Effective Telecommunications Service Competition in Australia

and the Need for Regulatory Reform

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1. Executive Summary

This white paper examines the issues of design and reform of regulatory policy in Australia in light of the current status of telecommunications competition, its likely evolution, and the general economic learning on the costs of excessive regulatory interventions in the unimpeded workings of telecommunication markets. This paper has been prepared at the request of Telstra for submission to the Australian Productivity Commission to assist the Commission in its review of the telecommunications-specific competition regulations included in the Trade Practices Act 1974 ("Trade Practices Act").[1] These special provisions were added to the Trade Practices Act in 1997 and are contained in Parts XIB and XIC of the Act. The new provisions supplement the

[1] For additional background on the issues under consideration see *Review of Telecommunications Specific Competition Regulation: Issues Paper,* Australian Productivity Commission, June 2000 (http://www.pc.gov.au/inquiry/telecommunications/index.html).

general competition rules included in Part IV and Part IIIA of the Act.[2] The new provisions, which apply specifically to telecommunications, are intended to deter anticompetitive behavior and to guarantee competitive access to bottleneck facilities, respectively. As required by the Act, the Commission is now reviewing whether Parts XIB and XIC should be repealed or reformed. In this paper, I assume that the repeal or reform of these provisions will not affect the other parts of the existing regulatory regime as it pertains to telecommunications.

This paper evaluates the efficacy of retaining these provisions in their present form, in light of industry, technology, and market trends[3] and general economic principles. Economists generally agree that markets, rather than regulations, are the most effective means of delivering to consumers the products and services they want and provide proper signals for investment decisions by market participants.[4] Consequently, proponents of regulations should bear a heavy burden to demonstrate that the relevant markets do not function efficiently and therefore must be supplemented by regulations. In the instant case, the proponents of the industry-specific rules bear an additional burden:

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[2] Parts IIIA and IV of the Act are "general" in that they apply to all industries, including telecommunications.

[3] Note that I use the term "market" in a broad sense in this paper. Thus, I have not attempted to conduct a formal market definition analysis such as would be required for antitrust purposes.

[4] See for example, Viscusi, W. Kip, John M. Vernon, and Joseph E. Harrington, Economics of Regulation and Antitrust, Second Edition, MIT Press: Cambridge, 1995; or,

they need also to show that general rules against anticompetitive behavior are not sufficient to ensure competitive outcomes in the provision of telecommunications services to Australian households and businesses.

In this paper, I argue that justifications for these telecommunications-specific rules explicitly or implicitly rely on the presumption that they represent an efficient regulatory guard against anticompetitive behavior. However, if these provisions can be shown to be unnecessary, or worse, inefficient, then their reform or repeal is justified. Because general protections against anticompetitive behavior already exist in the Trade Practices Act, it is necessary to demonstrate that the telecommunications sector is fundamentally unique in ways that are pertinent for policy towards the sector. Moreover, even if the sector were in some ways unique, the proponents of specific regulations would also have to demonstrate that these industry-specific rules could do a better job of protecting competition (and guarding against abuse of market power) in the sector than the general rules. Finally, even if, theoretically, such specific rules might be more effective, the need for such rules would be lessened if the realistic risk of anticompetitive behavior were low. Specific regulations tend to exacerbate regulatory burdens, and thus should be foresworn if the competitive risks are small or can be readily handled by more general rules.

Sam Peltzman and Clifford Whinston (editors), Deregulation of Network Industries, AEI-Brookings Joint Center for Regulation Studies: Washington, DC, 2000.

From the above it thus follows that whether or not telecommunications-specific rules are needed to supplement the generic provisions depends on a careful assessment of the current and prospective state of competition in telecommunications in general and in the provision of specific telecommunications services in particular.

The overarching conclusion that follows from my analysis is that, with two exceptions, the generic regulatory regime, as embodied in Parts IIIA and IV is well-suited to deal with the competitive problems that may arise in the provision of telecommunications services. Consequently, there is no or little reason to encumber telecommunications providers with additional regulation. This means that the specific regulations should be either repealed or substantially reformed. More specifically, my main key conclusions are as follows:

Regarding the feasibility of competition in telecommunications :

1. Technological progress, demand growth, and increased industry competition around the globe -- and in Australia -- have fundamentally changed the economics underlying the provision of most telecommunications services.

2. Sustainable competition is in principle achievable in all segments of the industry value chain, including the provision of local access services.

3. These trends have substantially eroded traditional industry boundaries and substantially increased the competitiveness of all telecommunications sectors in Australia and in other countries. The rapidly progressing convergence of telecommunications and computing, as well as voice, data, and video transmission services is posing a severe challenge to traditional industry-specific regulatory regimes that are based on traditional notions of how services and service providers ought to be identified and regulated. As industry boundaries blur, general competition rules become both more necessary and better-suited to deal with current *and* prospective risks that might arise.

4. In recognition of changing industry economics, policymakers in Australia and in other countries have relaxed regulatory barriers to entry that have remained as a legacy from the days when telecommunications was regarded as a natural monopoly. Where these regulatory restraints have been removed, competition has proceeded vigorously (*e.g.*, first for customer premise equipment, later for toll and for value-added services, and most recently, for local telephone service).

5. Almost all telecommunications services in Australia appear to be effectively competitive at this time, or are rapidly progressing in this direction. The two exceptions are (1) the provision of local access services and (2) universal

termination services.[5] However, even for these services, there is mounting evidence that nascent competition is taking root. Evidence of substantial entry, significant reductions in Telstra's market shares for all services, across the board price declines, and high-levels of customer churn provide potent testimony that competition is vigorous in virtually all service markets.[6]

6. Regulatory policy has hindered the progress of local competition in Australia. The access regime that has been imposed is too vague in that it allows too much discretion to the regulator to determine when, how and under what circumstances regulatory solutions can be imposed. Furthermore, regulated prices for wholesale and retail services have been set below forward-looking economic costs. As a result, efficient investment in local exchange facilities (including access) has likely been stymied. Moreover, the current regulations have created inefficient implicit subsidies[7] and distorted decision-making by service providers and consumers alike. Regulatory pricing must allow for full

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[5] Local access services support the origination of local calling and long distance services. Universal termination services allow telephone calls to be terminated ubiquitously to any local loop on the network of the carrier offering such service.

[6] In preparing my assessment of the state of competition in the telecommunications sector in Australia, I have relied on public and private data supplied to me by Telstra.

[7] For example, below-cost pricing for wholesale and retail local telephone services, especially in high cost serving areas, provides subsidies to Telstra competitors and from urban to rural customers. These subsidies distort the investment behavior of competitors who are deterred from investing in their own facilities as opposed to leasing below-cost facilities from Telstra. These subsidies also distort the consumption behavior of

recovery of economic costs for continued investment and competition in the sector to be sustainable in the long-run.

Regarding the telecommunications-specific provisions of the Trade Practices Act

7. In their application to date, Parts XIB and XIC have likely hindered rather than promoted the transition to sustainable competition in the provision of telecommunications services.

8. Part XIB of the Trade Practices Act should be repealed because it is inefficient and harms, rather than helps, telecommunication service competition. It creates an ambiguous regulatory regime that can result in arbitrary and costly enforcement undertakings. The provisions in Part IV, supplemented by a reformed access regime under Part XIC (see below), would provide superior protection against anticompetitive behavior and are more consistent with sound and efficient regulatory policy.

9. Part XIC of the Trade Practices Act needs to be substantially reformed to assure that it applies only to bottleneck facilities.[8] Part XIC should reflect

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customers in low-cost (e.g., metropolitan) areas and consumers of value-added services that pay above-cost prices to generate subsidies to offset below-cost offerings in high-cost serving areas.

[8] I recognize that in imposing access obligations on bottleneck facilities, regulators will need to regulate the prices at which such facilities are made available to competitors. As long as such prices are set so as to allow the incumbent to recover the economic costs of providing the facilities, such access regulation is consistent with the emergence of effective competition.

sound economic pricing principles that provide incentives for efficient investment in infrastructure facilities. Regulated wholesale prices that are below the economic costs of providing the bottleneck facilities deter efficient investment and artificially encourage competitors to lease facilities from Telstra rather than building their own even when such investment would be efficient.

10. Provisions in Parts XIB and XIC were supposed to have expedited enforcement and facilitated the transition from direct industry regulation to enhanced reliance on general competition law to regulate industry behavior. This has not been achieved. Part of the problem derives from the fact that the telecommunications-specific rules do not provide the explicit controls on regulatory authority (*e.g.*, full merit review requirements) that exist under the general rules. The general competition rules included in Parts IV and IIIA of the Trade Practices Act protect other industries against arbitrary regulatory enforcement and thus lessen the regulatory risks.

11. Under Part XIB, costly and lengthy proceedings have occurred. In addition, under Part XIC, access obligations have been extended to cover more services than in 1997.

12. Telecommunications-specific provisions provided a springboard for extension of regulations, thereby undermining the laudable public policy goal of enhanced reliance on market forces. For competition to thrive, regulators

need to let the market processes work. Robust competition and arbitrary regulatory authority are fundamentally at odds with each other. Therefore, to facilitate the transition to competition managed by market forces instead of regulations, maximal forbearance should be the guiding regulatory principle. The scope of regulatory remedies ought to be reduced, not expanded, as competition develops. Regulators should face a strong burden of proof to show that there is a significant risk of abuse of a substantial degree of market power before imposing regulatory restraints and burdens on the incumbent firm.

13. To determine whether there exists a risk of abuse of a substantial degree of market power requires an appropriate and realistic standard against which to evaluate market structure, behavior, and outcomes. The theoretical market model of "perfect competition" is not the proper standard against which to gauge whether the incumbent firm has market power or has taken advantage of substantial market power. An effectively competitive market provides a better and more realistic benchmark against which to assess the current state of competition and the incumbent's ability to exercise substantial market power to the detriment of competition and consumers. In an effectively competitive market, one or more firms may possess some degree of market power, yet pose no significant risk to present and future competition.

The rest of this paper is organized into six sections. Section 2 reviews the history and helps provide an understanding of the context in which the present review is taking place. Section 3 examines the principal economic arguments in favor of the industry-specific rules included in Parts XIB and XIC and explains why these rules should be repealed or substantially reformed even if one assumes that the incumbent has a substantial degree of market power. Section 4 sets forth the principles that ought to govern an assessment of whether an incumbent possesses a substantial degree of market power. Section 5 examines industry and technology trends that structurally altered the landscape for the telecommunications industry by eliminating economic and regulatory barriers to entry and thereby facilitating the emergence of effective competition. In Section 6, I review empirical data that indicate that the sector, with two exceptions, is effectively competitive. Section 7 concludes with a summary of the main arguments and final recommendations to the Productivity Commission.

2. Background and History

The Australian Productivity Commission is currently evaluating whether the telecommunications-specific provisions included in Parts XIB and XIC of the Trade Practices Act ought to be repealed or reformed. This review is timely and complies with the legislators' view that these provisions ought to be temporary and can be justified only so long as they are needed to facilitate the transition to effective competition. Since these sections were incorporated into the Trade

Practices Act in 1997, telecommunications competition in Australia has progressed rapidly, furthering the transition from statutory monopoly towards effective competition. Thirty years ago, most policymakers and many industry analysts believed that telecommunication services were a natural monopoly and that a single firm with an end-to-end network would be able to offer telecommunication services most efficiently. Many believed that, if competition were allowed, costs would increase and the public policy objective of universal service would be more difficult to accomplish.[9] To preclude inefficient competition, policymakers typically instituted regulatory barriers to entry. With these restrictions in place, what may have been a natural monopoly by virtue of the underlying economics, became a protected monopoly by statute.

Much has changed during that past few decades.[10] As Section 4 explains in greater detail, technological progress and demand growth have transformed

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[9] The existence of a natural monopoly does not preclude the feasibility of competition. The market may be a natural monopoly, but there may fail to exist prices that permit the monopoly to be sustainable (*i.e.*, allow cost recovery, but deter competition from higher cost competitors). There may be "cream-skimming" entry, especially if there is price regulation that prohibits the monopolist from responding flexibly to competition. For a further discussion of these issues see Sharkey (1982). (William Sharkey, The Theory of Natural Monopoly, Cambridge: Cambridge University Press, 1982.)

[10] For a review of trends in telecommunications and their impact on prospects for regulation see Robert Crandall and Leonard Waverman, Talk is Cheap, The Brookings Institution: 1995; or, Stephen Bradley and Jerry Hausman (editors) Future Competition in Telecommunications, Harvard Business School Press: Cambridge, 1989; Ingo Vogelsang and Bridger Mitchell, Telecommunications Competition: the Last Ten Miles, AEI Studies in Telecommunications Deregulation: Washington, DC, 1997; or Jean-Jacques Laffont and Jean Tirole, Competition in Telecommunications, MIT Press: Cambridge, 2000.

industry economics to the point where effective competition is sustainable for all telecommunications services and in all segments of the industry value chain, including local access services.[11] These changes have been accompanied by a global paradigm shift in regulatory policy. There is now general recognition that markets are better than regulators or governments at guiding the industry to efficient outcomes and at injecting competitive forces and discipline into industry behavior. It is now commonly agreed that once the transition to effective competition has taken root and its presence is assured, the industry can be deregulated and the costly apparatus of direct regulatory oversight can be dismantled. In North and South America, in Europe, and in Asia, policymakers have been opening the telecommunications sector to increased competition. Typically, regulatory restrictions against competitive entry were relaxed first in customer premises equipment markets, then in long distance telephone and value-added services, and only recently, in local telephone services.

Relaxing regulatory barriers to local telephone service competition is crucial to assuring sustainable end-to-end competition in the sector. Local access facilities are an essential input to providing many telecommunications services (*e.g.*, local calling, access to long distance services, universal termination, dial-up Internet access, etc.) and may constitute a bottleneck facility if the incumbent carrier is the only supplier of these services. In such a case and absent

[11] This includes both wholesale and retail-level service competition.

appropriate regulation, the incumbent may be able to exercise its monopoly power over these bottleneck facilities and earn excess profits or to deter effective competition. Until alternative sources of supply for these bottleneck facilities become available, asymmetric regulations that require the incumbent to provide its competitors non-discriminatory access to these bottleneck facilities at prices that recover the full economic costs of supplying these facilities may be warranted.[12]

Australia has been an early leader in opening local access to competition. Australia initiated the transformation from monopoly to limited competition in 1991 with the introduction of a managed duopoly regime. In 1997, open competitive entry was allowed and policymakers committed to substitute general competition law, as embodied in the Trade Practices Act, for telecommunications-specific regulations. Therefore, in 1997, the Trade Practices Act was augmented with two telecommunications-specific sections that were intended to facilitate the transition to the new regime. Part XIB was added to supplement the rules in Part IV of the Trade Practices Act that are intended to

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[12] There may also be a need for retail price regulation and/or for a universal service subsidy program if policymakers deem it desirable to protect consumers from facing potentially higher prices. The Trade Practices Act does not address such issues and reform of the telecommunications-specific rules in the Trade Practices Act is not inconsistent with such retail price and/or universal service regulation, although, if such rules are applied inappropriately (*e.g.*, retail prices are regulated at levels that fail to recover economic costs or universal service subsidies are not funded or distributed via a competitively neutral mechanism), then competition will be harmed and the damage

deter anticompetitive behavior, while Part XIC was added to supplement the rules in Part IIIA of the Trade Practices Act that are designed to guarantee competitors access to bottleneck facilities. Because these industry-specific sections were designed to be interim measures, the Trade Practices Act required that they be reviewed on a regular basis to determine when they should be repealed or reformed.

Parts XIB and XIC expand the powers of the Australian Competition and Consumer Commission (ACCC) to intervene in telecommunication service markets and lower the threshold under which competition rules would be applied to the telecommunications sector. Thus, Part XIB substitutes an "effects" test for a "purpose" test[13] and increases disclosure obligations on the incumbent, Telstra. Part XIC enhances the ACCC's authority with respect to imposing access obligations on Telstra. Both sections relax checks on regulatory authority that restrict general enforcement under the Trade Practices Act. These latter checks include such things as sunset clauses, full merit review requirements, and specific evidentiary provisions. Taken together, these two sections allow the

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from retaining the inefficient telecommunications-specific regulations will be exacerbated.

[13] I understand that under the former standard, the ACCC needs to show that an action would have the "the effect, or likely effect, of substantially lessening competition in that or any other telecommunications market." (See Section 151AJ, Trade Practices Amendment Act 1997). In contrast, under s46 of Part IV, the ACCC would need to show that the action that constituted taking advantage of a substantial degree of market power was undertaken for a prohibited purpose.

ACCC great latitude in intervening in telecommunications markets and in imposing asymmetric regulatory restrictions on the incumbent, Telstra.

3. Arguments for Telecommunications-specific Regulations

Telecommunications-specific competition provisions may be needed, if the following conditions hold: (1) telecommunications markets are not effectively competitive so that there is a substantial risk of anticompetitive harm in the sector; (2) the telecommunications sector is different from other industries on pertinent dimensions that warrant industry-tailored competition policy; and, (3), industry-specific provisions are needed to effectively deter anticompetitive behavior because it is somehow different from anticompetitive behavior that could be addressed using general competition rules.

In the balance of this section, I will address the last two points, assuming, *arguendo,* that the incumbent carrier, Telstra, possesses a substantial degree of market power.[14] Even with this assumption, I show that the case for telecommunications-specific competition rules is weak. The argument that the telecommunications sector is unique is premised on the belief that either the sector constitutes a natural monopoly, or if not actually a natural monopoly, then that its economics reflect a unique collection of characteristics not widely

[14] I discuss evidence as to the state of competition in telecommunications markets in Australia in Sections 4, 5, and 6.

observed in other sectors. As we shall see, the competitive concerns in the telecommunications sector are no different in many respects from those in other sectors of the economy.

After refuting the position that the sector is unique, I explain why general competition rules are likely to be superior to telecommunications-specific rules in the Australian context. Moreover, I explain how these industry-specific rules have failed in practice by contributing to the implementation of an inefficient access regime and are likely to have harmed the progress of competition. In sum, even if one believes that Telstra possesses a substantial degree of market power, the telecommunications-specific competition rules in Part XIB and XIC of the Trade Practices Act are inefficient and should be repealed or substantially reformed.

Natural Monopoly and the Legacy of Telecommunication-specific Regulation

Telecommunication-specific regulation is not new. Historically, almost every aspect of telecommunications, from investment decisions, to pricing, to where and how services should be offered, has been subjected to the heavy hand of direct regulation. When telecommunications was thought to be a natural monopoly and there was a single integrated carrier, direct and expansive regulatory oversight was needed because market forces that might otherwise have disciplined inefficient behavior were lacking. In such an environment, regulators did not need to consider the impact of their decisions on competition

because there was no competition. Indeed, competition was frowned upon as being a source of inefficiency. Slowly, regulatory entry barriers into the sector have been relaxed or totally removed and competition begun to emerge, thereby demonstrating that the sector was not a natural monopoly.[15]

The current regulatory approach is – and ought to be -- premised on the view that effective competition in the provision of telecommunications services is sustainable. Given the new regulatory approach, the main concern should be that regulatory rules facilitate rather then retard the transition to competition, that they do not impose unnecessary asymmetric burdens on the incumbent firm (or firms), and that they do not excessively restrict the incumbent's ability to respond to the exigencies of the market. At the same time, competition rules should not compromise such important policy goals as universal service or, more broadly, wide-spread access to the "information superhighway". This implies that competition should not be compromised for the sake of these goals but, rather, that the forces of competition should be harnessed to promote these goals at the least cost to society.

As is often the case, technological progress and demand growth have outpaced the glacial change in antiquated regulations. The natural monopoly

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[15] For evidence of the global trend towards communications liberalization, see for example, OECD Communications Outlook: 1999, Organization for Economic Cooperation and Development: Paris, 2000.

view of the sector preserved for too long prohibitions against competitive entry and sustained pricing regimes that implemented inefficient cross-subsidy schemes (*e.g.,* from long distance to local, urban to rural, and commercial to residential consumers) long after competition became feasible.[16] Australia's policymakers were relatively advanced in recognizing the need to lift the protective regulations, but, even there, certain restrictions on facilities-based entry were only eliminated in 1997. By jettisoning these outdated regulations, policymakers plainly signaled their faith in competition and market forces as being preferable to direct regulation of the sector. At the same time, this decision

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[16] In its most recent submission, the ACCC raises again the specter of natural monopoly. The ACCC appears to suggest that portions of the telecommunications sector remain a natural monopoly (page 5) or may become one. Contrary to industry analysts world-wide, the ACCC seems to regard the implications of technological and market convergence for competition as unclear (page 9) rather than pro-competitive. The notion that, in Australia, the sector is potentially heading towards natural monopoly is clearly inconsistent with the whole thrust of regulatory policy globally and with technological and industry trends. The ACCC notes that the presence of natural monopoly is "neither necessary nor sufficient for market power" (page 9). This statement is obviously true, but hardly justifies industry specific competition rules. There, surely, are other industries in which the incumbent firm is not a natural monopolist yet it may possess a significant degree of market power. The ACCC does not advocate special rules for every industry in which this condition is satisfied. The specter of "natural monopoly" is, thus, a shaky foundation on which to build a structure of special rules for the telecommunications sector. Indeed, if it turns out that at some point in the future, the sector (or some of the services) will exhibit the indicia of natural monopoly, enhanced regulation may become warranted. This is not the case at this time, and all the trends point to more – not less – competition. Even if Telstra retains substantial market power in the provision of some services, the ACCC has not yet shown it needs to be restrained by the telecommunications-specific provisions of the Trade Practices Act. (For page references, see *Supplementary Submission to the Australian Productivity Commission Review of the Telecommunications Specific Competition Regulation*, Australian Consumer and Competition Commission, November 2000, hereafter, *ACCC Second Submission*).

demonstrated that policymakers abandoned the view that some services, such as the provision of local exchange services, constitute a natural monopoly.

Economics of Telecommunications Sector Are not Unique

If telecommunications is no longer a natural monopoly, it is much more difficult to justify why it should require extensive industry-specific regulations to protect competition and consumers.[17] The mere existence of a substantial degree of market power, and a consequent risk of anticompetitive behavior are insufficient because, presumably, this risk exists in other industries as well (which, apparently, are adequately protected under Part IV and Part IIIA). To justify such rules, it is necessary to show that telecommunications is somehow unique, and in ways that would stymie the application of general rules to the task of controlling any abuse of market power. However, the argument about the uniqueness of telecommunications is quite shaky, to say the least. Many industries share many of the features that have been identified as distinguishing characteristics of telecommunications. These include:

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[17] As noted in the preceding section, the ACCC apparently regards local access as natural monopoly (see *ACCC Second Submission*, note 16, *supra*, page 5). This view is inconsistent with the fact that entry using different technologies is taking place in Australia, as well as in other countries. Moreover, if it were the case that local access is a natural monopoly and there is a risk of inefficient competitive entry, the proper policy response would be regulatory foreclosure of entry, a step which Australian policymakers wisely eschewed.

(1) *Lumpy and Sunk Investment:* In a number of capital-intensive industries, investment in productive capacity may be lumpy and sunk.[18] When applicable, this can be a source of entry barriers that may support the existence of substantial market power. Historically, investments in telephone plant, especially local facilities, have been regarded as lumpy and largely sunk. For example, providing telephone service to a neighborhood requires a large investment in outside plant that may be sensitive to the number of customers served on those facilities but is not sensitive to the number of calls (traffic) that these customers make. Moreover, insofar as these facilities are dedicated to telephone service, they may be substantially sunk.[19] However, with convergence and the rise of the Internet, telecommunications investments have become less lumpy and sunk.[20]

(2) *Scale and scope economies.* Scale economies arise when unit production costs fall with the scale of a firm's output. The presence of large fixed costs is a

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[18] When investments are lumpy, there is excess capacity relative to current demand following plant expansions. An investment is considered sunk when a significant portion is irreversible, which means that it is not possible to recover all or a substantial fraction of the original investment if a firm decides to exit from the industry once the investment is made.

[19] That is, the investment is irreversible because, should demand for telephone service be less than forecast, the investment costs in the facilities cannot be fully recovered. As I explain further below, convergence helps reduce the extent to which investments in local telephone infrastructure is sunk because it expands the range of services that can be supported on that infrastructure.

[20] See for example, Glenn Hubbard and William Lehr, "Telecommunications, the Internet, and the Cost of Capital," in The Internet Upheaval, edited by Ingo Vogelsang and Ben Compaine, Cambrige: MIT Press, 2000.

factor that contributes to scale economies. In the presence of scale economies, the industry is not likely to contain many independent firms. Natural monopoly is the most severe manifestation of scale economies. Scope economies arise as a consequence of inputs that can be shared among multiple services (*e.g.*, when multiple services are supported on the same facilities). When scope economies are present, the average cost of a service declines as the number of services offered by the firm increases. When scope economies are present, firms in the industry will produce many different goods (and services). In telecommunications, scope economies arise naturally as a consequence of the same network facilities being able to support multiple services (*e.g.*, local and long distance calling sharing the same local loops).

(3) *Network externalities*. Positive network externalities arise when the value that individuals ascribe to the product or service increases with the total number of consumers that utilize it.[21] For example, telephone service is more valuable to a subscriber the larger the number of other subscribers that can be called. The same is true of facsimile services or even CDs. Again, in the presence of network externalities, the relevant industry is likely to have few firms, or perhaps, only one. While positive externalities are important in

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[21] See for example, Katz, Michael and Carl Shapiro, (1985), "Network Externalities, Competition and Compatibility," American Economic Review , vol. 75 (3), pp. 424-440; or Shapiro Carl and Hal Varian, Information Rules: A Strategic Guide to the Network Economy, Harvard Business School Press: Boston, MA, 1999; Nicholas Economides,

telecommunications, their impact can be muted through interconnection. If customers on one network can communicate seamlessly with customers on another network, 'the size of the network can be immaterial to consumer choice.

(4) *Bottleneck facilities.* When there is an input that is essential to the production of a good or service, and substitutes for this input are limited, costly, or vastly inferior, then this input may constitute a bottleneck facility.[22] A firm with unconstrained monopoly control over this facility may possess a substantial degree of market power not only over the bottleneck but also in the markets for the goods and services that utilize this input. In telecommunications, the local loop is often regarded as such a bottleneck facility. Competitive concerns in telecommunications relating to bottleneck facilities derive from the fact that entrants may need to utilize these facilities in order to compete with incumbents for at least some services.

(5) *Rapid structural and technological change.* Innovation can change the opportunities and challenges faced by incumbents and entrants, leading to pressure for regulatory reform, changing competitive dynamics in the industry, and confronting market participants with substantial uncertainty

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"Economics of Networks," Brazilian Electronic Journal of Economics, v1, n0, December 1997.

[22] That is, the input is both necessary (essential) to produce the good or service and alternative sources of supply are not available on economic terms.

regarding the future course of the market.[23] While rapid technological change should not immunize an industry to scrutiny by regulatory authorities, such scrutiny should be narrowly tailored lest it stifles innovative forces.

(6) *Vertically integrated incumbents*. The existence of vertically-integrated incumbents with substantial market share that compete with vertically integrated and non-integrated competitors is also not a feature unique to the telecommunications sector. A number of other industries such as petroleum processing, publishing, and software share this feature. The competitive concerns are not, therefore, unfamiliar.

The first two industry characteristics are important because they *may* give rise to economic barriers to entry that establish an efficient minimum scale of operation. Depending on the magnitude of these effects relative to the available demand, this can help determine how many firms the industry can support efficiently (*i.e.*, operate close to the minimum efficient level of costs). As I explain further in Section 4, the extent to which telephone investments are lumpy or sunk has been reduced as a consequence of technological progress and convergence. The increased modularity and capability of modern

[23] Rapid innovation a changing industry structure are common features of such diverse industries as financial services, healthcare, software, telecommunications, and many others.

telecommunications infrastructure to support multiple services (*e.g.*, traditional voice and enhanced data services may be provided both over ATM and IP capable networks) have facilitated smaller scale entry. In any case, these characteristics are certainly not unique to telecommunications but are shared by most capital and R&D intensive industries (*e.g.*, pharmaceuticals, steel, petrochemicals, software, or semiconductors), and others (*e.g.*, financial services).

Network externalities are also not unique to telecommunications. For example, the benefit from reading a book may depend on how many have read the book. The same is true for software, fax services, etcetera. Moreover, these externalities are often present in so-called network industries that rely on the existence of a physical network infrastructure, such as pipelines, as a key production input. The presence of a physical network is not necessary for network externalities to arise. All production processes share network elements and it is possible to view any complex system as a network of components.[24] Positive network externalities may arise when the scale or extent of any networked process is extended (*e.g.*, growth in the PC-compatible market fueled growth in complementary software, peripherals, and markets for used systems and components). For example, wider adoption of the Microsoft Windows/Intel

[24] In a telephone network, this includes the local loops, switches, signaling, and long-haul transport facilities used to support end-to-end telephony services; while in an oil refinery this includes the various unit operations such as catalytic cracking, coking, and distillation that process the crude oil as it is refined into asphalt, heating oil, and gasoline.

8x86 processor architecture produced substantial network externalities that benefited suppliers and consumers of compatible systems.

The presence of bottleneck facilities is not unique to telecommunications either. For example, intellectual property rights (patents) may constitute a bottleneck. Alternatively, transmission facilities in an electric power network, airport gates, or shipping facilities may all constitute bottlenecks under certain circumstances.

Rapid technological progress and structural change occurs in many industries. In capital-intensive industries (*i.e.*, with lumpy and potentially sunk investment and important scale and scope economies), this makes investment decisions risky and optimal dynamic investment planning difficult. Firms with legacy infrastructures are likely to find themselves competing against new, lower cost technologies. While dealing with the challenges of managing long-lived investments in a changing world is a difficult business problem, it is not one that is unique to telecommunications.

Finally, the co-existence of vertically integrated and partially or non-integrated competitors are features shared by many industries. For example, airlines, automobiles, computers, petrochemicals, pharmaceuticals, and financial services all share this feature.

To sum up, the features that are usually cited as uniquely distinguishing telecommunications from other industries are on closer inspection shared by multiple industries. These industry features may preclude perfect competition or even restrict the number of active firms to a few, however, these features are not inconsistent with sustainable effective competition.[25] The fact that these features may permit one or more firms to acquire a substantial degree of market power and take advantage of this market power provides a valid justification for watchful oversight of the industry by the competition authority but not for industry-specific competition rules.

General Regulatory Rules Already Protect Competition

The potential risks to competition stemming from the existence of substantial market power and its possible exercise are addressed by the general competition rules in Part IV and Part IIIA of the Trade Practices Act. Part IV sets up the general regime for regulating anticompetitive behavior under the Act, while Part IIIA permits regulators to compel competitive access to bottleneck facilities.[26]

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[25] Nevertheless, it appears that many who support retaining the telecommunications-specific rules point to these features as the rationale for specific rules and tacitly argue that local services remain a natural monopoly.

[26] The general industry bottleneck access provisions included in Part IIIA and other sections of the Trade Practices Act such as Part V which addresses consumer protection also serve to deter anticompetitive abuse of control over the bottleneck.

These rules are important and the ACCC is responsible for seeing that these rules are enforced for all industry sectors, including telecommunications.[27] If the industry-specific provisions merely duplicate general enforcement rules, then this is obviously inefficient: the result is additional regulatory burden without enhanced efficient enforcement. On the other hand, if the rules extend enforcement powers, then the question arises as to why one industry should be singled out for protection over others.

The proliferation of idiosyncratic, heterogeneous, industry-specific competition rules threatens the effectiveness of the general competition protection regime and raises the enforcement costs for both the general and specific rules.[28] For example, determining which rules apply in an industry subject to both general and overlapping specific rules increases regulatory ambiguity and can encourage inefficient rent-seeking behavior as firms are encouraged to classify business activities with an eye to gaming the regulatory process.[29] Regulatory ambiguity imposes additional costs on an industry because it increases uncertainty. This in turn can deter investment in productive facilities,

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[27] The ACCC is not responsible for declaring services under Part IIIA. This is the responsibility of the National Competition Council (NCC). Under Part IIIA, however, the ACCC is responsible for assessing the "reasonableness" of undertakings and arbitrating in relation to price and non-price conditions of access.

[28] The ACCC's effectiveness would be enhanced if its mandate for competition protection is harmonized across industries, and arbitrary distinctions between the regulatory treatment of economic sectors are eliminated.

while diverting resources towards protection against arbitrary regulatory enforcement.[30]

Plainly, if the current general competition rules incorporated in the Trade Practices Act are inadequate to protect competition in all industries (including telecommunications), then they ought to be reformed for all industries (including telecommunications). Any changes that enhance the effectiveness of these rules ought to be applicable to all industries where there exists a danger of anticompetitive behavior. Piecemeal reform – or mere "tinkering" -- based on industry-specific amendments is likely to be inefficient and cumbersome. Piecemeal reform would create potentially arbitrary distinctions in the regulatory treatment across industry sectors that are not warranted. Furthermore, asymmetry in regulation will generally result in asymmetry in costs. This, in turn, will distort investment incentives and the workings of competition.[31]

When faced with a choice between general versus industry-specific rules, the former are generally preferable. There are scale and scope economies

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[29] For example, an issue may arise as to whether video-on-demand ought to be regarded as a telecommunications service or not when it is provided over xDSL lines.

[30] Ambiguous rules can provide incentives to invest in regulatory capture strategies, and in anticipation of this, defensive strategies. Collectively, such investments in bargaining positions represent a deadweight loss to the economy.

[31] For example, *ceteris paribus*, industries covered by superior rules (either more effective at deterring anticompetitive behavior or less burdensome from an enforcement perspective and hence lower cost) are likely to face lower capital costs than industries subjected to inferior competition rules. This would distort investment by directing funds away from poorly protected industries and toward industries with better protection.

associated with interpreting and enforcing a common legal structure and a set of rules. Wider application provides a greater body of applicable case law and more extensive sharing of common legal expertise.[32] Moreover, because general competition rules apply to all industries, the community of vested interests in assuring efficient regulatory decision-making is larger. For example, when open access is ordered under Part XIC, only telecommunications firms need concern themselves about whether the decision reflects sound regulatory decision-making, while open access decisions made under Part IIIA have implications for firms in many industries. This wider interest helps make the regulatory process self-monitoring.[33] This provides a compelling rationale for increased reliance on general trade practice law rather than individual-industry-based competition regulation.

Telecommunications-specific Competition Protection Has Largely Failed in Practice

The telecommunications-specific provisions included in Part XIB and XIC of the Trade Practices Act duplicate protections included under Part IV and Part

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[32] That is, lawyers do not need to acquire expertise with respect to industry-specific provisions. A wider body of case law, drawing on cross-industry decisions relating to the general provisions of the Trade Practices Act, becomes available to inform jurisprudence. This can help reduce regulatory uncertainty and the costs of legal expertise.

[33] Mathew McCubbins, Roger Noll and Barry Weingast, "Structure and Process, Politics and Policy: Administrative Arrangements and the Political Control of Agencies," *Virginia Law Review*, vol 75, no 2 (March 1989) 431-482.

IIIA. There is nothing in Part XIB or XIC that is specific to the telecommunications sector except for the authority they provide for their application. That is, the rules are not written in such a way as to make them inapplicable in other industry contexts. They do not refer to circumstances that are exclusive to telecommunications. What differentiates these rules from the general provisions is that they expand regulatory discretion and the power to intervene when applied to the telecommunications sector. They provide the ACCC with broader enforcement powers under the Trade Practices Act when addressing the competitive concerns in the telecommunications sector than when addressing similar concerns in other industries. As discussed in Section 2, these broader powers are reflected in more lax evidentiary requirements for enforcement, relaxed checks on regulatory authority, and increased flexibility for the ACCC in choosing how and when it will act to enforce competition rules in telecommunications. I understand that the alleged motivation behind adopting these rules was threefold:[34]

(1) Because telecommunications is different from other industries – a position I have already shown to be mistaken;

[34] See for example, pages 5-7 of the *Submission to the Productivity Commission Review of Telecommunications Specific Competition Regulation*, Australian Competition and Consumer Commission, August 2000 (hereafter, *ACCC First Submission*).

(2) Because there is a pressing need for more flexible and speedy enforcement to adequately protect competition – a position that, if true, applies equally to all industries where competition is threatened; and,

(3) Because the incumbent, Telstra, is so dominant – a point I address in subsequent sections.

The greater enforcement flexibility afforded to the ACCC under Parts XIB and XIC further exacerbates the regulatory ambiguity that already exists as a consequence of the duplicative rules.[35] The more freedom a regulatory authority has – the less circumscribed its mission, the fewer checks and balances on its decisions, etc. – the greater the regulatory uncertainty. As noted above, this increases industry costs. Moreover, it endangers the ability of regulatory authorities to make credible commitments, which are essential for an orderly evolution of the industry from heavy handed regulation (or public ownership of the incumbent firms) to market-driven competition. Economists have long

[35] The ACCC incorrectly believes that greater regulatory latitude results in increased – not decreased – regulatory certainty (see *ACCC Second Submission*, note 16, *supra*, page 6). Allowing the ACCC more enforcement latitude makes its actions less predictable and hence increases regulatory uncertainty. Moreover, the rules of Part IV and IIIA have not resulted in more expeditious enforcement as even the ACCC admitted in its prior filing (see *ACCC First Submission*, note 34, *supra*, page 9).

understood that governments need to be able to make such commitments if they wish to implement optimal incentive-compatible regulation.[36]

Prospects for regulatory compliance are diminished if firms cannot anticipate how regulators will respond or if firms expect the legal rules governing industry conduct to change frequently. This sort of ambiguity is especially harmful under present circumstances where the goal of telecommunications policy is to promote increased investment in competitive facilities. These higher costs associated with elevated regulatory ambiguity can deter infrastructure investment or skew the investment decisions of both the incumbent(s) and new firms alike.

Telstra's review of the history of enforcement under the telecommunications-specific provisions suggests that these provisions have led to inefficient and over-zealous regulatory interventions.[37] Regulatory policy during a transition from heavy-handed regulation to market-based competition ought to facilitate the transition without unduly restricting the incumbent firm's

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[36] For the value of commitment for optimal regulation, see for example, Brian Levy and Pablo Spiller, "The Institutional Foundations of Regulatory Commitment: a Comparative Analysis of Telecommunications Regulation," Journal of Law, Economics and Organization, v10, n2 (October 1994): 201-46; or, David Baron and David Besanko, "Commitment and Fairness in a Dynamic Regulatory Relationship," *Review of Economic Studies*, No. 54 (1987) 413-436.

[37] See *Public Submission to the Productivity Commission Review of Telecommunications Specific Competition Regulation*, Telstra Corporation Limited, August 30, 2000, pages 28-31 (hereafter, *Telstra First Submission*) and *Second Round Submission to the Productivity*

ability to respond to the changing market circumstances. While vigilance is warranted, over-broad interventions into the workings of the marketplace do not advance the overarching goal of promoting competition and efficient resource allocation. The ACCC's enforcement record raises at least a colorable concern that the ACCC has exhibited excessive zeal in ferreting out anticompetitive conduct by the incumbent Telstra where potentially there has been none.[38] Remedies for valid threats to competition in the sector can be effectively pursued under the general competition rules included in Part IV and Part IIIA. Furthermore, these rules do a better job at guarding against unnecessary and costly regulatory interventions because of the greater burden of proof imposed to justify the need for a regulatory remedy.

Moreover, the telecommunications-specific rules have failed in practice to realize one of their main objectives: that is, expediting enforcement. Even the ACCC admits as much.[39] This outcome is readily understandable. Increased ambiguity does not enhance prospects for speedy enforcement. The best way to

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Commission Review of Telecommunications Specific Competition Regulation, Telstra Corporation Limited, October 24, 2000, pages 28-31 (hereafter, *Telstra Second Submission*).

[38] All of the regulatory proceedings were terminated before a judgment was reached. Certainly, evidence of regulatory over-reaching would have been more compelling had one or more of these proceedings concluded with a judgment that expressly determined that the ACCC's allegations were groundless. However, Telstra did not have unilateral control over how and when the proceedings were resolved. Moreover, pursuing judicial exoneration for alleged anticompetitive behavior could have subjected Telstra to even longer delays and higher regulatory costs than were already incurred.

[39] See ACCC *First Submission*, note 34, *supra*, page 9.

expedite regulatory proceedings is to circumscribe their scope. If the circumstances in which a proceeding will be initiated are well-understood by all parties and if there are clear standards specifying the procedures and evidence that will be reviewed by the enforcement agency, then the proceedings can be efficiently organized and a resolution can be reached in an efficacious manner.

The current rules extend regulatory authority precisely at the wrong time when policymakers are trying to convince the industry that they are committed to deregulation and to increased reliance on market forces to discipline behavior. The avowed direction of the 1997 amendments was to harmonize telecommunications and trade practice law. This goal was consistent with the overall commitment to increased reliance on market forces.[40] However, the telecommunications-specific rules have not delivered on this promise. Rather, these provisions have been relied upon to extend regulatory oversight and have failed to speed up the process of dispute resolution. For example, as Exhibit 1 illustrates, since 1997, the ACCC has increased the share of Telstra revenues that are subject to Part XIC access obligations from 38% to 76%. Such an extension of access requirements creates concerns in and of themselves. These concerns are exacerbated by the general fact that, in the absence of a clearly articulated provision for their removal, these requirements (even if warranted in the first

[40] Even the ACCC accepts the desirability of moving from industry-specific to general regulation (see *ACCC Second Submission*, note 16, *supra*, page 7).

place) are likely to stay “on the books” far longer than justified by competitive circumstances. The ACCC has not been required to articulate clear guidelines for when it will remove these potentially burdensome and inefficient obligations on Telstra. And Telstra’s rivals, which are not subject to such obligations, have little incentive to push for their removal.

Substitution of the "purpose test" used in s46 of Part IV with an "effects test" may also result in less efficient regulation to the extent that the "effects test" is more likely to be applied in cases where there is harm to competitors rather than harm to competition. This problem may arise because pro-competitive actions by firms, by definition, inflict harm on competitors, since they cause competitors to lose customers and revenues. Competition rules ought not to be used to protect competitors or provide them with an undue advantage in the marketplace. Competition rules need to police and deter market conduct that is inconsistent with effective competition and which has the effect of harming competition. The general competition rules in the Trade Practices Act offer adequate protection already against such behavior, without unfairly favoring one class of competitors over another. In my opinion, the ACCC has not shown that specific rules are needed to ensure that telecommunications firms in general, and Telstra in particular, do not engage in anticompetitive behavior. General rules in the Trade Practices Act do not seem deficient in their ability to detect and deter anticompetitive conduct in the Australian economy.

Implementation of the Access Obligations is Inefficient and Deters Investment

Part XIC provides the authority for the ACCC to impose open access obligations on Telstra. When applied to bottleneck facilities, these provisions duplicate open access provisions included in Part IIIA of the Trade Practices Act. Because Part XIC does not face the same sort of sunset provisions, full merit review, and other administrative hurdles that restrict arbitrary regulatory authority under Part IIIA, the ACCC has excessive latitude in determining which services to declare and how to administer the open access obligations. This excessive latitude may have fostered an inefficient access regime in Australia.

Assuming that local access facilities and interconnection to facilitate universal termination constitute bottleneck services, and hence, that open access obligations for these services may be warranted to assure effective competition, access ought to be priced based on long-run economic costs. It appears, however, that the current regulatory regime requires Telstra to provide its competitors with access to its network facilities at prices that are below the long-run economic costs of providing access.[41] This is clearly inefficient and harms competition in Australia.

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[41] In preparing this paper, I have relied on Telstra's characterization of available data and regulatory discussions that demonstrate general acceptance that access is priced below long run economic cost on average, and far below cost in many high cost regions that account for much of the territory outside of major metropolitan areas. For example,

Regulated prices that are below economic costs distort incentives, deter investment, and result in lower (more congested) quality for those services that continue to be offered. Such a policy stifles efficient competition, but may also provide an incentive for inefficient, high-cost competitors to participate in retail telecommunications markets in order to exploit the implicit access subsidies embedded in the current wholesale price structure. If sustained over the long term, such a policy poses a serious threat to the integrity of communications infrastructure in high cost areas of Australia. An access regime that excessively encourages reliance on the existing facilities of Telstra, rather than facilities utilizing newer, low cost technologies can retard adoption and diffusion of productive innovations.

Current retail pricing regulation further compounds the problem by relying too heavily on geographically averaged rates. Even if on average prices were set equal to average costs, the failure to properly account for differences in underlying costs would distort efficient investment. For example, because costs are typically higher in rural areas than in metropolitan area, regulated prices will be below economic costs in the rural areas and above economic costs in metropolitan areas. This will deter investment in facilities in the countryside where they are needed, while encouraging excess investment in metropolitan

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see *Telstra First Submission*, note 37, *supra*, pages 6-8, 21-24 and *Telstra Second Submission*, note 37, *supra*, Appendices, pages 6-7, 35-46.

areas. Evidence suggests that this has occurred, with competitors concentrating their investment in central business districts (CBDs).[42] If policymakers wish to subsidize consumers in high cost areas (*e.g.*, for reasons of universal service or network externalities) by imposing higher prices than are necessary in low cost areas, such subsidies ought to be explicit, and at the very least, need to be implemented in a competitively neutral fashion. The right approach is, of course, to create correct incentives for investments and to rely on pin-pointed subsidies to "correct" whatever market failures may arise and/or to achieve social policy objectives that are deemed desirable.

4. Appropriate Standard for Assessing Effective Competition

Absent substantial market power, a firm does not have the ability to engage in anticompetitive activity and so, regardless of any incentives to the contrary, the firm poses no risk to competition. Absent any foreseeable risk that such power could be attained, there would be no basis for retaining telecommunications-specific provisions. Indeed, if all telecommunications markets were deemed to be effectively competitive, then there would be no reason or basis for invoking either the general or telecommunications-specific competitive provisions of the Trade Practices Act.[43] If the telecommunications-

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[42] See *Telstra First Submission*, note 37, *supra*, pages 18-21.

[43] That is, absent market power, no threat to competition would arise that would justify invoking competition protection rules.

specific provisions were repealed, the general competition provisions included in Part IIIA and Part IV would remain in force to deal with risks to competition in the telecommunications or any other industry sector that may arise in the future.[44]

In this section, I examine the economic criteria that ought to inform an evaluation of whether there exists a substantial degree of market power, and, if this exists, the circumstances under which such power may pose a threat to competition.

First, it is important to have an appropriate reference standard. This cannot and should not be a textbook model of perfect competition. While useful, the perfect competition standard is a theoretical construct that is not intended to accurately reflect real world circumstances, and certainly will not apply to an industry such as telecommunications. The perfect competition standard makes a number of structural and behavioral assumptions that do not apply in real world situations. For example, perfect competition requires that all firms are price-

[44] As I explain below, current technological, demand, and industry trends suggest that the telecommunications sector will continue to become more competitive in the future. Therefore, it is not reasonable to justify retention of telecommunications-specific provisions in the Trade Practices Act to protect against an unrealistic possibility that, in the future, telecommunications will be substantially less competitive than they are today.

takers[45]; a market for homogeneous goods[46]; and constant return-to-scale production technologies[47]. In telecommunications, none of these conditions are met. Because of the presence of joint and common costs, the perfect competition ideal of pure marginal cost pricing would fail to recover costs even if enforced by regulatory fiat.

In the real world – as opposed to a theoretical construct – most firms have some degree of market power (i.e., some degree of discretion over price).[48] Thus, if one were to utilize perfect competition as the metric for determining whether effective competition exists, virtually all real world markets would not be effectively competitive. This is clearly not correct. Furthermore, in the telecommunications industry, acceptance of this view would apparently warrant perpetual regulation of the sector and would be in clear conflict with the avowed regulatory goal of a transition from direct regulatory oversight to a market-based

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[45] Buyers and sellers behave as if their actions have no effect on market prices. If there are a very large number of buyers and sellers, each of which consumes or produces only an infinitesimal share of total market output, this may be a reasonable assumption.

[46] Both buyers and sellers regard the goods produced by different sellers as perfect substitutes. A commodity good such as wheat may come closest to meeting this ideal, however, even wheat may be differentiated based on the variety, its moisture content, or production location.

[47] That is, there are no scale economies.

[48] On the divergence between the theoretical ideal of perfect competition and real world markets, see for example, Dennis Carlton and Jeffrey Perloff, Modern Industrial Organization, Harper-Collins: New York, 1990, pages 92-94; Alfred Kahn, The Economics of Regulation, MIT Press: Cambridge, 1988 (reprint edition, original John Wiley & Sons, 1970), volume II, pages 44, 114; or, Robert Pindyck and Daniel Rubinfeld, Microeconomics (3rd Edition), Prentice Hall: Englewood, NJ, 1995, page 271-272.

regime. On the other hand, rejection of the perfect competition standard implies acceptance of systematic deviations from that standard in terms of structure (*e.g.*, potentially concentrated market shares), behavior (*e.g.*, evidence of some control over prices), and outcomes (*e.g.*, systematic deviations from marginal cost pricing).

Once one rejects utilization of perfect competition as the standard by which to determine whether markets are effectively competitive, one is forced to adopt a more nuanced view of what constitutes substantial market power. Structural characteristics may portend the existence of market power, but, if the firm or firms with market power do not have the ability to use that power to harm the competitive process, then that firm or those firms do not have a *substantial degree of market power*. In such a case, the market may be deemed to be effectively competitive.

When evaluating data on market performance it is important to remember that most of the prescriptive predictions are based on long run equilibrium behavior. For example, even the model of perfect competition allows prices in the short-run to deviate from the long-run equilibrium of minimum long run average cost. In the short-run, when firms possess asymmetric information, heterogeneous vintages of capital, and are offering differentiated services – as is the case in telecommunications and many other industries – one should expect to see multiple examples of what might appear to be disequilibrium, inefficient

behavior. Firms face different adjustment costs when responding to supply, technology, or demand shocks. For example, with a larger investment base in legacy equipment, an incumbent carrier may be expected to face higher adjustment costs than new entrants that are investing in the latest generation of communications infrastructure facilities. This leads to a natural dispersion in competitive strategies and observed outcomes in pricing and investment behavior. *Ex post* some firms will be observed to have made mistakes while others will earn superior returns. The mere fact of these differences is insufficient to demonstrate that the market is not effectively competitive or that a particular firm possesses a substantial degree of market power.

Moreover, firms may attain market power through behavior that is pro-competitive. For example, market power (or even monopoly power) can stem from product innovation, efficient production methods, or an exclusive franchise awarded by government authority. Firms generally seek to gain advantages in the marketplace that will result in attaining some level of market power.[49] The mere existence of this market power, however, does not generally present a competitive problem. Furthermore, courts around the world accept that the mere

[49] For example, invention of a patentable technology that is clearly welfare enhancing and is so superior to its predecessors that it creates a monopoly is not contrary to competition law. Competition rules would be violated only if the market power obtained as a consequence of the invention were abused.

possession of market power (or even monopoly power) does not lead to an infringement of the antitrust statutes.[50]

For this reason, the regulator must be able to explicitly identify a competitive problem – other than the mere existence or possibility of market power – that the regulatory restriction is seeking to address. It should be possible to trace a causal link from regulatory restrictions to the behavior that would otherwise occur in the absence of the restrictions. It ought to be possible to explain how the behavior that is deterred would harm the competitive process and thereby reduce total welfare. Regulations that fail to meet this standard risk deterring efficient competitive behavior.

To evaluate whether there is effective competition, it is necessary to evaluate structural features and trends in the market, the characteristics of current and potential competition, the behavior of market participants, and trends and characteristics of market outcomes.[51] As I explain in the next two sections, a review of structural features and trends (Section 5) and evidence relating to market performance and outcomes (Section 6) provides substantial

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[50] For example, precedent cases in Australia and New Zealand suggest that, if a firm with market power merely conducts its business in the same way that a competitive firm would act, then there is no relevant anticompetitive use of its market power: see, e.g., *Queensland Wire Industries Proprietary Limited v The Broken Hill Proprietary Company Limited* (1989) 167 CLR 177; and *Telecom Corporation of NZ Ltd v Clear Communications Ltd* [1995] 1 NZLR 385.

[51] The specific types of data that ought to be considered are discussed further in Section 6.

evidence that virtually all telecommunication markets in Australia are effectively competitive, with the notable exception of local access facilities, especially in high cost serving areas, and ubiquitous termination services. However, an appropriate access regime that provides competitors with access to these potential bottleneck facilities provides adequate protection against the abuse of any latent market power that might exist due to Telstra's control of these facilities. Moreover, access prices that are set at cost-based levels will provide incentives for efficient investment and entry; whereas prices that are too low or too high will distort investment incentives and are likely to deter efficient entry.

5. Structural Factors Supporting Effective Competition

As noted above, there is a general consensus that end-to-end telecommunications services is no longer a natural monopoly. Thus, competition is now believed to be sustainable at all stages of the industry value chain.

In this section, I discuss technological progress in the telecommunications sector and how this progress has transformed industry economics. The conversion of network infrastructure from analog to digital technology -- and with the emergence of the Internet -- from circuit switched to packet-based technologies were major steps that changed the sector's business realities. These advances have facilitated product innovations that have fueled demand growth and greatly expanded the range of service offerings available in the marketplace.

These changes have reduced entry barriers and led to the blurring of traditional industry boundaries through the process of "convergence." After explaining how convergence enhances competition, I discuss why it makes retention of telecommunications-specific rules increasingly problematic. Finally, I address how current regulatory policy fails to properly take account of these changes. The structural changes in the industry make assuring any-to-any connectivity and interconnection less of a concern for regulators.

Technical progress: from natural monopoly to sustainable competition

Telephone networks were built originally to support real-time voice telephony using circuit-switched analog technology. Constructing an ubiquitous network capable of allowing any-to-any universal-service telephone calling required a substantial investment. In this world, the underlying network infrastructure and the service it supported were tightly coupled. The telephone network was optimized for voice services – not data or video.

With the evolution of digital computing and transmission technology, the network was converted from analog to digital. This had a number of important benefits. First, the costs of communications infrastructure declined dramatically. Wide area transport networks were the first beneficiaries of these reduced costs. Over time, however, these productivity gains were extended to all parts of the network. With the addition of common channel signaling, network resources

could be utilized more efficiently, the network became more reliable, and many new types of services could be supported.

Second, the new technology is inherently more modular. Digital technology was designed to be readily scalable so it was easier to add capacity in less-lumpy increments. This increased modularity helps reduce capacity adjustment costs, including the costs of small scale entry, and therefore has facilitated entry. For example, digital switches can be upgraded and expanded via software upgrades or by adding and/or swapping relatively-inexpensive line cards. More recently, technologies such as Dense Wave Division Multiplexing (DWDM) are dramatically altering the costs for provisioning fiber transmission networks. DWDM makes it possible to expand the transmission capacity of installed fiber by allowing use of multiple wavelengths. Relatively modest incremental investments can allow capacity to be scaled to meet substantial demand growth.

Third, with digital computers proliferating throughout the network (in the switching and control infrastructure), it became easier to support service enhancements (*e.g.*, enhanced calling features such as ANI, voice mail, call forwarding, etc.) and entirely new services (integrated multimedia services, fax-back services, etc.).

The combination of more productive equipment resulted in lower costs and prices to end-users and a broader range of services. These in turn fueled

demand growth, and it became feasible to support multiple service providers. The technical progress that led to reduced cost, increased modularity and scalability, and increased functionality resulted in a virtuous cycle of innovation spurring demand which spurred more innovation. The overall effect of these trends has been that telecommunications infrastructure investments do not necessarily disadvantage small-scale entry. In short, economic barriers to entry have been reduced making telecommunications markets effectively competitive, at least in principle.

Furthermore, the increased modularization and lower costs have allowed consumer equipment at the edges of the network to become much more capable and at prices that make them accessible to smaller business and even residential customers. This has increased competitive pressures on service providers. When customers are able to credibly threaten to self-provision, competitive pressure on service providers grows and brings them into direct competition with equipment makers. For example, PBX and private networking equipment vendors compete directly with such carrier-provided business services as virtual private networks.[52] The option of self-provisioning has long been available to large commercial customers, but with the reduced prices, modularity, scalability, and

[52] A private corporate telephone network utilizing PBXs and leased lines with statistical multiplexing equipment to achieve high circuit utilization rates provides a lot less revenue to the PSTN service provider than if all of those calls were handled as switched voice calls.

increased capabilities of modern PBXs, this option has been extended to smaller businesses, and even, residential consumers. For example, voice mail machines provide consumers with a outside option for carrier provided voice mail services.

Impact of the Internet and eCommerce: accelerating the trend

All of the trends that have distinguished telecommunications over the past thirty years are continuing in the age of the Internet and electronic commerce (eCommerce). Today, no firm would invest in infrastructure for a telephone service-only network. It wouldn't make sense. Modern digital communications networks are built to handle data traffic and voice telephony is just another (relatively narrowband) service that can be supported on these multipurpose data networks.

The emergence of the Web and Internet access as a mass consumer market is simply the most recent stage in the long-term trend of the convergence of data and voice networks. This convergence is part of the broader convergence between computers and communications. As computing technology has penetrated more and more of the network, communications networks have been

able to take advantage of some of the exponential productivity gains that have characterized computing technology for over three decades. [53]

Demand for Internet access to browse the Web has opened up the market for consumer data services, and fueled a revolution in corporate networking as the capabilities of closed private networks are expanded to an ever wider audience of employees, suppliers and customers over intranets, extranets, and the Internet. These trends are accelerating the process of convergence, which implies a general blurring of industry boundaries. Convergence is occurring at all levels within the electronic communications value chains. For example, deployment of broadband xDSL access services makes it possible for telephone companies to deliver television services over copper loops; while at the same time, the addition of 2-way cable modem access services is permitting cable television networks to offer telephone services and broadband Internet access. The boundaries between telecommunications, broadcasting, and cable television are breaking down. The proliferation of Voice-over-Internet Protocol (VoIP) technologies is facilitating the emergence of new types of carriers that use packetized data networks to support voice calling (and other) services. And, many wireless service providers (satellite broadcasters, private networking

[53] The best-known manifestation of this trend is Moore's Law, based on the empirical observation that productivity growth in computers is exponential, doubling every 18 months. The law is attributed to an observation by Gordon Moore in 1965, co-founder of Intel, that the density of transistors per square inch on integrated circuits doubled every year.

services such as LMDS and other wireless point-to-point and point-to-multipoint technologies, and cellular phone service providers) are upgrading their networks to offer data and other services. What this means for infrastructure providers is that facilities that may originally have been installed for a single purpose (*e.g.*, copper loops for telephone, coaxial cable for TV) are now able to support a wider-array of services, and their potential markets overlap. Infrastructure providers that used to serve different domains are increasingly becoming direct competitors.

The Internet is also fueling convergence between service providers and equipment vendors. The opportunity to place smart computers at the edge of a network opens up flexibility in where to locate network intelligence. For example, should protocol translation be handled at the edge or in the core of the network? The emergence of Internet telephony provides a case in point. In 1996, consumers could download free software to their PCs and make "free" telephone PC-to-PC calls across the Internet.[54] Today, services such as Net2phone offers PC-to-phone calls over the Internet.[55] Meanwhile, companies such as iBasis are

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[54] The calls were "free" in the sense that the consumers did not pay usage-sensitive fees for the call, beyond what they may have been paying for the underlying Internet access connection. Initially, the services were of limited value because users would both have to be logged on and using compatible software for the service to be feasible, and even then it was of poor quality typically. However, since then VoIP services have evolved into a global industry and telephone calls are often carried from black phone to black phone with IP networks transparently connecting users on either end.

[55] In the United States, Net2Phone allows free calls and very inexpensive international calling (see http://www.net2phone.com).

providing IP voice and fax wholesale services to other international telephone service providers and companies such as Band-X, RateXchange, and Arbinet are supporting new wholesale markets that allow service providers to trade capacity.[56] Even if some of the these services may not yet be available in Australia, there are no barriers to their introduction.

The emergence of electronic commerce and new types of interactive content are helping to propel demand for infrastructure services. On-line retailers are adding richer advertising and catalog content and new services to help attract customers. These include things such as streaming media, web-to-phone customer service, and a variety of personalization services (*e.g.,* email, calendar, and contact list maintenance services). Supporting these services requires upgraded and enhanced network infrastructure capable of supporting integrated data, voice, and video traffic. In such an environment the bulk of the traffic is associated with data, even while voice services may still account for the majority of revenue.

The transition to IP based networking has other implications as well. The Internet was originally designed to allow connectivity across heterogeneous networks and between peering equipment (end-user nodes) of differing quality.

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[56] See http://www.ibasis.net, http://www.band-x.com, http://www.arbinet.com, http://www.ratexchange.com. Also, see, William Lehr and Lee McKnight, "Next Generation Bandwidth Markets," Communications & Strategies, Number 32, 4th Quarter 1998, 91-106.

This inherent robustness means that IP can be layered on top of almost anything and this allows integrated networking services to be supported over a diverse array of facilities and networking architectures (*e.g.*, IP over ATM, over Frame-relay, over SONET, over Ethernet, etc.). Power companies with local distribution grids, cellular companies with spectrum, and a variety of other wireless technologies (LMDS, MMDS, wireless local loop, etc.) are all experimenting with technologies for offering local transport facilities that could support IP traffic, and hence, all of the diverse communications services that can be supported on IP networks.[57]

Furthermore, because IP is an open protocol, it means that a global community of firms and researchers is continually able to develop new applications and technologies that extend and complement the capabilities of IP-based networks. This open-ness fosters interoperability which facilitates internetworking and lowers costs. It makes it very difficult for any single firm or network to develop market power over a bottleneck because there are potential substitutes at every layer of the communications infrastructure.

Convergence, Competition, and Regulatory Policy

[57] While not all network providers are adopting IP-based architectures, the presence of these architectures increases prospects for competition across all of the different network architectures.

In economic terms, convergence means increased competition at all levels along the electronic communications value-chain. From a public-policy perspective, this is all good news. When markets can function, they are typically much more efficient than governments at making decisions about how resources should be allocated, what goods and services consumers want, which technologies are best, and where investment is needed. Consequently, telecommunications regulators in Australia and elsewhere have been implementing drastic reforms that amount to a paradigm shift. Instead of directly managing the behavior of a single or small number of vertically integrated telephone carriers, regulators are increasingly turning towards incentive-based, and ultimately, market-based control mechanisms.

A necessary component of this paradigm shift is policymakers' willingness and ability to rely on market forces. If regulators retain broad-based, arbitrary powers to intervene, then uncertainty as to how this power may be used raises the costs faced by market participants and dampens incentives to invest and compete efficiently. During the transition from a statutory monopoly to effective competition, it may be necessary to maintain asymmetric restrictions on the incumbent carrier to assure that it does not use any latent market power it possesses to crush nascent competition. The extent of these restrictions should be, however, congruent with the competitive concerns engendered by the legacy situation, and not more. Furthermore, as competition becomes established and its

sustainability is assured, it is critical that deregulation proceeds as quickly as is feasible. "Regulated competition" beyond the normal antitrust oversight is a state of affairs that should be avoided in favor of unimpeded rivalry. In Australia today, the state of competition is such that, in most cases, there is no basis for retaining asymmetric competition policy rules. Hence, Part XIB and XIC, at a minimum, ought to be substantially reformed to be more compatible with the general competition rules in Part IV and Part IIIA of the Trade Practices Act.

Convergence will make industry-specific regulation increasingly difficult (high cost) and distortionary because of the blurring of industry boundaries that is occurring and the rapid pace of industry changes.[58] Already, traditional telephone services are being offered by firms that are not regulated as telephone carriers and telephone infrastructure has the opportunity to support many other services beyond plain old telephone service. Today, companies such as Microsoft, Oracle, and Intel regularly participate in communications standards debates and view communications policy as having a direct impact on their business interests. Increasingly, it will be difficult for regulators to narrowly target services, service providers, or consumers as participating in

[58] In a world running on "Internet-time," regulators are ill-equipped to keep up with the rapid pace of product and industry life-cycles.

telecommunication services as opposed to some wider Internet-based service markets such as eCommerce, communications services[59], or content media.

In a competitive marketplace, regulatory policy needs to protect the process of competition, but not individual competitors. Regulatory policy needs to strive towards a level playing field that does not arbitrarily constrict the ability of any one firm to respond to its rivals or to gain competitive advantages. The transition to general competition rules will help realize this policy objective. In contrast, if telecommunications-specific rules are maintained, creating a level playing field could require extending the reach of telecommunications regulation to a set of industries, introducing potential regulatory distortions into markets that heretofore have been free of these.[60] The best way to remove inefficient incentives to engage in regulatory arbitrage is to assure that there is a sound set of general rules guiding competitive behavior that apply to all firms.

Changing Need to Assure Any-to-Any Connectivity

During the transition from regulation to competition, policymakers have placed particular stress on maintaining universal connectivity (*i.e.*, any-to-any calling capability) and the associated network benefits and externalities. Towards

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[59] Which include both traditional and new types of wireline telephone carriers, cable system operators, terrestrial and over-the-air broadcast networks, and satellite services.

[60] With the blurring of industry boundaries, the telecommunications-specific rules may be leveraged into adjacent industries that participate in the sector in ways that may distort competition in unanticipated ways.

this end, policymakers have imposed both interconnection and open access obligations on the former monopoly carrier, Telstra. The rationale for these obligations has been to guarantee that, as vendors and networks proliferate, they remain interconnected. The belief is that positive network externalities associated with telephone networks are so important that, if Telstra elected to deny such interconnection to other service providers for origination and termination of traffic, this would preclude the emergence of effective competition. Moreover, policymakers apparently believed that Telstra has an incentive to deny such interconnection, and therefore strong regulatory oversight, assuring competitive access to interconnection services, was essential to facilitate the transition to effective competition.

This policy stance may be overly simplistic in light of industry and technology developments. First, it is worth observing that regulators do not mandate interconnection among Internet Service Providers (ISPs) and yet the Internet provides world-wide connectivity. Furthermore, this occurs without the costly and inefficient layer of the International Settlements type system, which continues to burden international telephone service. Thus, it is not clear that, absent mandatory interconnection or access restrictions, Telstra would seek to deny such services to competing networks. Economic theory does not unambiguously demonstrate that carriers with larger networks (and hence beneficiaries of greater positive externalities) would categorically refuse to

interconnect with smaller rivals or that broad prohibitions against exclusion and leveraging of market power are insufficient to deal with this issue. Furthermore, any-to-any connectivity does not require that every or even a single carrier have infrastructure capable of providing connectivity to all consumers (although in Australia, Telstra has such a network), but rather that, collectively, the networks provide such connectivity. For example, there is no single provider in the Internet with an ubiquitous network. End-to-end global connectivity is provided through market-based, competitively-provided interconnection services across a network of networks.

Second, the value of positive externalities embedded in a telephone network could differ from those that may be associated with broadcast television or other entertainment content distribution services; for example, an inherent aspect of the value of telephone service is its ability to support "any-to-any" calling. However, a consumer listening to music or watching a movie may care much less if he or she can access any music or any movie that may be located anywhere. This means that the need to interconnect diverse networks is potentially lower for services other than telephony, insofar as those services do not include "any-to-any" connectivity as intrinsic to their design.[61]

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[61] For example, most commercial on-line services offered to consumers do not require any-to-any connectivity. This includes content distribution (*e.g.*, entertainment media over the Web) and electronic commerce transaction services (*e.g.*, Web-based retailing). For many applications, one (or few)-to-many communication support may be sufficient.

Furthermore, effectively competitive markets can adjust to accommodate customer demand. If there is a compelling market rationale for any-to-any connectivity to support a particular application, then commercial customers and their carriers will figure out how to offer it (absent, of course, regulatory barriers that preclude such service innovation). Moreover, for applications where any-to-any connectivity remains crucial (*e.g.,* email, telephony), carriers may have a incentive to interconnect even without explicit regulatory mandates requiring such interconnection because they recognize that the increased value derived from consumers from being part of a interconnected network increases the revenue to be shared by all firms.[62]

This may be because of the way in which the service or product is targeted (specialized for a niche market) or because of the way in which the service is delivered (*e.g.*, provided via servers located on multiple networks interconnected by a private network). The key point is that just because telephone service requires any-to-any connectivity to maximize its value to consumers, and realize maximal positive network externalities, this may be less so for the increasingly diverse array of services that are being provided over modern communication networks.

[62] As networks become more heterogeneous and fragmented, interconnection may be the only way for many providers (perhaps all providers) to reach all parts of the network and, hence, may be the only way to achieve any-to-any connectivity. Therefore, as heterogeneous, partial-coverage networks proliferate, incentives to interconnect are likely to increase, meaning that mandated interconnection may not be necessary.

The notion that a dominant incumbent carrier with a nearly ubiquitous network may have insufficient incentive to interconnect with its smaller rivals is premised on several assumptions that are decreasingly applicable. These include the presumption that we are assuming homogeneous networks offering a single service over the same market footprint. Even when networks offer services over the same footprint, they may address different market segments or offer different services and interconnection may allow them each to offer complementary services to their customers.

Third, the interoperability afforded by IP technology and the other technical developments cited above make it easier to interconnect facilities.[63] For example, interconnecting traditional, hierarchical circuit-switched networks is inherently more difficult than interconnecting IP-based networks.[64] Bridge and gateway technologies are readily available to facilitate interconnection across diverse network domains. This equipment has been used by firms to interconnect their local area networks (LANs) to create global enterprise-wide networks (WANs). Because diverse network architectures are being used on a regular basis, robust technology has been developed to support connectivity and interoperable communications across this heterogeneous networking fabric.

Fourth, it is important to distinguish between different types of interconnection for telecommunications services. For example, the value of interconnection for a competitor and the potential for market power that might be abused by an incumbent with the only ubiquitous network are likely to be greater for termination than for origination services. This is because it is easier to scale origination facilities (*i.e.,* construct facilities first to the customers you wish

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[63] For a discussion of how the architecture of the Internet supports interoperability and interconnection across multiple applications and multiple types of facilities infrastructure, see National Research Council, Realizing the Information Future and Beyond, National Academy Press, Washington, DC, 1994.

[64] The type of interconnection needed will depend on the type of service that is being supported across the networks (*i.e.,* interconnection to support email versus real-time telephony). Assuring end-to-end quality of service across multiple carrier domains for general services still presents a difficult challenge for IP-based architectures.

to serve first) than termination facilities (*i.e.*, because one may not know whom your customers will wish to call). Also, it takes time to construct facilities and some markets are more attractive than others (*e.g.*, typically, it is less expensive to construct facilities per customer served and the revenues anticipated per customer are higher in CBDs than in rural areas). This may mean that the incumbent will preserve its position as the only service provider capable of supporting universal termination even after there are many substitutes available for origination services for most consumers.[65] For this reason, it may be reasonable to regard universal termination services as a bottleneck service under present market conditions. However, with the expansion of multiple cellular services, each with national coverage capabilities, substitutes are now emerging even for universal termination services.

While competitors may need to interconnect with Telstra in order to offer universal termination services to their customers, these interconnection arrangements may also provide the basis for competitors to extract subsidies from Telstra.[66] While Telstra is subject to price regulations, its competitors are

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[65] As noted earlier, the ability to call anybody (any-to-any connectivity) is an intrinsic characteristic of what makes telephone calling valuable. As long as there is no alternative ubiquitous network (or no such network can be constructed from a mesh of alternative partial networks), Telstra will possess the only network capable of terminating calls ubiquitously.

[66] For a model that shows how a non-dominant carrier that is able to set termination charges above cost can extract excess profits from interconnection with the dominant carrier see Julian Wright, "Non-dominant Network Competition," mimeo, University of Auckland, March 23, 2000.

not and may be able to set termination charges that exceed their economic costs for terminating traffic. Symmetric termination charges do not solve this problem if the costs of terminating traffic are different, and specifically, if the costs are less for the competitor with the smaller network. In such a case, the competitor captures a subsidy from Telstra for every minute terminated to the competitor's network, and this subsidy is maximized if the competitor is able to attract customers with asymmetric traffic patterns that result in a higher share of traffic terminating on the competitor's network. By targeting such customers as call centers and Internet Service Providers, competitors can create a mechanism for extracting subsidies from Telstra via excessive termination charges. To avoid this problem, termination charges must be set equal to the economic cost of terminating traffic, and if these costs differ on the two networks, then asymmetric charges are in order.

In summary, it is important to scrutinize closely arguments that premise the need for telecommunications-specific competition rules on the policy objective of any-to-any connectivity. While regulatory intervention may be warranted in the realm of traditional telephony services, industry trends and structural changes in global communications markets may be reducing the need for mandatory interconnection requirements. And, where those rules are deemed to still be necessary (*e.g.*, to assure universal termination for telephone service), it

is important that regulators assure that interconnection be priced appropriately to prevent distorting efficient behavior.

The prior discussion examined trends in technology and communications markets that have resulted in a fundamental structural shift in telecommunications markets and their underlying costs. The economic implication is that entry barriers are lower and competition is more intense at every level in the communications value chain. This structural analysis of trends suggests that even markets that may be relatively concentrated, or otherwise do not exhibit some of the hallmarks of on-going competition are likely characterized by effective competition. In the next section, I examine empirical evidence of market behavior and outcomes that is indicative of effective competition in various segments of telecommunications.

6. Market Conduct/Behavior Evidence of Effective Competition[67]

In the previous section, I explained how the reduction of economic and, more recently, regulatory barriers to entry has facilitated the emergence of competition in virtually all telecommunications markets. In this section, I present

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[67] In reviewing empirical evidence for Australia, I have considered public data and data provided by Telstra. The former includes data from the trade press, analyst and investment banking reports, public financial statements, and other sources, such as Paul Budde. In the exhibits, I have relied on data provided by Telstra because these data are internally consistent and I believe them to be reliable. Moreover, while Telstra's estimates may differ from publicly available data, they are broadly consistent with

evidence that demonstrates that competition is strong in virtually every telecommunications service in Australia. My conclusion stands in stark contrast to the assessment by the ACCC and certain other petitioners in this proceeding.[68] This is not surprising, since were they to believe otherwise, the arguments in favor of retaining Parts XIB and XIC would not be tenable. I must also re-emphasize that in my view, even if some of the telecommunications markets were not yet effectively competitive, the proponents for retention of the pertinent parts of the Act would still need to demonstrate why ensuring successful and prompt transition cannot be accomplished by relying solely on the general provisions against abuse of dominance embodied in the Act.

Based on my review of the submissions in this proceeding, those commenters who claim that telecommunications markets are not effectively competitive are relying on narrow evidence that focuses excessively on static market shares. For example, the ACCC states that "the number of operators competing in the Australian telecommunications market has increased rapidly" and "between them, they provide alternative offerings to Telstra and other

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public data. Therefore, my conclusions regarding the extent of competition would not be altered were I to have relied on public data in the discussion included below.

[68] According to the ACCC, telecommunications markets in Australia are characterized by "overwhelming dominance in the national market, and almost every segment of the market, of a single, vertically integrated incumbent." (see *ACCC First Submission*, note 34, *supra*, page 6).

incumbents in almost every area of the Telecommunications market."[69] The ACCC then goes on to note that there is active competition for both commercial and residential customers; intermediary (wholesale) services have developed; there is increased and more complex price and quality competition; and there is increased carriage infrastructure (fiber, satellite, wireless and mobile networks.[70] After recounting this impressive progress (but not providing much in the way of actual data to see how impressive this progress really has been), the ACCC concludes – that, "nevertheless, Telstra remains the only operator with a ubiquitous access network" and "Telstra's market power remains extensive."[71] I do not dispute that Telstra may retain some market power in the provision of certain telecommunications services. However, the ACCC does not show that, given the market dynamics, conceded by the ACCC, there is a need to retain the special provisions in the Act to guard against the possible abuse of this market power.

Market shares, and concentration, are, clearly, only one of the factors that bear on the question whether the relevant market is, or is not effectively competitive. For example, if no firm possesses more than a 10% share, the pertinent market must be deemed effectively competitive, unless there is explicit

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[69] See *ACCC First Submission*, note 34, *supra,* page 56.

[70] *ACCC First Submission*, note 34, *supra,* page 57.

evidence of cartel behavior. On the other hand, if a single firm retains a 90% share, then it seems quite likely that that firm possesses some degree of market power and there is a danger that such a market will deviate from the "effective competition" benchmark. Of course, if the market is contestable (*i.e.*, there are no entry barriers) or market conditions are changing quite rapidly (*e.g.*, because of rapid innovation, convergence with other markets, or structural change)[72], then the market may behave as if it were effectively competitive. In addition, an effective regulatory regime that mimics the working of a competitive market, constricts the exercise of significant market power. Market shares are, thus, suggestive but not probative: *ceteris paribus*, higher concentration implies greater likelihood of market power.

To determine whether a market is effectively competitive, it is necessary to examine at least the following types of evidence:

(1) *Patterns of market entry*. Without entry barriers, a market is presumed to be contestable[73] and hence to be effectively competitive. In the absence of entry

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[71] The ACCC, relying on statistics from Paul Budde, estimates that Telstra's overall share of total equipment and services is 54%. See *ACCC First Submission*, note 34, *supra*, pages 57-58.

[72] Rapid innovation and structural change can reduce the value of incumbency. Yesterday's infrastructure and customers may not provide a substantial advantage when competing in today and tomorrow's markets. The incumbent may be at a disadvantage because of old installed plant and the need to reform existing organizational and capital infrastructure.

[73] In the absence of entry barriers, the threat of competitive entry can result in behavior consistent with perfect competition even in a market with only a single firm. See

barriers, the mere threat of competition may be sufficient to discipline behavior and limit market power. Evidence of entry demonstrates that entry barriers have been substantially reduced. If the entry is committed (*i.e.*, involves large-scale investments that are not likely to be easily reversible) then this indicates that competitors expect to be able to earn at least a fair return and provides additional assurance that competition is healthy. In analyzing entry patterns, it is important to examine investment trends by new and incumbent firms and also to consider the strength of potential future entrants. *Ceteris paribus*, evidence of excess capacity or the development of robust wholesale markets provide further indication competition is likely to be vigorous.

(2) *Trends in market shares.* While market shares alone give at best a partial picture, they do provide some indication of the extent of industry rivalry, especially when considered in connection with other factors. Evidence that the incumbent has continuously ceded market share over time indicates that competitors are strong and also that the market is not yet in equilibrium.

(3) *Pricing and marketing trends.* The hallmark of vigorous competition is aggressive marketing by firms. This takes the form of product innovations and price reductions as firms are continuously driven to respond to changing

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Baumol, William, John Panzar, and Robert Willig, *Contestable Markets and the Theory of Industry Structure*, New York: Harcourt Brace Jovanovich, 1982.

competitive conditions and to customer tastes. Evidence that product quality is improving at the same time prices are falling provides strong support for the view that the market is highly rivalrous.

(4) *Customer churn*. The best evidence that competition is vigorous is always that customers have numerous viable market alternatives and demonstrate their ability to choose by moving among suppliers. Evidence that customers are changing service providers regularly provides a strong indication that competition is vigorous.

Before considering the data for Australia, it is worth reiterating that, in each case, the failure to observe such evidence would not prove the contrary proposition, namely, that Telstra retains a substantial degree of market power. For example, the following are all consistent with effective competition:

(1) Lack of entry because the market is contestable or sufficiently rivalrous such that additional entrants would anticipate earning no more than a normal return (and hence would be indifferent to entry).

(2) Market shares are stable and unequal because the market is in equilibrium with different firms having different costs and product advantages. Even if shares are changing, they may become more or less concentrated, with fluctuations in both directions likely as firms respond differently to exogenous shocks. In any case, static market shares in a

sector as dynamic on both the technology side and on the demand side as telecommunications are likely to be of little probative value in gauging the strength and future development of competition.

(3) Prices may increase because of increased costs or because of improved quality. More importantly, prices may adjust from unsustainable levels that were only possible under the regime of extensive cross-subsidies to levels that better reflect underlying costs. Indeed, in many countries, certain telecommunications services (such as local calling), were often priced below their true economic costs while other services, such as international calling, were priced significantly above such levels. Once competition takes hold, such unbalanced prices cannot be sustained and adjustments will be necessary, with some prices inevitably rising.

(4) Customer churn may slow. Customers may move between subscribers too frequently, denying sellers the ability to recover their investment in customer acquisition efforts. This is not sustainable over the long run, and may be indicative of inefficient competition.

In summary, the finding of substantial entry, declining market shares and prices, and high customer churn are all strongly supportive of the conclusion that the telecommunications sector in Australia is effectively competitive, with the notable exception of local telephone services, a point that is addressed below.

Patterns of Entry

Prior to 1991, facilities-based entry was prohibited in Australia and from 1991 to 1997 was limited to managed duopoly competition in wireline services. Australia allowed general facilities-based entry in 1997. Moreover, even once entry was permitted, retail price regulation set a price ceiling that precluded effective tariff rebalancing. This created substantial retail-market distortions. While it may have been possible to price below this ceiling in markets where costs were lower (*e.g.*, when serving high volume commercial customers or when operating in major metropolitan areas), this was not feasible in higher cost regions where the price caps were set below economic costs. In these markets, price regulation effectively forestalled the emergence of competition until mandatory resale services were instituted. Under this program, a competitor could resell Telstra's retail service at a wholesale discount from the current retail price. Even if retail prices are constrained by regulation to be below the level required to recover total economic costs, resale entry is still profitable if the discount allows resellers a margin sufficient to recover their retail-level costs.[74] Moreover, some resellers may not even expect to break-even on resold local

[74] Retail-level costs refer to all of the costs that would be incurred by a pure reseller. That includes everything except those functions associated with running a pure wholesale networking business. Retail-level costs include sales and marketing, customer service, billing, product development, etcetera. A competitor may have lower retail-level costs then Telstra because it is genuinely more efficient or because it targets a niche market. Alternatively, if the retail discount is set too large, even a less efficient competitor may be able to compete profitably.

service, but anticipate using it as a loss-leader as part of a bundle of services (*e.g.*, including toll, Internet access, or other services) that as a bundle is expected to earn at least a normal profit. In the long-run, inefficient regulatory price restrictions are not sustainable because infrastructure investment will not be adequate unless retail prices are sufficiently adjusted to allow recovery of *both* wholesale facilities and retail-level costs.

Regulated wholesale prices for loop access facilities were purportedly set at Total Service Long-Run Incremental Cost (TSLRIC), but Telstra's analysis indicates that, in fact, these were set below economic costs. The opportunity to lease these facilities at below-cost prices provided another opportunity for even inefficient competitors profitably to enter the market.

These regulatory-induced distortions could reasonably be expected to have had a dampening effect on investments in local infrastructure. In spite of this, there has been substantial entry of all types of service providers. By July 2000, there were 44 new licensed carriers, while in June 1997, there were only three (Telstra, Optus, and Vodafone). There were also 100 carriage service providers and over 900 Internet service providers.[75] These firms are not all small start-ups, but in many cases, well-funded and sizable international competitors.

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[75] See *ACCC First Submission*, note 34, *supra*, page 56. Carriage service providers include both facilities-based carriers and reseller offering telecommunications services to the public.

For this reason many of these firms cannot be considered as nascent competitors. Regardless of one's opinions about the advisability of government subsidies to new entrants (either directly or via asymmetric regulatory protection), these are irrelevant in the present context given the nature of the firms against which Telstra is competing. Several of these are identified in Exhibit 2.

These firms and others continue to invest substantial amounts of money to expand infrastructure and to attract customers. Because of the regulatory distortions discussed earlier, and because most of the customers – especially the largest commercial customers – are located in metropolitan areas,[76] this is where the bulk of investment has occurred. In a number of CBDs, there are up to nine competing facilities-based providers among which customers may choose.[77] Therefore, telecommunications service suppliers to large commercial customers in all areas[78] and to all customers in many CBDs already face significant competition, and there is no basis for presuming that Telstra retains a substantial degree of market power in these locales.

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[76] According to Telstra data, over 70% of Australian businesses are located in close proximity to the CBDs.

[77] See *Telstra First Submission*, note 37, *supra*, page 14.

[78] Large commercial customers ability to self-provision and capture scale and scope economies means that they can have access to state-of-the-art communications facilities wherever they are located. Moreover, most of them are located in CBDs which are served already by multiple facilities-based carriers.

Although there is much less investment by competitors in areas outside of these metropolitan areas, this can be attributed at least in part to regulatory constraints on retail and wholesale pricing. Given current regulated access prices, such investment is simply not attractive. The lack of alternative investments means that Telstra remains the sole owner of a wireline network with ubiquitous coverage in Australia. This makes it the only network capable of supporting universal termination services, which are especially important in the context of telephony services.[79] Moreover, for many residential or small business customers outside of metropolitan areas, Telstra owns the only facilities for providing originating access wireline connectivity for local and toll calling, and other services that depend on use of the local loops (*e.g.*, dial-up Internet access). For this reason, interconnection for universal termination and to provide competitive access to local access facilities in regions that lack alternative sources of supply may be regarded as a bottleneck facility and hence appropriate access regulation appears warranted.

My preliminary assessment suggests that current regulation, however, is not appropriate. Regulated prices are set too low and hence deter investment in

[79] Note, other services such as email that depend on universal connectivity (any-to-any messaging capability) for much of their attraction, are much less dependent on universal termination services. Because email is accessed asynchronously, it can be stored on servers that can be flexibly located around the network.

alternative facilities.[80] They should be set so as to enable Telstra to recover its economic costs. Also, there is not enough flexibility in regulated rates to allow rebalancing to reflect differences in local costs. And, finally, access obligations are extended far too broadly, applying in market situations where substitute sources of supply are available.[81] When and where effective competition exists, continuing to impose burdensome access obligations on Telstra is inefficient, distorts business decisions, and blunts the effectiveness of the competitive process by reducing market discipline.

If access obligations were reformed and applied to those services that are truly bottleneck facilities, then I would expect wireline providers to extend their networks into less densely populated markets.[82] In addition, wireless alternatives will offer more acceptable substitutes, increasing the competitive discipline they impose. Today, cellular providers have networks capable of supporting alternative universal termination (and originating access) services. These are not yet generally regarded as acceptable substitutes for fixed line phones by most

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[80] See *Telstra First Submission*, note 37, *supra*, pages 6-9, for evidence that costs exceed current prices; and pages 21-22, for evidence that Telstra's prices are low by international standards.

[81] As noted earlier, under Part XIC, the ACCC has expanded access obligations imposed on Telstra to cover 76% of revenue, up from 38% in 1997 (see Exhibit 1).

[82] That is, appropriate access regulation would apply only to true bottleneck facilities and prices would be set at levels that would recover the economic costs of providing those facilities, including an opportunity to earn a normal return on invested assets. Under such a regime, both the incumbent and competitors would make optimal investment decisions with respect to when it was appropriate to invest in additional facilities and when it was appropriate to lease the incumbent carriers facilities.

consumers. However, this is expected to change as cellular networks are expanded and upgraded, thereby allowing them to offer improved services and quality; as customers become more familiar with cellular services and appreciative of its added benefits such as mobility; and as competition intensifies and results in lower prices**.**

It is important that regulators continue to monitor the progress of competition and readjust access obligations as soon as it is clear that universal termination and originating access services are effectively competitive so that these obligations can be relaxed on a region-by-region basis as rapidly as possible. This process would be aided by the adoption of sunset provisions that would require elimination of access obligations once adequate alternative services are available or on a regular schedule absent the presentation of substantive evidence demonstrating that failure to retain these obligations would result in significant harm to consumers. Moreover, even if such access requirements were repealed, private parties would still retain the ability request access under the general prohibitions against abuse of market power that exist in the Act.

Market Share Trends

Until 1991, Telstra had a statutory monopoly on the provision of telecommunications services. Entry barriers were relaxed only in 1997. Hence, it is not surprising that as of today Telstra continues to retain the largest sales share

in the provision of many telecommunication services. It would be surprising if it were otherwise, given the capital-intensive nature of some of the services, especially local access. Despite this, Telstra is losing market share as new entrants come into the previously protected markets. It is also noteworthy that the losses have been greatest, and Telstra's share is currently lowest, in many of the newer, most attractive service markets. However, as noted earlier, some segments of the telecommunications sector will likely remain quite concentrated, at least for the time being. Significant capital requirements as well as scale and scope economies remain important, even if substantially less so than in the past. I would not expect that in the long run, there will be a very large number of facilities-based providers competing for customers in each locale; however, this is not needed for the market to be effectively competitive. Long distance telephone services in the United States are very competitive even though three facilities-based providers control in excess of 50% of the total market, with hundreds of providers reselling long-distance minutes of use, which are highly competitively priced at wholesale. I would expect, however, that in the long run each residential customer and each business customer will have the ability to purchases needed services from several different vendors not necessarily offering the same technology.

My review of Telstra's commercial in confidence data[83] shows that Telstra's competitors account for significant shares of total revenue in each major telecommunications service category, with the exception of local calling services. However, even in local services, competition has been growing as demonstrated by the significant progress that has occurred since 1997 despite regulatory impediments including local services provided over competitors' own facilities. The fact that Telstra's shares have fallen continuously since 1997 is especially important because it suggests that, if anything, the elimination of the wireline managed duopoly has a salutary effect on competition in the provision of local access services.

Pricing and Marketing Trends

Other important indicators of competition are trends in pricing and product marketing. Data on average revenue per minute (ARPM) and on posted pricing indicate that there have been substantial reductions in nominal prices, which means that reductions have been even larger in real terms.[84]

For example, Exhibit 3 shows that ARPM for international and domestic toll services has declined substantially since just 1997. Exhibits 4 and 5 show that

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[83] I understand that Telstra has provided these data to the Productivity Commission on a commercial in confidence basis.

[84] Calculating price indexes for telecommunications services is far from simple given the availability of numerous calling plans and also changes in quality of service. ARPM is a

these declines result from reductions in prices for broad range of calling classes and cannot be explained solely in terms of changes in the product mix. Similarly, Exhibit 6 shows continuous reductions in the pricing for Internet services since 1996.

The data on tariffed price reductions are conservative because they do not reflect changes in pricing structures and the increased reliance on discounting and other innovative practices intended to respond to customer demands. Also, the data fail to correct for improvements in service quality, which means that the quality-adjusted cost to consumers has fallen even more rapidly.

Customer Churn

Data on the rate at which customers are switching among carriers provides very pertinent evidence on the extent to which telecommunications markets in Australia are aggressively competitive. My review of Telstra's commercial in confidence data[85] shows that, in relation to pre-selection and commercial churn, a much larger number of customers are switching carriers than are suggested by a static examination of changes in market shares. Furthermore, customer churn rates have accelerated in recent months. The rapid

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useful measure of "average" prices that reflects consumers' self-selection among the available calling alternatives.

[85] I understand that Telstra has provided these data to the Productivity Commission on a commercial in confidence basis.

pace of both local service (commercial) and long distance (preselection) churn demonstrates that there is vigorous competition in these markets.[86]

7. Conclusion

This paper argues that the telecommunications-specific provisions in the Trade Practices Act ought to be repealed (in the case of XIB) or substantially reformed (in the case of XIC). An analysis of the regulatory and public policy framework makes clear that these provisions are inconsistent with sound regulatory policy. Ultimately, the justification for retaining these telecommunications-specific rules must rest on the contention that Telstra retains a substantial degree of market power that poses a significant threat to the progress of competition, and that the competitive risks that this state of affairs engenders cannot be adequately addressed with the general provisions in the Trade Practices Act. In my view, the progress that Australian telecommunications have made from regulated monopoly through managed duopoly to an open competitive marketplace, mandates that the regulatory burdens should be reduced and not strengthened or unduly extended.

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[86] As noted above, the competition for local services is distorted by an access and retail pricing regime that permits even inefficient retail-level competition to proceed vigorously. With an appropriate access pricing regime and competitively neutral universal service mechanism in place (in case public policy determines that certain services or consumers ought to be provided service at below-cost rates), sustainable efficient competition would be enabled.

The Australian government is actively modifying its regulatory policy in telecommunications away from direct government oversight towards increased reliance on unimpeded market forces. A market-based approach is consistent with sound economics and with global trends towards pro-competitive regulatory approaches. In 1997, policymakers decided to replace industry-specific regulation with general trade practice rules. However, they elected to adopt transitional telecommunications-specific provisions to address concerns that such rules were needed to expedite enforcement of anticompetitive restrictions in the rapidly changing telecommunications sector.

As the discussion in Sections 2 and 3 make clear, these provisions were flawed from the start and have resulted in regulatory policies that have hindered rather than assisted the progress of competition in the sector. The rules do not offer superior deterrence incentives than those already provided under the general competition rules in Parts IIIA and IV of the Trade Practices Act. Duplication is inefficient and results in unnecessary burdens and costs being imposed on the industry in general, and on Telstra in particular. In practice, these rules have not helped expedite enforcement proceedings and, likely these rules have prolonged and extended direct regulatory oversight of the sector. This is fundamentally at odds with the overall goal of increased reliance on a market-driven, competition-disciplined regulatory structure.

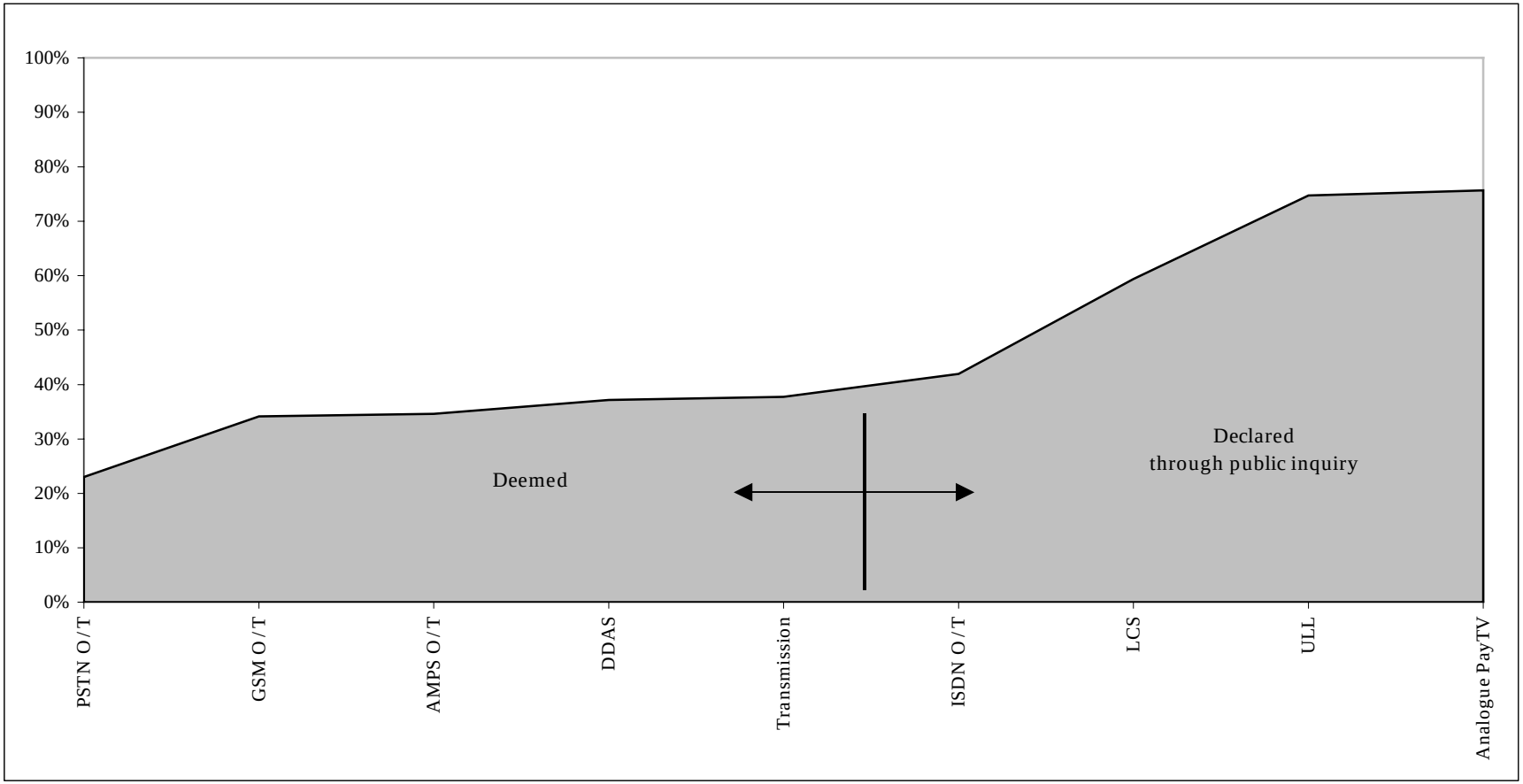
Parts XIB and XIC are flawed because they extend the power in the ACCC in a way that makes regulatory enforcement more arbitrary and uncertain. Furthermore, the access regime that has been enforced under Part XIC has set mandatory access prices at levels that fail to recover economic costs, and thereby substantially deters investment in the sector.

These arguments against the continued maintenance of these specific provisions in their current form remain valid, even if one were to assume that Telstra possesses a substantial degree of market power. In Sections IV through VI, I present the framework that can be used to gauge the progress of competition in Australian telecommunications and the extent to which telecommunications markets are becoming effectively competitive. The application of this approach to the data strongly -- which focuses both on structural features and trends and empirical data on market performance -- demonstrates the existence of effective competition in virtually every major telecommunications service category. The two exceptions are universal termination services and originating local access services in geographic market areas that lack facilities-based alternatives to the Telstra network. Given the rapid progress towards effective competition, the arguments for retaining telecommunications-specific regulations lose much of their force. Indeed, there is evidence that regulatory policies, implemented under Part XIC, that have set

access rates at levels that deter efficient investment and have lessened incentives for facilities based entry, where such entry might otherwise be possible.

There is no doubt, in my mind, that the telecommunications sector in Australia, like in other countries, is inexorably evolving in a direction of more competition. The role of public policy should be to promote such transition to the benefit of Australian consumers of telecommunications services. This requires that the regulator restrain itself from undue handicapping of market outcomes while retaining a proper level of vigilance.

Exhibit 1
Share of Telstra's Retail Revenue Subject to Regulation, 1999-2000[1]



[1] Source: Telstra. Exhibit 1 is a representation of the extent to which the Telstra group's retail revenues rely upon regulated inputs. The table is cumulative in that each additional regulatory decision brings more group revenues within the scope of regulation. For example, declaration of the local call resale service brought Telstra's local call revenues within the scope of the access regime. The retail data are drawn from Telstra's regulatory accounts for the year 1999-2000.

Exhibit 2

Sampling of Competing Carriers[2,3] (Most recent reported annual data)

	Capital Investment	Revenue	Revenue CAGR (1997-2000)	Market Capitalization[4]
Cable & Wireless (Optus)	$ 1,471	$ 4,100	18%	$ 15,100
Vodafone		$ 1,140	79%	
AAPT	$ 215	$ 942	37%	$ 2,200
Primus		$ 580	36%	
Hutchinson/Orange	$ 903	$ 437	30%	$ 679
One.tel	$ 88	$ 410	40%	$ 1,800
RSL (Comvergent)		$ 384	139%	
MCT (Macquarie Corp Telecom)	$ 6	$ 194	77%	
Powertel	$ 150	$ 46	-14%	$ 660
Telstra	$ 4,830	$ 18, 609	6%	$ 84,000

[2] Source: Exhibit prepared from data provided by Telstra.

[3] Currency in millions of Australian dollars.

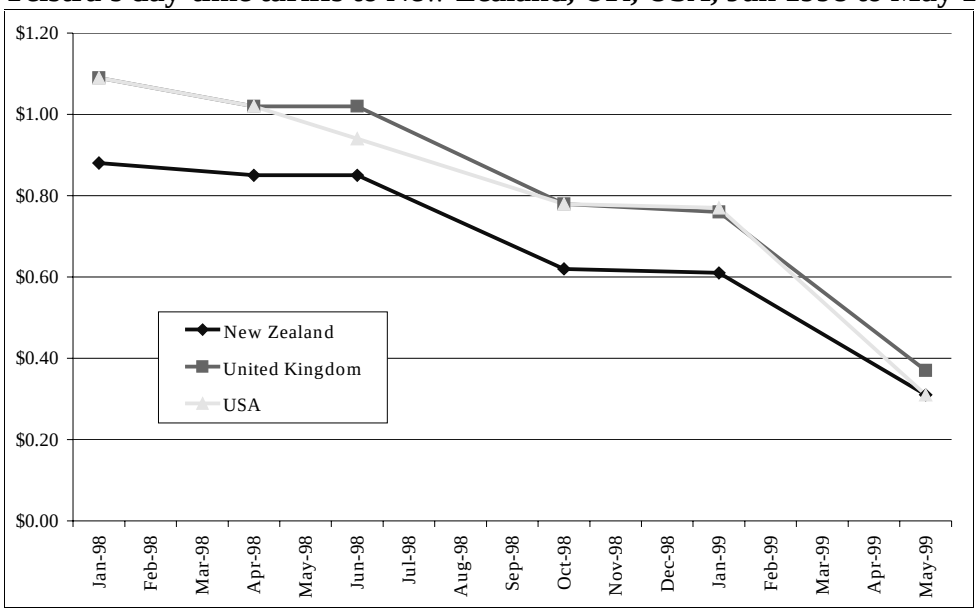
[4] As of November 10, 2000.

Exhibit 3
Telstra Average Revenue per Minute ($A/minute)[5]

	1997	2000	CAGR
International Toll	1.10	0.53	-22%
Domestic Toll	0.19	0.15	-8%

[5] Source: Data provided by Telstra.

Exhibit 4
Telstra's day-time tariffs to New Zealand, UK, USA, Jan 1998 to May 1999[6]



[6] Source: Figure 7, *Public Submission to the Productivity Commission Review of Telecommunications Specific Competition Regulation*, Telstra Corporation Limited, August 30, 2000.

Exhibit 5

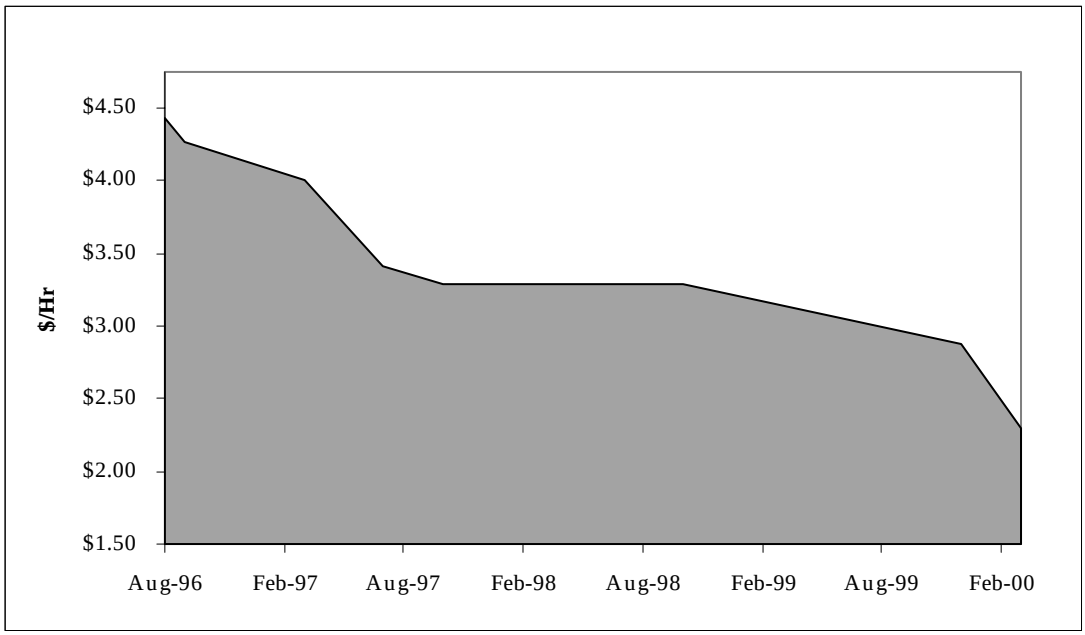
Prices for STD calls supplied by Telstra, Sept 1997 to Dec 1999[7]

Day time residential	30 minute call	10 minute call	5 minute call	3 minute call	1 minute call
Sep-97	$19.37	$6.54	$3.33	$2.04	$0.76
Apr-98	$17.62	$5.95	$3.04	$1.87	$0.70
May-98	$10.65	$3.65	$1.90	$1.20	$0.50
Feb-99	$8.46	$2.92	$1.54	$0.98	$0.43
Dec-99	$7.10	$2.50	$1.35	$0.89	$0.43
Economy residential	30 minute call	10 minute call	5 minute call	3 minute call	1 minute call
Sep-97	$9.74	$3.33	$1.72	$1.08	$0.44
Apr-98	$8.87	$3.04	$1.58	$0.99	$0.41
May-98	$5.40	$1.90	$1.03	$0.68	$0.33
Feb-99	$4.32	$1.54	$0.85	$0.57	$0.29
Dec-99	$3.00	$1.60	$0.90	$0.62	$0.34

Source : Telstra published tariffs for the > 745km distance band

[7] Source: Figure 8, *Public Submission to the Productivity Commission Review of Telecommunications Specific Competition Regulation*, Telstra Corporation Limited, August 30, 2000.

Exhibit 6
Telstra (Big Pond) average hourly retail price for ISP service 1996-2000[8]



Source: Telstra

[8] Source: Figure 9, *Public Submission to the Productivity Commission Review of Telecommunications Specific Competition Regulation*, Telstra Corporation Limited, August 30, 2000.