

contended that there should only be general market conduct regulation (say, under section 46 of the Trade Practices Act) to regulate the terms and conditions of supply of access to essential services. The central contention of this paper is that, with such regulation in place, convergence does not provide a convincing policy justification for the application of any additional industry specific laws.

2 The costs of regulatory error include the potential deterrent effect of regulation on competitive conduct. See generally Landrigan M. & Warren T., *Administrative costs and error costs in market conduct regulation: two case studies*, 7(3) (2000) *Competition and Consumer Law Journal* 224-239.

3 For a discussion of the ACCC's application of the access regime in Part XIC of the Act to telecommunications, see generally Warren T. & Landrigan M. (2000), *The Long Term Interests of End Users or Competitors?*, paper presented to Industry Economics Conference, UNSW Graduate School of Economics and Management, 7 July 2000.

4 For more detail on these technologies and their commercial supply see Little, Ralph and Wong *Regulation and convergence of the telecommunication and content industries* NECG Papers, November 1999, pp. 3 and beyond, which has an Australian perspective, and Speta, J. *Handicapping the Race for the Last Mile?: A Critique of Open Access Rules for Broadband Platforms* Yale Journal of Regulation Vol. 17 (1) Winter 2000.

5 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 not need a line of sight.

6 Hogendorn, C. *Broadband Internet: Open Access TPRC*, 24-25 September 2000.

7 Katz, ML and Shapiro, C (1985) *Network externalities, competition and compatibility* *American Economic Review*, 7, June, 424-40, provides an early discussion of network goods; for an overview from these proponents see Katz, ML and Shapiro, C (1994) *Systems competition and network affect*, *Journal of Economic Perspectives*, 8 (2) Spring, 93-115.

8 Liebowitz, SJ and Margolis, SE (1994) *Network externality: an uncommon tragedy*, *Journal of Economic Perspectives*, 8 (2), Spring, 133-50.

9 Liebowitz and Margolis use slightly different language. For them a network externality is a network effect that leads to market failure. I use the term to mean a standard externality, but one that arises due to joining a network. As is well known, but often forgotten (see Liebowitz and Margolis, 1994), the mere presence of an externality does not lead to market failure. Most externalities are infra-marginal, that is, they do not effect choice at the margin, and hence do not lead to inefficient outcomes. For example, the network externality associated with telephone subscription can only cause market failure if it is optimal for someone to subscribe to the network but they do not. While an externality exists when a person makes a choice to subscribe (since third parties benefit from the decision) no market failure

occurs because the optimal decision – subscribe – is made.

10 Liebowitz, SJ and Margolis, SE (1995) *Path dependence, locked-in and history*, *Journal of Law, Economics and Organization*, 11 (1) 205-226, at 221. This paper also notes the visual and audio quality of the Betamax tapes were only marginally better than the VHS format, but that the longer recording length of the VHS format, and JVC's ability to partner with large VHS recorder manufacturers, were key in the success of the VHS standard. See also Sutton, J (1998) *Technology and Market Structure: Theory and History*, MIT Press, at 103.

11 See, for example, Sutton (1998, at 412, note 5) on VHS; Garrard, GA (1998) *Cellular Communications: Worldwide market Development*, Artech House Publishers, 164 ff, on GSM; and Bresnahan and Greenstein, 1999, on computer platforms.

12 Bresnahan, TF and Greenstein, S (1999) *Technological competition and the structure of the computer industry*, *Journal of Industrial Economics*, 47 (1) March 1-40, at 3 and *passim*.

13 Shapiro, C. and Varian, H. (1999) *Information Rules*, Harvard Business School Press: Boston, Massachusetts, at 214 and *passim*.

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Competition in Converging Markets

In our second article dealing with telecommunications competition regulation, Dan Lloyd and Peter Waters examine the phenomenon of convergence in shaping regulatory policy.

The hype generated in the capital markets and the press over "convergence" seems to be infecting regulators and policymakers. Policy decisions are increasingly based on the promises of this phenomenon.

It is undeniable that convergence of electronic communications industries is not only proceeding, but delivering very real outcomes and benefits for consumers. The digitisation of communications technologies has, for example, enabled greater inter-operability and intelligence of networks and end-user devices. This has allowed consumers to receive email via their mobile phone, to listen to the radio on their PC, or run broadband data systems over their ordinary copper telephone line.

However, when dealing with "converging markets", analysts and policy-makers can mistakenly assume that convergence is a coherent, uniform process; overestimate its pace; or assume that it is an inherently pro-competitive process. This overly

simplified view of convergence can lead policymakers:

- To abandon sector-specific regulation in favour of generic "lowest common denominator" schemes covering telecommunications, media, broadcasting and information technology;
- To employ increasingly wide market definitions, and thus underestimating incumbents' market power;
- To confuse the convergence of technologies, industries and networks with the convergence of markets; or
- To ignore the very real potential for anti-competitive conduct that some forms of convergence exhibit – particularly the expanded scope for cross-market leverage.

These misplaced assumptions have potentially serious consequences for competition in converging markets,

especially for continuing effective regulation of vertically-integrated incumbents. It is surprising, therefore, that this fundamental policy shift has not been preceded by a comprehensive examination of the fundamentals of convergence: What exactly is it? How fast is it proceeding in different markets? What are the actual regulatory implications of different forms of convergence, and at different times?

DEFINING AND "UNPACKING" CONVERGENCE

Much of the confusion surrounding convergence arises from the fact that the term "convergence" is not used to describe a single homogenous process, but a range of processes operating at a variety of levels. In making recommendations about how to regulate converging markets, policymakers often rely on generic definitions of convergence which amount to little more than "we know it when we see it". A recent expert report prepared for the New Zealand

Ministerial Inquiry into Telecommunications, for example, recommended against the introduction of a telecommunications-specific regulatory regime, primarily on the basis of convergence, on little more than the following assertion:

*"Convergence is a desirable phenomenon because of its ability to increase the level of competition in the market... convergence is not only a substitute for regulation, it is a phenomenon that can be placed at risk by regulation."*¹

It is also often assumed that the term "convergence" inevitably denotes the convergence of markets, and is therefore unquestionably a wholly pro-competitive force. Indeed the terms "convergence" and "competition" are increasingly used as synonyms:

*"Convergence increases competition, indeed by definition it does so by bringing different industries together."*²

When these generalisations are examined and "unpacked", convergence appears to be comprised of a number of distinct forms and trends:

- *network level technology convergence*, for example, involves the merger of underlying transport technologies (eg circuit-switched and packet-switched networks), such as the migration of circuit-switched voice networks to packet-switched data networks;
- *gateway convergence*, on the other hand, involves separate services, usually delivered over one transmission pathway, which are accessed by the customer through a single user interface. For example, access to voice telephony and e-mail via the same mobile handset;
- *service convergence* involves the delivery of multiple services through a single "pipe" to the customer, such as pay TV and Internet over xDSL;
- *substitutional service convergence* emerges where an existing service "encroaches" on a separate existing service and becomes substitutable for that service. For example, the gradual emergence in some markets of the substitutability of mobile for fixed voice services;
- *bundled convergence*, on the other

hand, emerges where services continue to be delivered over their traditionally separate platforms, and continue to be used separately, but are marketed, priced and billed as a single retail package. For example, fixed telephone and pay TV access offered as a single, cut-price package;

- *new converged services* emerge where new technologies and functionality are used to develop entirely new services, which may or may not substitute for existing services. For example, unified mailboxes that operate over a variety of networks; and
- *the convergence of markets*, on the other hand, is a quite distinct development which involves the development of services to such an extent that they become genuinely substitutable for other services, as far as both suppliers and consumers are concerned, so that two previously separate markets have effectively merged into one. For example, it is often claimed that HFC cable and xDSL over copper are fully substitutable in the market for broadband Internet services.

There are obvious dangers associated with assuming that the first six forms of convergence outlined above inevitably mean the last-convergence of markets. A critical omission in analysing convergence often lies in the failure to undertake a careful examination of the substitutability of services, and to inform this assessment with a thorough consideration of demand side factors – how customers use services – as well as supply side factors such as the transmission technologies used to deliver services. If services remain merely complementary or additive and not substitutable, it is a clear indication that markets have not yet converged, although other forms of convergence may well have taken place.

THE PACE OF CONVERGENCE

There is no doubt that all forms of convergence, as outlined above, will eventually be significant drivers of change in telecommunications markets throughout Australia and the world. The pace at which each form of convergence is proceeding is, however, another fundamental issue that policy-makers must come to grips with.

There are many examples of over-enthusiastic predictions of the pace of various forms of convergence. In 1982, for example, the UK Minister for Information and Technology predicted that "by the end of the decade multi-channel cable television will be common place countrywide.... TV will be used for armchair shopping, banking, calling emergency services and many other services." Over 20 years later, this is still not a consumer reality, indeed it may never happen.³

There are continuing signs that various forms of convergence are proceeding far more slowly than is predicted or assumed. Many dot.coms, for example, which were expected to shake traditional media and telecommunications companies to their Old Economy foundations, have collapsed in recent months. Digital Entertainment Networks, one of the largest new "converged" businesses, which planned to distribute interactive television over cable and xDSL networks in the US, claimed that it would put the "boob tube zombie television" out of business. It recently filed for bankruptcy. Events such as these led the president of the Interactive Properties Group at AOL to remark that "to date digital entertainment has been a failure"⁴.

As a UK consultancy has commented:

*"The overall picture is complex and uncertain. In some instances convergence has already occurred but the true erosion between separate markets has still not happened. In other instances, convergence is either beginning to happen now or can be envisaged but, once again, it is difficult to foresee the genuine meeting of previously separate markets. A review of forecasts for various convergent products and services made five years ago and compared to what has actually happened illustrates the difficulty for anyone to predict the eventual form of convergence... Our view is that, for the most part, the drivers of convergence develop over generations (particularly in the case of infrastructure, wealth, skills and attitudes) not year by year."*⁵

Regulatory decisions must be built upon careful and thorough examinations of the forms of convergence in question, and the pace at which they are

proceeding in the market in question. Otherwise regulators risk applying the right policies at the wrong time with potentially detrimental results for competition in communications markets and consumers of communications services.

THE ANTI-COMPETITIVE IMPLICATIONS OF CONVERGENCE

It is tempting to regard convergence, regardless of its particular manifestation or the pace at which it is occurring, as a panacea for competition concerns in communications markets. At first glance, convergence appears not only to foster competition by lowering barriers to entry for new entrants, but also to facilitate price competition and innovation from which flow a range of consumer benefits.

It is easy, therefore, to assume that it is therefore not only safe to roll back industry-specific regulatory regimes, but that it is imperative to do so since industry-specific regulation will inhibit the process of convergence itself.⁶ Incumbent telecommunications, broadcasting and media companies have encouraged this view of convergence for obvious reasons - it allows them to escape sector-specific regulatory controls on their exercise of market power.

Convergence clearly does have pro-competitive effects on electronic communications markets. The convergence of services, for example, allows operators to deliver a wider variety of services over the same network. This facilitates entry by increasing potential economies of scope for new entrants. But this does not necessarily mean that convergence is inherently pro-competitive on balance, as the following examination shows.

The economies of scope a new entrant derives from convergence must be weighed against the economies of scale and density the incumbent operator derives from its existing narrowband PSTN services and networks. The fixed costs of the incumbent's network have been spread across a long time period, as well as a large number of customers and calls. The incumbent is therefore able to serve customers at a much lower incremental cost, and has few incentives to interconnect with the entrant's network since this would allow the entrant to share in the incumbent's economies. These economies enjoyed by the incumbent are likely to substantially outweigh the

economies of scope a new entrant derives on its newly built digital network.⁷

Once the incumbent begins to offer broadband services over the copper local loop using xDSL technologies the situation will become more difficult for entrants using any network since the incumbent will enjoy the same economies of scope in broadband services as new entrants. The incumbent can "marry" these economies of scope from new services with the existing powerful economies of scope, scale and density it enjoys on that copper network.

Convergence also offers many new opportunities for incumbents to leverage their market power in new ways and into new markets. The potential for anti-competitive cross-market leverage in converging industries was clearly identified by the ACCC as a basis for rejecting the proposed Telstra/OzEmail merger.⁸ As the ACCC recognised, it is no accident, that Australia's vertically-integrated incumbent telecommunications operator is also the largest Internet Service Provider, and that this pattern has been reproduced in most other developed markets.

The networked nature of electronic communications markets makes them particularly sensitive to such leverage. Economic theory has recognised that in many high technology industries there is a "tipping point", where an operator reaches a particular market share which allows network effects, in the form of positive and negative feedback cycles, to rapidly accelerate that operator's market share growth at the expense of competitors and consumers:

*"...if technology is on a roll, as is the Internet today, positive feedback translates into rapid growth: success feeds on itself. This is a virtuous cycle...."*⁹

In networked industries, therefore, companies can quickly achieve dominance, and the same processes which allowed it to do so ensure that their market dominance is unassailable:

*"...[A company] once it achieves dominance through network efficiencies, can preclude competition for extended periods.... Once a network monopoly is in place, it is often a simple matter for the monopolist to exclude would-be challengers."*¹⁰

A pattern of tipping has been exhibited repeatedly in the high technology markets, for example the video recorder market; the computer hardware market and the computer software market. In each case, a company that gained a significant initial edge crossed the tipping point and grew exponentially to arrive at a position of unassailable dominance. The *Microsoft* case combined the dynamic of tipping in a new market with the exercise of cross market leverage from a dominant position in an adjacent market. Similar combined risks of tipping and cross market leverage arise in the telecommunications industry between traditional voice telephony markets and new services markets, such as the Internet, and were at the core of the ACCC's decision not to clear the Telstra-Ozemail merger. Such tipping occurs rapidly in telecommunications markets due to low marginal costs and rapid distribution. Some of the forms of convergence outlined above exacerbate this problem by allowing incumbent's easier access to, and leverage into, related markets.

The incumbent's main source of leverage remains the copper local loop. New technologies, such as xDSL, have given the copper a new "lease of life" which makes it the most likely candidate for the primary delivery channel for converged services. As the European Commissioner responsible for communications has remarked this will remain a key competition concern for some time:

*"High telecoms prices are a major factor explaining Europe's low Internet penetration, and the shorter connection times of Internet users. The 1998 telecoms liberalisation has already delivered positive results on this account. But obviously, this is not enough. The main reason is that the local access market is still largely dominated by incumbent operators. And this, in spite of the development of new and alternative networks. Access to the local loop is therefore a pressing issue for new entrants."*¹¹

CONCLUSION

While it is easier to subscribe to the hype of convergence, policymakers must take a much more rigorous approach before substantial policy decisions are built on assumptions regarding convergence. A closer examination of convergence reveals that convergence is not a homogenous force with a consistent impact on electronic communications

markets, but rather a series of processes, enabled by digitisation of communications networks, which effect technologies, gateways, services and markets in different ways.

The anti-competitive possibilities raised by convergence also must be recognised, and regulators must maintain a strong interest in anti-competitive behaviour in communications markets. Rather than scrapping the current industry-specific regulatory regimes in broadcasting and communications, convergence regulation, at this early stage, should focus on three issues - ensuring that like issues are regulated in a similar manner, addressing the risks of cross market leverage, and ensuring adequate regulatory tools for monitoring and intervention.

Converging industries are increasingly important to our lives and economics. We must ensure that inappropriate regulatory decisions based on the promises of convergence do not squander their very real potential.

1 Arthur Andersen Consulting, *Report on Issues Raised in Submissions*, New Zealand Ministerial Inquiry into Telecommunications, 29 June 2000 at 5.

2 NECC, *Regulation and the Convergence of the Telecommunications and Content Industries*, November 1999.

3 There are a number of other examples from the UK - in 1979/80 BT introduced a consumer videotext service called Prestel, which was intended to revolutionise the way customers accessed information in the UK. By the mid 1980's Prestel only had a 100,000 subscribers and in 1994 BT eventually sold it. In the UK, teletext has been very successful with over 60% of households having teletext capability. This service is used daily by 9.4 million people and

weekly by nearly 20 million people. It is the largest holiday advertising medium in the UK. By contrast, teletext has been largely unsuccessful in Australia, with the Seven Network being the only remaining terrestrial broadcaster to offer teletext services.

4 Ted Leonsis, *The Failure of New Media*, *The Economist*, August 19, 2000.

5 Spectrum, *The Scope, Pace and Consequences of Convergence*, November 1999, at 3.

6 "Convergence is a desirable phenomenon because of its ability to increase the level of competition in the market... convergence is not only a substitute for regulation, it is a phenomenon that can be placed at risk by regulation." Arthur Andersen Consulting, *Report on Issues Raised in Submissions*, New Zealand Ministerial Inquiry into Telecommunications, 29 June 2000 at 5.

7 "Fixed costs are frequently associated with economies of scale. Specifically, where a firm faces both a fixed cost and a constant or declining variable cost, the firm's average unit cost will fall as output increases, and the firm's cost structure is said to exhibit economies of scale. For example, the costs a competitive LEC incurs to construct its own fibre transport ring would constitute a fixed cost, because, at least in the short run, this cost would not vary as the competitive LEC's output changed. If a competitive LEC incurs significant fixed costs when it uses a particular facility, in its early stages of development it would have a significantly higher average unit cost than the incumbent LEC, which has a significantly larger output and customer base over which to spread the fixed costs.

Certain network facilities also involve sunk costs, because the facilities cannot be easily redeployed or sold should the competitor decide to cease offering service over those facilities. For example, the cost of the loop serving a customer's home is largely a sunk cost because it cannot be recovered if the carrier ceases serving the customer. It is generally recognised that the need to incur sunk costs can constitute a barrier to entry. Specifically, where an incumbent has already deployed sunk facilities to serve all customers, a competitive LEC may be unwilling to sink the costs of duplicative facilities, either because it may be unable to lure customers away from the incumbent and

generate enough revenue to cover those sunk costs, or because resulting competition between itself and the incumbent LEC would drive prices so low that, even if the competitive LEC won a significant number of customers, it would still be unable to recover its sunk costs. In such situations, the incumbent has a "first mover" advantage." FCC, Third Report and Order, FCC 99-238, 1999, pp 40-41.

8 The Commission stated in its preliminary advice that:

"The impact of this proposed acquisition could be further compounded by the fact that Telstra is the major provider of infrastructure services to other ISPs. This acquisition coupled with Telstra's strength in the wholesale provision of Internet services could give it the capacity to distort and hinder the competitive process. It is possible that Telstra would attain dominance through this acquisition in the provision of residential Internet subscriber services which could have a significant flow-on effect into other markets. It is possible that the proposed acquisition could have a detrimental impact on the competitive dynamics for Australian online content, online advertising and electronic commerce. These Internet markets are still in the early stages of development in this country. The emergence of a dominant Australian ISP could retard competition and stifle innovation in these evolving markets". ACCC, Telstra/Ozemail Preliminary Advice, Press Release, 28 January 2000.

9 Carl Shapiro and Hal Varian, *Information Rules: A Strategic Guide To The Network Economy*, Harvard Business School Press, Boston, Massachusetts, 1999 at p 176.

10 Robert Pitofsky, FTC Chairman, "Antitrust Analysis in High-Tech Industries", Speech to ABA Antitrust Issues in High Tech Industries Workshop, 26 February, 1999.

11 Erkki Liikanen, Member of the European Commission for the Information Society, Speech, 21 January 2000. Available at: http://europa.eu.int/comm/information_society/speeches/liikanen/athens01_en.htm

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Internet Television and Radio Services -The Streaming Controversy

There has been plenty of bluster but little legal analysis of the Internet streaming controversy. Raani Costelloe provides a thoughtful analysis of the legal issues.

Question: Are television and radio services delivered or accessed using the Internet or Internet protocol regulated as *broadcasting services* under the *Broadcasting Services Act 1992* ("BSA")?

Answer: Yes and no. Yes, if they are delivered over the broadcasting services bands, which is the part of the radio-frequency spectrum allocated by the

Australian Broadcasting Authority ("ABA") to broadcasting and datacasting licensees under the BSA. No, if they are delivered outside of the broadcasting services bands.

This article explains why this differentiation exists and also examines the regulation of video on demand services.

DIGITAL TV AND DATACASTING

A section of the Second Reading Speech to the *Broadcasting Services Amendment (Digital Television and Datacasting) Bill 2000* relating to Internet streaming created a great amount of controversy within the Internet industry following the recent enactment of the Bill. It raised the issue of whether television and radio