

Regulation and the Convergence of the Telecommunication and Content Industries: A View from Australia

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Abstract

The paper addresses the regulatory implications and the competitive impacts associated with the convergence between once distinct markets. Specifically convergence is occurring in two primary forms: convergence to two-way broadband from cable, narrowband wireline and various forms of fixed wireless; and convergence to broadcasting from traditional two-way broadband technologies (a reversal of an earlier convergence). We argue that such rapid convergence warrants a reconsideration of regulatory arrangements and indeed a need for deregulation. Convergence raises two related policy concerns. First, the potential need for liberalisation of existing competition laws and regulatory practices, and, second, the need to harmonise any legislation and regulatory processes applying to the converging industries.

There are three reasons why convergence has such regulatory and legal policy implications:

- (1) Convergence broadens competition in existing markets or creates new markets with more competition than found in the traditional markets of the converging industries.
- (2) Due to convergence, different firms governed by different regulatory regimes may compete. However, this is not as it should be. A fundamental precept of regulatory policy is that it not arbitrarily have a material impact on one competing firm and not another.
- (3) Convergence, at least in telecommunications and publishing, increases uncertainty. In such an environment firm profit levels must be analysed from an ex ante perspective rather than punished ex post. In addition, it must be understood that in such an environment both vertical and horizontal mergers may be an important tool for risk management.

Convergence

Convergence occurs when technological change erodes the boundaries between what were once distinct markets or industries. Convergence raises two related policy concerns. First, the potential need for liberalisation of existing competition laws and regulatory practices, and, second, the need to harmonise any legislation and regulatory processes applying to the converging industries.

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- (2) Due to convergence, different firms governed by different regulatory regimes may compete. However, this is not as it should be. A fundamental precept of regulatory policy is that it not arbitrarily have a material impact on one competing firm and not another.
- (3) Convergence, at least in telecommunications and publishing, increases uncertainty. In such an environment firm profit levels must be analysed from an *ex ante* perspective rather than punished *ex post*. In addition, it must be understood that in such an environment both vertical and horizontal mergers may be an important tool for risk management.

We deal with the broad regulatory and policy implications of each of these in turn for the markets for telecommunications and content.

Convergence broadens competition

In the absence of anti-competitive mergers—a matter for competition law—convergence increases competition for existing services, or generates competition for new services, or both. As a result,

- any existing industry-specific regulation designed to protect consumers from firms with market power must be reconsidered;
- any analysis in competition law must be conducted with an eye to the changing environment rather than with a view to the verities of the past;
- where convergence is creating a new market, regulatory forbearance may be wise until the market has begun to mature.

To show how convergence increases competition and, as a result, calls for market deregulation, that is reduced regulation, we focus on two important cases—convergence toward two-way broadband and toward broadcasting. Both cases illustrate how convergence increases competition, sometimes from unexpected sources.

Case 1: Convergence to two-way broadband

Historically, two-way broadband, that is, bandwidth in excess of 64 kb/s,¹ was almost uniquely supplied by telecommunication firms and was too expensive to ever be a mass-

market product. Entry into two-way broadband from other industries, and from markets within telecommunications, has dramatically changed this. In particular, four sources of new competition in broadband can be identified: (1) cable television, (2) narrowband telephone services, (3) entirely new technologies and, (4) older sources of two-way broadband that moved into broadcasting and are now returning to two-way communications (discussed as part of Case 2 below). Four percent of US households subscribed to broadband services in 1999.²

For the bulk of their history cable firms were broadcasters, however, cable broadcasters now compete with telecommunication carriers in the supply of two-way broadband, all the way to the household. In 1999 alone, cable companies spent \$11 billion upgrading their networks to enable two-way digital services.³ Cable television is fundamentally similar to other broadcast technologies. It is a point-to-multipoint system for delivery of channels to a very broad consumer market. While it is true that cable television is typically both a subscription and a multi-channel service, and free-to-air broadcasting is not, there are no technological reasons for these differences. Free-to-air can be offered on a subscription basis—signals may be scrambled prior to transmission and decoded by a set-top box—and free-to-air broadcasting of multiple channels by a single firm in a given geographic market is typically limited by spectrum allocations and laws specifically preventing this. However, if cable suppliers were once broadcasters, the advent of the cable modem has changed this situation. Cable can facilitate speeds of anywhere between 512 Kb/s and 52 Mb/s downstream and up to 2 Mb/s upstream although, since bandwidth is shared amongst users, speeds are generally between 1.5 and 9 Mb/s downstream. Broadband cable services became commercially available in the United States, United Kingdom and Continental Europe respectively in 1997, 1998, and 1999.⁴ At the end of 1999 there were over 1.8 million cable modem subscribers in North America.⁵

Cable is not the only source of new competition in two-way broadband. Traditional narrowband communications systems are being upgraded to broadband technologies. Copper wire, the traditional medium of two-way narrowband communication systems, is already being used to provide commercial two-way broadband all the way to the house by ISDN and, much more importantly, over a number of digital subscriber line standards.⁶ Similarly, cellular telephony, historically a narrowband technology, will become a broadband technology by as early as 2001 with the advent of third generation mobile service.⁷

A range of new technologies already or soon will compete in the supply of broadband access. Current commercially available products include:

- 128 k wireless modems (Ricochet),⁸ and

² Varian, H, "Field of dreams", *The Standard*, March 17, 2000 [<http://www.thestandard.com/article/display/0,1151,12944,00.html>].

³ Lopez, Maribel, "Beyond Broadband", *Forrester Research*, March 2000.

⁴ Merrill Lynch: Broadband Interactive Services: The Next Wave, July 1999, p. 45.

⁵ <http://www.cabledatcomnews.com/cm/cmic16.html>. Cable modem customer rankings 12/31/99. Kinetic Strategies, Company Reports.

⁶ ISDN over copper cables connects at a relatively low bandwidth—128 Kb/s. Digital subscriber line technologies deliver much higher bandwidth. For example, ADSL provides bandwidth of between 1.5 and 9 Mb/s downstream and between 16 and 640 Kb/s upstream; and VDSL provides bandwidth up to 52 Mb/s downstream or 26 Mb/s symmetrical.

⁷ Japan NTT's DoCoMo is set to offer third generation network services in Spring 2001 - Vanessa Clark, "Euro operator aims to launch first 3G network", *Total Telecom*, 9 March 2000 [<http://www.totaltele.com/secure/view.asp?articleID=26321&Pub=TT&categoryid=625>].

⁸ The existing Ricochet narrowband service is expected to be upgraded to 128 kb/s in 12 U.S. cities by mid-

- 1 Mb/s fixed wireless service (Rooftop Communications).⁹

In addition, the development of low earth orbiting satellites (LEOs) promises to provide another source of broadband access within five years.¹⁰

Case 2: Convergence to broadcasting from two-way broadband and then back

Convergence in the reverse direction, from two-way communication to broadcasting, has also occurred in technologies originally used to carry high bandwidth communication services, as well as in new technologies. Geostationary satellites and high bandwidth radiowave links traditionally were used to wholesale two-way broadband. However, some decades ago geostationary satellites began to be used for broadcasting purposes, a form of convergence perhaps not widely commented on simply because penetration of such services remained low until the advent of direct broadcast satellite (DBS).¹¹ Satellite transmission of multi-channel subscription television is now a multi-billion dollar business. Similarly, high bandwidth radiowave links (fixed wireless), once used solely for two-way broadband transmission, are also widely used to broadcast multi-channel subscription programming. In the meantime, as access by residential households to high bandwidth links becomes more and more widespread, and compression technologies improve,¹² the world-wide web is increasingly being used to supply programming that competes directly with traditional radio and television broadcasts. Not only is the delivery of broadcast radio quite common via the web, but a new demand is emerging for programming automatically downloaded by a computer for subsequent watching. Forrester Research has estimated that there will be 14 million personal video recorders (PVRs) by 2004, with household penetration reaching 80 percent within 10 years.¹³ A recent court action shows that the traditional broadcasters take web-broadcasting very seriously. In February 2000 the Canadian Internet company,

⁹ Service became commercially available in April 1999 (www.rooftop.com).

¹⁰ For example, Alcatel's Skybridge is intended to be up and running by late 2001 with 80 LEO satellites. Teledesic, partly funded by Bill Gates, along with Motorola and Alwaleed, will be in full service by 2003 with 288 LEO satellites. In addition, Lockheed Martin's Astrolink, Loral's Cyberstar and Hughes' Spaceway are GEO based projects that are intended to be in service by 2001. The bandwidth potential of satellites is enormous. For instance, Teledesic intends to provide most users with up to 64 Mb/s on the downlink and up to 2 Mb/s on the uplink. (www.teledesic.com). Astrolink intends to provide transmission up to 110 Mb/s on the downlink, and 20 Mb/s on the uplink. (www.astrolink.com). Hughes' services range from its DirecPC service for consumers which boasts download rates of up to 400Kb/s and normal upload rates over an analogue modem, to its VSAT service that has download rates of up to 24 Mb/s and upload rates of 128Kb/s (www.hns.com).

¹¹ DBS service experienced rapid take-up. As of year end 1998, there were 10.6 million DBS subscribers (Merrill Lynch: *Global Satellite Marketplace 99 - 14 April 1999*, p. 25).and in 1997 37.1 million subscribers world-wide (p. 46)..

¹² Motion Picture's MP3 appears to be the current compression standard for sound, but Wave, RealAudio media and Liquid Player media are also popular. Video compression standards are more varied and include RealVideo and QuickTime. Most of these standards have gone through several upgrades since their inception, for example, M1V and MP2 were predecessors of MP3 and RealAudio has released several versions of its standard.

¹³ Merrill Lynch (*Broadband Interactive Services: The Next Wave*, July 1999, p. 43.) PVRs record programming downloaded via either a satellite or cable onto a hard disk for viewing at the owner's discretion. Intelligence in the box allows the creation of personalised channels. Storage capabilities ultimately will be in the vicinity of 14-30 hours. Currently, the major service providers are TiVo, Replay TV and Dish. TiVo operates through DirecTV, via a video on demand service. The Carmel Group predicts that the Personal TV market will yield more than 10 million subscribers by 2005 (www.tivo.com). Replay TV offers personalised on-demand "channels" that can be created by program, actor, sport, etc. Dish offers a "satellite receiver [that] is the world's first satellite receiver with a built-in ultrafast, multi-gigabyte hard drive capable of recording and playing back simultaneously full-quality digital video. The disk drive makes possible a number of enhanced digital TV features, including TV Pause ("freezing" a TV show for up to 30 minutes and resuming when the viewer is ready to watch again, DVR (automatic recording of several hours of high-quality digital video) and downloadable video games. The DVR feature is planned to be available at the end of the year as a WebTV Plus and EchoStar

iCraveTV.com, was shut down by a lawsuit filed by the Motion Picture Association of America, because it could not prevent US users from accessing its site.¹⁴

Not surprisingly, in both satellite and wireless cable, the process of convergence did not stop with the shift from two-way broadband to broadcasting. Suppliers of these broadcast technologies have recently returned to two-way broadband, but this time in retail as well as wholesale markets. DBS Internet access provides download rates of 400Kb/s, with a return path of up to 56 Kb/s over a telephone line.¹⁵ One supplier of this service, DirecPC, had 40,000 DBS Internet subscribers as of mid-1999.¹⁶ Fixed wireless options also abound with two-way communications speeds in the T1 range and higher.¹⁷ In Australia, AAPT (www.AAPT.com.au) has completed testing and aims to offer Local Multi-point Distribution Service (LMDS) to customers in early 2000. In the United States, WorldCom has invested over a billion dollars in Multi-point Multi-channel Distribution Service (MMDS) spectrum to try and tap the residential and SOHO (small office/home office) markets, and is now offering wireless Internet services over this spectrum in some cities. AT&T, with heavy investments in TCI and MediaOne, is also poised to take advantage of fixed wireless. The Wall Street Journal (20 September 1999, R14) reports that as many as 200,000 wireless broadband subscribers are expected by the end of 1999.

It is also possible to use free-to-air spectrum in conjunction with a telephone return line, and this is especially so for digital broadcasts (because digitalisation allows substantial increases in bandwidth utilisation). In the US, iBlast, a consortium that includes the Tribune Company, Gannett, Cox Broadcasting, Washington Post Company, New York Times, and Meredith Corp, intends to do exactly this. It has already signed up over 140 local television stations in 102 cities and will reach more than 80% of the US with its network.¹⁸

Summarising convergence to two-way broadband and broadcasting

In summary, rapid convergence has taken place over the last five years in the market for high bandwidth services, and especially in delivery of those services to the household. Two-way broadband to the home is now commercially supplied by a range of options. First, over what in recent times were largely broadcast technologies: HFC cable, satellite, and fixed wireless; second, over copper wire (ISDN and xDSL); and third, on completely new technologies such as wireless modems and fixed spread-spectrum antenna. In the future it is likely that broadband access will also be supplied over free-to-air broadcast spectrum in conjunction with a telephone line, via new satellite enterprises and over third generation mobile telephone services.

In broadcasting, convergence has taken place over a longer period. As a result, the picture is not quite as dramatic. Once broadcasts were delivered via free-to-air signals. Now they are delivered by cable, satellite, fixed terrestrial wireless, and increasingly over the world-wide web.

¹⁴ See for example, The New York Times (C4), 13 March 2000, Denise Caruso, [www.nytimes.com/library/tech/00/03/biztech/articles/13digi.html].

¹⁵ See DirecPC [<http://www.direcpc.com/>] for DBS bandwidth.

¹⁶ DirecPC Experiencing Slow Consumer Growth, But Is Optimistic, *Communications Daily* (Apr. 8, 1999); Merrill Lynch Analyst Report Concerning Hughes Electronics Corp. (June 23, 1999). Cited in FCC: Docket No. 98-146. Released on February 18, 2000.

¹⁷ Teligent's Smartwave (www.Teligent.com) fixed wireless technology allows customers to choose speeds of between 64 Kbps and 1.544 Mbps (i.e., T1). Wireless One (www.WirelessOne.com) offers speeds of between 256 Kbps and 10 Mbps. SpeedChoice (www.SpeedChoice.com) claims "realistic download speeds of 1 to 2 Mbps at home".

Convergence calls for deregulation

In each of the examples in the previous section convergence has significantly increased opportunities for supply-side substitution. Yet both telecommunications and broadcasting are heavily regulated industries, and much of this regulatory apparatus is concerned with market power.¹⁹ This raises the question—are the concerns of the past still relevant today? In many instances they are not, yet it seems that regulatory policy has not kept pace with technology-driven changes within these industries. A simple example from Australia illustrates this point.

Despite the rapid development and actual roll-out of alternative broadcast delivery systems, in 1997 the Australian Competition and Consumer Commission (ACCC) declared analogue cable delivery of television channels, meaning any firm seeking access to analogue HFC transmission for broadcasting purposes can seek regulatory intervention if they are not satisfied with the deal offered them. This decision was reconfirmed in 1999. But analogue cable is one of three technologies that are commercially available in Australia for delivering multi-channel television, and one of at least five sources for multi-channel delivery (cable, wireless cable, satellite, digital free-to-air, and the world-wide web). Moreover, digital transmission over cable is not subject to declaration. It is time we caught up with the present, and even hazarded a glance into the future. Competition policy may no longer require an access regime in multi-channel transmission. Instead, convergence-driven competition already polices such access. This has been better recognised by the United States Federal Communications Commission (FCC). For instance, William E. Kennard, Chairman of the FCC, recently remarked:

“A fierce battle has erupted over what to do with one of the possible broadband connections: cable. Some fear that cable companies will get a lock on the broadband market, dictating who can connect to the system and where users can go once on it. Calling for “open access,” they want the Federal Communications Commission to step in and regulate the cable platform.

“The quest for openness in the Internet is in line with the history of this medium's remarkable development. Indeed, the Internet's open protocols as well as FCC decisions not to regulate the Internet and to open up access to the phone network are at the heart of the network's growth. E-mail, the Web and Internet radio are only some of the applications that have been developed and deployed in this open environment.

“What we need to remember now is that no one could have predicted these innovations. We cannot regulate against problems that have yet to materialize in a market that has yet to develop.

“... the FCC has decided not to intervene in this nascent broadband market. In doing so, we are following advice as old as Western civilization itself: First, do no harm--a high-tech Hippocratic Oath.

“Instead, we are taking steps to ensure that there are many competitors in the marketplace, not just cable. ... we've decided to allow the cable companies to go ahead with their efforts to deploy broadband access without pre-emptive regulation, even as we closely monitor the marketplace for anticompetitive behavior.” (Wall Street Journal, August 24, 1999)

However, a number of regional court decisions have taken contrary stances seeking, as in Australia, to enforce open access on cable.²⁰ Further, it appears that even very large players

¹⁹ For example, in Australia, the U.K. and the U.S. dominant telecommunications carriers are subject to industry-specific trade practice regulations, and industry-specific rules restrict media holdings.

²⁰ The main battle grounds are: (1) Portland, Oregon, (2) Broward County, Florida, (3) San Francisco, California, and (4) Fairfax City, Virginia. To date decisions have gone against the cable operators in Portland (AT&T), Broward County (AT&T and Comcast) and Fairfax (Cox), while a recent decision in San

like AT&T and AOL/TimeWarner feel political pressure on these issues that amounts to *de facto* regulation. AT&T has consistently argued that it should not be regulated in these matters, yet also claims it supports open access irrespective of regulatory requirements. AOL/TimeWarner have flip-flopped on the issue, though prior to the merger of these two giants AOL was strongly in favour of FCC intervention.²¹

Competition between firms subject to differing regulatory regimes

Convergence calls for a harmonising of regulatory regimes because it brings differing industries with differing regulatory burdens into the same markets. A fundamental precept of economic efficiency is that regulators must treat like as like. To do otherwise is to distort choice in a way unrelated to underlying costs. The ACCC declaration of analogue cable transmission again serves to illustrate. It may be the case, despite the increasing number of actual and possible sources of broadcasting transmission supply, that Australian consumers need protection from market power in multi-channel transmission. Yet, if this is the case, Australian consumers are ill-served by rules that are not technologically neutral. It hardly makes sense to uniquely apply an access regime only to analogue signals, exactly at a time when the industry is beginning to move to digital transmission, and only on one medium (HFC cable) that is neither unique nor dominant among transmission modes.²²

To regulate a single technology in this manner will inefficiently distort investment and consumption choices in a number of ways. It is likely to:

- delay an efficient shift to digital transmission (because the regulator, having declared analogue access which downstream firms rely on, may find it difficult to allow the analogue access provider to withdraw that service);
- bias investment and consumption decisions between the various technologies; and
- distort the volume of investment undertaken in the industry.

New markets

The final argument for reduced regulation that convergence raises is the regulatory principle of forbearance in nascent markets. Convergence does not always move one industry or market into another's existing market places. It can also bring industries together in new arenas. The Internet is a good example of a new industry which includes markets for access, content, and backbone infrastructure. Suppliers in all of these markets include traditional phone companies, fixed-line and wireless start-ups and cable television suppliers. Yet in 1990, virtually none of these services were commercially available.

When new markets are being formed it is very hard to know whether any market failure justifying state intervention is likely. The mere observance of a current market problem is of little consequence. Market mechanisms designed to deal with such problems typically arise, and regulatory intervention in advance of these would only delay or even prevent such solutions from emerging. The congestion externality on the Internet provides an example.

October 1999; and AT&T Press Release: San Francisco Telecommunications Commission Vote Supports Market-Driven "Open Access" to Cable Internet Service, January 24, 2000).

²¹ ISP-Planet, Mar 2000:http://www.isp-planet.com/politics/fcc_ditchdigger_or_puppet.htm. AOL now takes AT&T's position that they support "open cable", but not through regulation.

²² Satellite coverage dominates the reach of HFC cable in Australia. Cable is also sharply less flexible than both satellite and fixed wireless, having very few alternative uses. It has an advantage over both in that it does

An externality occurs when one person's action affects a third party's well-being. Markets can have difficulties dealing with externalities because they are difficult to price. Congestion externalities arise on the Internet because:

- the traffic of one user or provider typically traverses many others' networks, and
- there are very limited methods of sending a price signal from suppliers of transmission to distant transmission users.

The presence of significant congestion externalities associated with Internet usage have led to a number of, in some cases dire, predictions of network break-downs. For example:

"The final blow came at the end of the year with the publication of a study ominously titled "Chronic Web Congestion," put out by Hans-Werner Braun of the San Diego Supercomputer Center. Citing infrastructure problems extending into the foreseeable future, the study argued that the Web slowdown was not due to temporary growing pains—it was all but permanent. That highly publicized report gave substance to Web developers' worst fears." (<http://www.wired.com/wired/archive/4.04/wipeout.html?pg=2&topic> The Great Web Wipeout, Chip Bayers. 4.04 - Apr 1996)

"the problem itself is much more insidious than a complete but straightforward network failure. It is about constantly escalating Internet traffic causing an almost undiagnosable, creeping paralysis which affects certain portions of the network. And it's going to get worse." – "Internet: Failure of the Century", *TotalTele*, 1 March 1998.

Despite this, dramatic investment by network suppliers continues to occur, apparently more than keeping up with the extraordinary growth in demand for Internet access and bandwidth.²³ While it is probably still too early to say whether the market has found adequate permanent solutions to this issue, it seems to be doing well enough. Government intervention four years ago, when some well-respected pundits forecast the Internet was soon to collapse, would have been premature.

Increasing Uncertainty

Convergence—the merging of different markets—typically creates significant uncertainties. This must inform regulators' views of profit, and of horizontal, and vertical relationships between firms.

Convergence, when it involves a restructuring of entire industries, can create a great deal of uncertainty about whether a particular firm or even market will succeed. This is so in the cases at hand. Consider taking bets on any of the following statements:

"Dataquest is forecasting that more than 10 million customers will subscribe to a satellite voice service worldwide by 2003." (Australian Financial Review, August 1999)

"... even as ISDN is just now gaining broader acceptance, it is doomed — squeezed by analogue (56K) modems at the low end and DSL and cable at the high end." (International Data Corporation, 1998²⁴)

²³ There is "broad-based investment boom in broadband, both backbone and last mile, amounting to tens of billions of dollars." (FCC: Docket No. 98-146. Notice of Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, February 18, 2000); "Because of network testing's importance, carriers and end users are fueling healthy demand for test equipment. Revenues of \$840 million in 1996 are expected to surge to \$1.2 billion by 2000, Tom Moore, of Frost & Sullivan, Internet Telephony: Code blue: network in distress. April 13, 1998.

“Within 10 years, the circuit-switched network could lose 25 percent of its voice traffic.” (Mike Doss, vice president of marketing and business strategy for Siemens Telecom Networks, November 1998²⁵)

“The idea that dominates the telecom environment is that wireless networks will some day handle all traditional voice telephone calls.”²⁶

“Some industry experts forecast that data and multimedia traffic will grow from 5 percent of wireless communications in 1996 to as much as 70 percent by 2005.” (Merrill Lynch, 1999)

“Merrill Lynch analyst Jonathon Cohen estimates that by the end of 2004, fully 95 percent of the domestic population will have Internet access.” (Merrill Lynch, September 1998)

The Internet telephony market will be worth USD\$19 billion by 2004, vs USD\$480 million in 1999, according to International Data (IDC). According to IDC's report, IP telephony traffic will total 135 billion minutes in 2004, vs 2.7 billion minutes in 1999 and 310 million minutes in 1998. (Total Telecom, September 1999)²⁷

Worse, the risks associated with these uncertainties are exacerbated because many of the relevant technologies require large sunk costs—most notably pulling cable to the curb or desktop and putting up specialised satellites—but also in the development of software (e.g., to provide payment mechanisms, or for delivery of video on demand) and content (e.g., a movie or computer game). This means firms have to risk large amounts of capital that, once invested, cannot be recovered if things do not work out.

Uncertainty and profit

Regulators, in considering whether a firm has market power—which amounts to the ability to earn a high rate of profit over the long term—must take account of the *ex ante* risks that firms bear. As risk levels rise, so do the optimal returns for successful projects. Merely noting that a firm is highly profitable *ex post*, fails to account for the *ex ante* uncertainty that generated the new high returns or market value. If regulators do not give weight to this, the incentive to invest will be severely curtailed. This will bias investment toward industries that face lower risks.²⁸

A firm's willingness to invest is determined by its expectations about profit. As a result, *ex post* profits, in an industry characterised by a high degree of *ex ante* uncertainty, may in some cases be quite high. This does not indicate a lack of competition.

High *ex post* profits due to *ex ante* uncertainty may arise in at least two ways:

- (1) It may be that the industry's future as a whole is uncertain. For example, it might be expected that if things work out profits in the industry could be rather high, but there is also a real chance that the entire industry might incur large losses. In this case, it would be a mistake to read large *ex post* profits as an indication of lack of competition. Rather, high profits may simply indicate the gamble paid off. The relevant question is not whether high profits are now earned, but whether the

²⁵ Tele.Com. It's Your Move, by Steven Titch.

²⁶ Communications Headlines, 15 November 1999, The Benton Foundation, paraphrasing Stephanie N. Mehta of the Wall Street Journal, 15 November 1999, (A6) <http://interactive.wsj.com/articles/SB942620943355819772.htm>

²⁷ <http://www.totaltele.com/view.asp?ArticleID=23675&Pub=tt>

²⁸ The claim is not that investment without regulation will be optimal, just as there is no claim that investment generated by existing intellectual property laws is optimal. The point is that such regulation

expected return, allowing for risk compensation, was high.²⁹ And in the industries we are discussing, such a prospect is more than a theoretical nicety as two examples from the satellite industry illustrate. DirecTV and News Corporation's satellite broadcasting arm have been remarkably successful, despite some early difficult patches, and pundits views to the contrary. On the other hand, a similar bet on mobile satellite communications was disastrous for Iridium and ICO's original investors.

- (2) There may be an expectation that successful firms within the market will earn high profits, but with a good deal of uncertainty about which firms will be successful. However, again, the mere fact that successful firms earn high profits *ex post*, does not indicate market power in a sense that would require regulatory concern. Again it is the expected profit that matters. The entertainment industry provides a good example. Winners in this industry—the maker of the day's Titanic, Furby, or PlayStation—can make very large profits. Firms compete vigorously to achieve such successes, and in most cases no particular firm consistently dominates the industry over time. But sometimes a particular firm is luckier than most. This need not and typically does not indicate a failure of competition.

Notice too that both cases may result in *ex post* market power. However, a focus on this would not recognise that it was exactly the possibility of such power that led to the new investment necessary to create the industry or market.

Uncertainty and market structure

Regulators must also be aware that ownership structures and inter-firm relationships are fundamental mechanisms of the market place for reducing risk. Vertical integration provides an important example (and indeed, explains the existence of firms themselves). Convergence is creating a great deal of uncertainty as to where in the value chain profit will be appropriable. It is very difficult to know what combinations of technology will succeed and where bottlenecks are likely to occur in the chain of production. Will the portal owner be able to claim the customer's dollar, or the provider of the technology that enables widespread electronic financial transactions, or the provider of access, or the supplier of content on those transmission systems? Uncertainty as to who will be able to hold up whom over such a string of vertical links can be resolved by developing vertical relationships, for example, mergers or joint ventures. Such relationships provide insurance in an environment in which little is yet understood, and may not even turn out to be representative of longer term industry structures.

Similarly, regulators need to consider horizontal relationships between firms in the light of the uncertainty of these industries. In a world where it is not clear what standards will succeed, firms both compete on the basis of standards, and seek to agree on standards to insulate themselves from being sidelined by choosing the wrong standard. Is it anti-competitive behaviour when a large group of powerful firms get together to agree on a software standard explicitly designed to promote their own bottom lines at the expense of a small group of their competitors? This is what Java is all about, but in the context it hardly seems anti-competitive (this highlights the earlier question about the relevant market—is the market for universal applications on the Internet, or for operating systems? In converging markets such questions are often hard to answer). Is a firm seeking to promote a cartel when it provides what many would consider commercially sensitive material to rivals in order to promote its own standards? This is common behaviour in the

²⁹ Consider an industry with a 50% chance of glorious profits and a 50% chance of dismal losses. The expected return in this industry may be normal, but if in fact the industry is successful it will earn very high profits. If

open source software community. Indeed, some would like Microsoft to be forced to release the source code of its operating system in order to strengthen competition in the applications market. This would likely increase competition for applications run on Windows, but would increase the dominance of that operating system. The benefits of the former do not obviously outweigh the costs of the latter. In all these cases, regulatory forbearance seems to have significant merit.

Conclusion

Convergence, virtually by definition, increases competition. It brings different markets and industries together. This calls for a *forward looking* review of existing regulation and regulatory approaches. The supply of telecommunications and content in many countries is subject to industry-specific regulation that convergence is making obsolete and harmful. In addition, convergence brings with it a great deal of uncertainty, and this must inform regulatory attitudes towards profit, and vertical and horizontal relationships among firms. The full benefits of convergence will be postponed or lost unless we pay attention to the future rather than the past.