in the telecommunications and broadcasting industries, and further, about the cost of service. In the all-IP network, routers do not care that a packet holds voice or video coded; all it sees are binary digits. With this changes the entire network structure, market scope, and economics.

Benefits and costs

With these changes are associated both benefits and costs. If the central aims of communication policymakers are universal service and competition, convergence will help forward these aims. It is now possible for data and cable television networks to provide telephony services, vastly improving the possibility of universal service. With telephone companies offering IP television, the broadcasting industry will also see competitive provision, which otherwise may be difficult. However, governments are also concerned about potential disruptions in their control over media channels, especially in broadcasting. They could have cultural or political concerns with convergence. In countries where broadcasting has been a state monopoly, for example, the possibility of YouTube or, in general, video over IP as a potential entrant into video provision is troubling. It is possible for media-controlling governments to view convergence as a potential political problem. Turkey, France, Thailand, India, China, and Morocco have banned or have considered blocking access to YouTube within their jurisdictions citing political slurs. Internet radio, which has been growing in importance and has an estimated 60 million listeners worldwide, has also seen blocking by governments in Uzbekistan and Thailand. Even a relatively open society like Canada has remained cautious about the cultural impact of new media. The government and regulator repeatedly have sought to ensure that local content remains pervasive in the converged era.

Service providers are in an interesting position. On one hand, they stand to gain significantly from convergence. As the Economist was right in pointing out, “although the industry likes to depict convergence as a great boon for customers, it ... will primarily benefit network operators.” Specifically, convergence “provides a cheaper, more efficient way to move data around on networks.” However, this

is only half the benefit. Where governments are worried about new broadcasters, telcos are looking at IPTV as a way to buttress their revenues. Cable companies see VoIP offerings as a way to attract more consumers and increase returns on their earlier infrastructure rollout expenditures. In the United States, where cable companies have incurred capital expenses over \$100 billion since 1996, over 5 million subscribers have signed up for telephone service with their cable companies in 2006. Cable operator Comcast alone has 3.5 million voice and 12.4 million broadband subscribers and has recently hired 4,000 employees to service them. Specialty VoIP operators like Vonage, which has 2.4 million subscribers, have entered a market that was otherwise the mainstay of the regional Bell operating companies (RBOCs). However, on the other side, operators also might lose their grip on the market. Over half of RBOC revenues currently come from voice service. While not the only factor, IP telephony offerings have played a significant role in causing people to move away from traditional wireline voice telephony. In developing countries, long distance tariffs have traditionally subsidized local calling. The introduction of Skype or other IP-based telephony service, which allow long distance calls for a fraction of the price, makes cross-subsidization difficult.

Regulators and their discontents

With convergence, it is possible for different infrastructures to offer the same types of content. Where earlier there was a one-to-one correspondence between network infrastructure and service, these technological developments allow one-to-many relationships: the simple correspondence has broken down. Consequently, rules have developed around medium-service pairings; there are radio broadcasting, cable television, and voice telephony rules. With convergence, it is possible to have cable telephony and television over telephone lines. The digitization of communication also mitigates scarcity, which is a justification for regulatory control in both telecommunications and broadcasting. The entire framework breaks down around such possibilities.

Regulations have also dealt with different services or media differently; there are completely different regulations for broadcasting and telecommunications, for example. This asymmetry is further complicated since the very philosophies informing regulation for

these earlier separate sectors are completely different, and if overlapping then usually conflicted. The conflict and overlap muddies the water, and it becomes unclear about which rules should apply where. This leads to another challenge: when rules and hence agencies are in conflict, regulatory uncertainty and risk increases. With convergence attracting significant investment – some analysts estimate approximately US\$400 billion over the next five years – heightened risk might delay deployment and any subsequent benefits. The processes of convergence thus pose significant regulatory challenges to governments. Consequently, discussions about convergence and its challenges are now prevalent around the world.

The regulatory challenges

Identifying these challenges is a difficult exercise because of the diversity of countries' situations. However, a number of studies have identified a set of universal challenges due to service convergence. These arise from the general trends of the merging of broadcasting, telecommunications, and computing: sectors that have had very different technical and legal histories and frameworks. Fundamental among these relate to competition policy, interconnection, universal service, quality of service, spectrum management, and service licensing.

A fundamental challenge involves the reconciliation of differing or conflicting philosophies underlying the legal and regulatory frameworks of the telecommunications and broadcasting sectors. Telecommunications policy over time has seen a reducing focus on regulation simultaneous with an increase in competition. On the other hand, broadcasting policy focuses on regulation, not competition. Further, telecommunications policy focuses on the carriage segment, while broadcasting is more attentive to content. The transition from circuit-switched telecommunications and unidirectional networks in broadcasting to packet switching, which is based in computing applications also poses a challenge to the technical basis for policymaking.

There are many policy and regulatory issues for governments to consider when dealing with convergence. Among these, we believe that competition and in it especially interconnection, licensing, universal service fundraising and disbursement, spectrum

management, and the design of regulatory institutions are the major ones. Here, we will (very) briefly introduce these. Regulators treat these challenges differently depending on where you look. In the following sections, we detail how convergence entered two different markets and then identify what factors might have led to current outcomes.

Licensing and authorizations

Traditionally, authorization regimes depended on service-facility pairs. With convergence, these pairings have disintegrated: facilities and services are separate and it is now increasingly difficult to maintain avoid overlaps that arise. In both India and South Korea, for example, there is confusion about licensing IPTV. The broadcasting and telecom ministries stake their claim through their respective acts and regulations. This overlap, or at least confusion, makes it difficult for service providers to make investments.

Competition and interconnection

With service-facility pairing, traditional models of interconnection assumed one-to-one connectivity. Further, the oft referred to 'intelligence' of the network resided in the switches and the core. This had two outcomes: interconnection regimes focused on cost-recovery based on the high cost of switch-based management, while technically, networks had physical and logical connections for both services and technologies. The move to packet switching and IP networking requires both interconnection for facilities and interoperability for services. Further, the associated cost structures have changed with concentration on the end-to-end model.

Of course, interconnection is one of the key issues in competition policy in the communication sector. Yet, other concerns also arise: will bundling of services, as is prevalent in the triple play model lead to anti-competitive behavior? How should competition regulators calculate market share? What might be the implications of lowering entry barriers into traditionally protected sectors such as broadcasting?

Spectrum management

With both wireless and computing technologies becoming cheaper, the use of radio spectrum has exponentially increased. There are now more than three billion cellular phone connections, and according to estimates by Wireless Intelligence, by 2010, this number will cross four billion. Wi-Fi chipsets sold in 2006 topped 200 million, and over 20,000 of Skype's VoIP Wi-Fi units are sold per month. Convergence allows bands that were used for one purpose to be put to multiple uses now. Through a combination of digital broadcasting and broadband wireless, there are proposals to offer triple play over the air. The introduction of digital broadcasting has the same impact on spectrum as did digital telecommunications technologies like GSM and CDMA, increasing efficiencies and opening new spectrum for use.

As convergence takes hold, there is a growing understanding that, within broad limits, spectrum can support any use. This leads to the possibility of treating spectrum like another type of infrastructure, albeit one that is scarce. Hence, it is no longer needed to tie spectrum with either a service or facility.

Universal service

Where one universal service meant plain old telephone service for everyone, convergence is opening the possibility that VoIP or other services such as broadband could also be added to the mix. Not only does this open the possibility for reaching more people, but it also changes who is funded and who subsidizes the rollout. Universal service fund collections are traditionally from telecommunications service providers, which did not include ISPs or cable companies. However, if they all offer the same types of services, it is probably now fair to apply the same rules across the board.

Institutional design

Convergence has also led to demands for converged regulators. This is a common demand because it helps service providers and other stakeholders in efficiently approaching one agency that manages the entire sector as opposed to dealing with multiple agencies (Korea has five different ICT-related agencies, India has three).

There are fully converged regulators (USA, UK, Malaysia, and South Africa) or converged carriage regulators with separate content

regulators (Singapore, Brazil, and Estonia). The justification is that a converged regulator is better suited to respond to new technologies and the interdependency of different communications services. Some countries have taken a different approach by including the regulation of the telecommunications sector in the mandate of a multi-sector utilities regulator, or by opting for an approach that veers away from sector-specific regulation and relies on the application of competition and antitrust rules to the communications sector.

India: Unified licensing and dissonant thought

Following independence in 1947, the state took control of India's telecommunications sector. Until the late 1980s, the network was labeled the worst in the world. A famous comedy series on public television had an episode where families tried to marry their daughters off to linemen in order to get a working telephone connection. The long waiting list for landline telephones grew from 0.59 million in 1982 to 2.29 million by 1992, or from 24 per cent to 34 per cent of total telephone connections. This was in spite initial attempts starting in 1984 to reform the telecoms sector. The monolithic incumbent split into two, creating national operator Bharat Sanchar Nigam Limited (BSNL), and Bombay and Delhi operator Mahanagar Telephone Nigam Limited (MTNL). The monolith also lost its regulatory and policymaking functions, and the public call office (PCO) revolution took place.

The situation has changed since. The average wait time for a wireline phone connection is now less than one week, and mobile phones – whose subscriber base grew at a compounded rate of over 30 per cent since 2000 – are available in street side stores. The government expects the total number of subscribers to cross 250 million by the end of this year. Apart from the liberalization of the telecoms sector following a major shift in India's macroeconomic policy in 1991, policymakers widely credit competition as a reason behind growth. In the story of this competition lies the history of convergence policy in India's communications sector.

When the government, in the early 1990s, request initial tenders for fixed and then mobile telephone service, licenses on auction were technology and service specific (only for GSM in mobile service). Diffusion was slow, and by 2000, only 29 million telephone

connections were active. It did not seem like it would be possible to reach the government's target of 70 million connections by 2007. A policy innovation to address this was to allow basic service operators, fixed line voice providers, access to spectrum in the 800 MHz band for the provision of limited mobility wireless in local loop service. It was not possible to constrain the technology, and soon, full-blown CDMA cellular service was beginning to challenge the supremacy of the GSM providers. The ensuing dispute focused on asymmetric licensing for substitutable service. In the end, after a Supreme Court decision and regulatory consultations and recommendations, the government implemented *unified access service licensing*, putting in place a technology-neutral licensing regime. However, 2003's UASL regime, which allowed service-neutrality except in broadcasting services, was only a temporary fix. It was part of a larger plan underway since the late 1990s to address convergence.

Given the excitement and interest in the Internet internationally, and especially since the government saw ICTs as a socio-economic growth tool, India's parliament considered the Convergence Bill in 2000. The Bill was discussed and debated in a number of public settings, and came close to becoming law. However, due to resistance from within the bureaucracy, the Bill had died by 2003. This marks the turning point in the regulatory progress India made towards convergence, and with one exception, backsliding has begun.

Regulator TRAI made recommendations on the second phase of unified licensing in 2005. Here, it proposed the government implement convergence-sensitive licensing, where operators would be able to offer all broadcasting and telecom services over any network. The government has not accepted these recommendations, or even those on convergence and competition issued in early 2006.

Since 2003, there has been only one significant move towards convergence-sensitive regulation. The government awarded erstwhile telecom carriage only regulator TRAI with power of broadcasting and cable carriage in early 2004. This was done partly in response to political pressures building around the botched implementation of conditional access service (CAS) in cable television and the sensitive issue of setting tariffs.

However, since then, a proposed Broadcasting Bill includes provisions for the establishment of a separate broadcasting regulator: BRAI. This

agency will have regulatory oversight in broadcasting content and carriage. While this proposal has not received as much attention as some of the content regulation provisions in the Bill, there is surprise on this move. The rest of the world is seeing the emergence of “converged” regulators that combine, at least, the carriage regulation of broadcasting and telecoms. Yet, India is moving in the opposite direction.

The potential confusion about which agency might regulate converged services in the future is already being evidenced in debates about the regulation of IPTV services. The cable television act regulates that industry, while telecom services follow the Indian Telegraph Act. Now, as telecom service providers holding the unified access service license plan IPTV (since the license allows triple play), cable operators claim that telcos too should have to follow the cable television act. On the other hand, FDI norms are relaxed in telecoms and stricter in cable television. These asymmetries have led to the point where the government has been forced to respond and has requested TRAI to look into the issue.

Such a situation is likely to be replicated in the future, as convergence takes hold as a technical reality and preferred business strategy. Yet, the government is holding fast to its plan to separate the carriage regulator instead of enabling the move to a converged sector.

United Kingdom: No turf to fight for

The last 25 years has witnessed major structural reforms in the UK communications sector. Latterly, a primary driver of these reforms has been technology convergence that has affected all aspects of the sector, including the way in which it is licensed and regulated. The communications system in the UK was a monopoly since the seventeenth century, when the King established the General Post Office (GPO). The scope of the state’s control over communications in the UK increased with the nationalization of the telegraph system in the mid-nineteenth century and then again through the gradual nationalization of private telephone companies at the beginning of the twentieth century.

The telephone business remained under state control for most of the twentieth century until the beginning of the 1980s when the government began the process of reform and restructuring. This was

followed in 1984 by the privatization of BT, changes in competition policy, and the establishment of an independent regulatory authority, OFTEL.

Prior to the privatization of BT and the liberalization of the market, the Government was the sole owner of the operator responsible for meeting its policy-objectives. There was therefore no need for an explicit regulatory function. However, with the structural reforms that began in the early 1980s, it became clear that an institution was needed to regulate the sector. OFTEL was established in 1984 with primary responsibility of enforcing operators' license conditions and making decisions in the areas specified in the operators' licenses (e.g. interconnection). Until its replacement by current Ofcom, OFTEL coordinated its activities with a number of other agencies looking after spectrum, broadcasting content, and so on.

These significant changes occurred in the context of far-reaching macroeconomic policy shifts in the 1980s. In the era of Thatcherism, the government drove relentlessly towards fiscal conservatism, liberalization, and privatization. The size of the bureaucracy reduced by a quarter over this period, and the practice of political appointments began, with the churning dissolving any closely held notions of 'turf'. Attention was also paid to the creation of neutral regulators, one of which was OFTEL.

After a moratorium on licensing until 1991, restrictions on market entry were largely removed, thus completing the liberalization process. By the end of the 1990s, the Government was explicitly thinking about the implications of convergence for the way in which the market was regulated. At the same time, the EU was developing a new regulatory framework. These came together in 2002 and 2003 with the creation of a converged regulator (Ofcom) and the implementation of the new regulatory framework. The key policy drivers have been to reduce the financial burden on the government, attract private investment, and encourage innovation.

Licensing providers of telecommunications networks and services has a long history in the UK. The structure of these licenses has evolved as new challenges have emerged – the most recent being technological convergence which has had a major impact on the UK's telecommunications licensing system.

This separation of facilities and services engendered by convergence has forced a change in the system of licensing through a separation of licenses into licenses to build and operate networks and licenses to provide communications services over those networks. This dual-license structure was the way in which the UK licensing system operated before the 2003 reforms. It was also the way in which the Authorization Directive (2002) of the European Commission described the activities that were carried out by undertakings in the communications sector. The structure defined in the Authorization Directive was transposed into UK law through the 2003 Communications Act. The current system in the UK in fact covers both network and service providers under the same set of 'General Conditions of Entitlement' which make no distinction between networks and services.

Convergence has also increased the number of companies entering the market since it allows multiple ways to provide telecom services. The UK government's response also combined its desire to minimize barriers to market entry. It switched from a system by which individual companies applied for licenses that would be given specifically to them to a system of general authorization in which anyone is free to operate in the telecommunications sector, provide that they comply with certain minimum requirements (the general conditions of entitlement). This is also consistent with the 2002 EU framework that required governments to implement an authorization mechanism that removed the need for a license application process.

By the end of the 1990s, technological convergence was a sufficiently important phenomenon for the Government begin considering a major reform in the institutions responsible for managing the sector. It proposed a gradual approach to the reform of the regulatory institutions of the sector but this was overtaken by the requirements of the new EU Framework. As a result, in 2002, the Government decided to establish a single regulatory body, which included all five of the institutions, previously responsible for regulating the sector (OFTEL, ITC, BSC, Radio Authority and The Radiocommunications Agency). This combined the functions of telecommunications regulation, radio-spectrum management, broadcasting regulation and content regulation. It was a direct response to the market and technological realities of convergence and aimed to provide coherent

and low-cost regulation across the entire sector and to reduce the risk of operators playing one regulatory body off against another.

Diverging experiences: India and the United Kingdom

What might these experiences tell us about the regulation of convergence? At first, it might seem that while everything is going forward in the United Kingdom, India digressed from its path to a converged communications sector. Yet, not everything is dissonant and a more specific analysis will aid our arrival at an understanding that goes beyond simple developed-developing dichotomies.

First, both India and the UK considered reforms in their telecommunications sectors in the early 1980s. In both cases, there were powerful monopolies to deal with: India's Department of Telecom (DoT), and British Telecom (now BT). With India, however, the plan went only half-way: the Prime Minister Rajiv Gandhi separated the regulatory functions of DoT and formed the Telecom Commission in 1989, and split the incumbent to create, MTNL to serve Bombay and Delhi, which at that point had over half the phone subscribers in the country. However, moving beyond this point was impossible due to the resistance of the DoT bureaucracy against losing any more power. As Bagchi notes, "The Ministry of Posts and Telegraphs [parent of the DoT] was more concerned with defending its turf against the newly formed Department of Electronics." By the early 1990s, the Telecom Commission was subsumed into the DoT fold and is no longer considered an autonomous body. The United Kingdom had a different story to tell mainly because of the force of reforms undertaken by the Conservative Party government. One of the key factors here was the complete revamping of the civil service and the elimination of 'turf'. While in India, job losses among the bureaucracy remain a main concern even today, the British civil service lost about a quarter of its staff during her term as Prime Minister.

India got its second chance around the time of liberalization in 1991. At the time, forced by near-default conditions, India opened up her economy and undertook significant reforms in the manufacturing and services sectors. The 'license raj', or state regulation of all economic activity disintegrated. It was in this period that significant changes were made in the organization of the Indian telecom sector, and the

most important of these was in allowing private investment in service provision. This leads us to believe that if governments need to do something against the forces of bureaucratic inertia, they tend to use crises or so-called post-election ‘honeymoons’ to push through reform. By taking advantage of these situations, it becomes possible to change decades old systems. Another example of such reform also fits with this finding: much of the work done in the UK around convergence, and especially in the formulation of the new convergence policy in line with the EU Framework happened after the landslide election of the Labour Party in 1997.

The UK also had the shelter of the EU. Bureaucracies everywhere tend to be conservative, and tend to avoid undertaking tasks that other stakeholders might disapprove. In the UK, even though support for the EU is not consistent, it provides regulators and policymakers an opportunity to shrug and claim helplessness; ‘the EU made us do it,’ they could say. It also helps that the UK is one of the leading policy innovators for the EU – this allows internal ideas to be ‘imposed’ if they cannot be implemented independently. Over the last decade, as participation in EU programs has increased, it has also become more common to subordinate some regulatory activity to the European standard. For India, membership to the WTO, which as McDowell notes, (as GATT then) forced Indian policymakers to make decisions they might otherwise have postponed.

However, much of India’s communications regulation is driven by crisis endogenous to the sector. Three relevant examples stand out. The move to Unified Access Service Licensing in 2003 followed the damaging legal battle between CDMA and GSM operators over the limited mobility arbitrage issue. When the immediate issue was resolved, further moves to convergent Unified Service Licensing stalled. When a law made conditional access (CAS) in cable television systems mandatory in 2003, the Ministry of Information & Broadcasting, which until then was considering its own sector regulator, called upon telecom regulator (TRAI) to address the issue. CAS has been one of the most controversial topics in Indian broadcasting policy, and it is not surprising to see the government give the responsibility to an independent regulator. Finally, the most recent example concerns the introduction of IPTV in the Indian market. A conflict is brewing between telecom service providers and

cable operators over whether IPTV is a telecom or broadcasting service and what obligations would apply. While in the past, the situation has been such that TRAI withdrew a 2006 consultation paper, the government has asked, as of last month, the regulator to prepare a set of recommendations on the issue.

Whenever a crisis arises, it is thus interesting to see the government turn to TRAI – noted as an independent and thoughtful regulator – to resolve it. By awarding it the power to regulate the carriage of both telecom and broadcasting services, and letting it work on issues like CAS and IPTV, we believe that the Indian government believes that a converged regulatory agency is good. Yet, it cannot bring itself to accepting it and hence is attempting to separate these functions across two different agencies.

Another interesting difference is in the role of the courts. While in India almost every other dispute lands up in court, the UK rarely sees communications firms seeking recourse in these forums. Indians are litigious enough that a separate specialist court, the Telecom Disputes Settlement Appellate Tribunal (TDSAT) was set up in 2000. Since then, it has worked on 1,819 cases and disposed of 1,500 of them. Other major regulatory reforms such as CAS, unified licensing, and even telemarketing regulations came about because of direct or indirect participation of various courts. Not only does this make India's regulator more conservative – it has to perform all its duties and make all its recommendations thinking that it might be hailed to court on them – but this also tends to slow down reform. The best example of this slow down is in the arena of interconnection: the Supreme Court has been considering whether TRAI can intervene to settle interconnection disputes since 2005. This has severely weakened the regulator's powers and reputation.

In the UK, though, the courts are a last resort for disputes. Operators are more likely to take problems first to Ofcom and then the competition regulator. Courts take a limited role in telecom issues. One of the main reasons for this is the view that Ofcom or the competition regulator are better placed to understand the technical and economic issues at stake; a non-specialist court will not be able to comprehend these issues and hence is not the forum of choice.

Convergence in policy thinking

No doubts then, that there are similarities and differences in the UK and India. When both markets faced technologies challenges due to convergence, they reacted very differently. What might some policy lessons be from this analysis?

One of the common aspects we found was that in both countries, irrespective of the outcomes, much of the structural changes could be implemented when the government was in a position of power, or had some crisis that 'forced its hand'. The Indian unified licensing regime could pass through its first phase when a crisis threatened to upset the entire progress in the sector. Indeed, the liberalization of the sector was aided, in part, by the structural adjustment package that accompanied emergency loans in 1991. The UK also had similar experiences: Prime Minister Thatcher could push for privatization and reform early in her tenure, and the victory of the Labour Party might have given it some leverage in considering alterations to downsize regulatory agencies and move to a converged framework. The lesson from this for countries seeking to reform their communication sectors is not so much to create or allow crises, but to act quickly when they get the opportunity.

A second lesson we can draw is that the processes of convergence are inevitable, and this forces governments to respond in unexpected ways. This is drawn from the Indian case, where a state no entirely willing to create a unified carriage regulator still turns to the under nourished telecoms regulator when it has problems in the broadcasting sector. Now that IPTV has become a potential problem, the government is investing in TRAI powers it might not have granted it otherwise: to define and regulate the communications sector as a whole.

Our second lesson leads to a third: that with convergence being inevitable, it is the government's choice whether it should lead or follow. Comparing India to the UK, it is obvious that while the UK system allows for and actually encourages innovation and new business models based in convergence, the Indian approach is to wait until the market starts creating pressure enough to force it to act. The long-standing principle of regulatory sequencing has been repeatedly violated in India: the regulator was created in 1997, five years after initial licensing took place, and rules have not kept up with

technology. Unfortunately, this odd ex post regulatory approach serves only to increase regulatory risk and reduce their appetite to invest in an economy that needs significant capital to continue expansion unabated.

We believe that governments should open their communications sectors to investment and encourage all types of innovative service models. Convergence offers the opportunity to change the structure of the sector, and simultaneously improve competition and quality of service. It is up to governments to decide whether they want to achieve these fundamental goals the easy way or the hard way.

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