

The Internet Service Provider (ISP) Markets of Australia and New Zealand

by

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Introduction

This paper compares the Australian and New Zealand Internet market. It draws heavily on Enright (2000)¹ which reports the short history of Internet Service Providers (ISPs) in New Zealand since the inception of the Internet in 1994. It also provides a review of the prices and market shares and strategic motivations for entry to this market.

The Internet phenomenon is worldwide. Thus although the New Zealand market has experienced rapid price declines and growing market penetration, its performance in delivering benefits to consumers should be judged relative to that of ISP markets elsewhere. International comparisons are fraught with difficulties that make for very cautious interpretation of cross-country price studies.² Nevertheless, some consideration of the Australian ISP market does help place the New Zealand market in perspective. The purpose of this paper is to build on the evidence of Enright *op cit*, and place it in a wider context by comparing the Australian and New Zealand ISP markets in 1999. The comparison suggests that Internet service provision in New Zealand was cheaper in 1999 than in Australia and that penetration and usage in New Zealand was at least that of Australia.

Because the ISP market does not require large investment in assets that once made are then sunk, entry costs are low. Furthermore, telecommunications infrastructure costs and the ability to circumvent them affect the ultimate level of ISP costs. The relative ISP costs of the two countries are in accord with the argument that telecommunications infrastructure competition in the Australia is weaker than in New Zealand. The weaker competition is attributed to the different regulatory regimes of the two countries. The efficient performance of facilities competition is a critical element of price and access regulation and one that deserves continuing research.

¹ Enright, Christina, "Strategic Behaviour of Internet Service Providers in New Zealand", MBA Research Paper, Victoria University of Wellington, March 2000, and New Zealand Institute for the Study of Competition and Regulation, research paper (<http://www.iscr.org.nz>).

² These include conceptual ambiguity about the use of purchasing power parity or nominal exchange rates to convert prices into a common unit of account, and the fact that where pricing regimes have the form of two-part tariffs standard price indices can be misleading in indicating how well consumers are being served, particularly where amounts used differ widely.

ISP Economics

An Internet Service Provider is defined as an entity that provides access to the Internet as its primary function. Internet access has been available to the public since 1994 but was first available some 10 years earlier to some academic and government institutions. Since 1996, most ISPs have begun to provide additional services as a way of diversifying into higher value products. ISPs are considered members of the telecommunications service industry since they provide access to the Internet via the telecommunications infrastructure (which includes telephone service, leased-line services, data communication, and billing). Internet access is one of the many services provided by telecommunications companies.

Most ISPs in the industry sell Internet access and other related telecommunications services through bandwidth leased from data communication networks, often owned by telecommunications network providers. They then repackage this into amounts usable by individuals and companies. Internet access through either dial-up or high speed data connections is a repackaging of the leased bandwidth, and thus the provision of Internet access has become a new market, a subfield within the telecommunications industry. The relationship between Internet and telecommunication services is set out in a schematic fashion for 1999 in Figure 1.³

Until 1999 an ISP generally accepted telephone calls at the toll exchange, either through 0800 numbers or by placing points of presence (POPs) at local exchanges. In 1999 Telecom

³ Figure 1 indicates in broad terms the structure of networks. It does not purport to provide a detailed, up-to-the-minute description of modern telephony or IP networks.

THE PLACE OF INTERNET SERVICE PROVIDERS IN NETWORKS

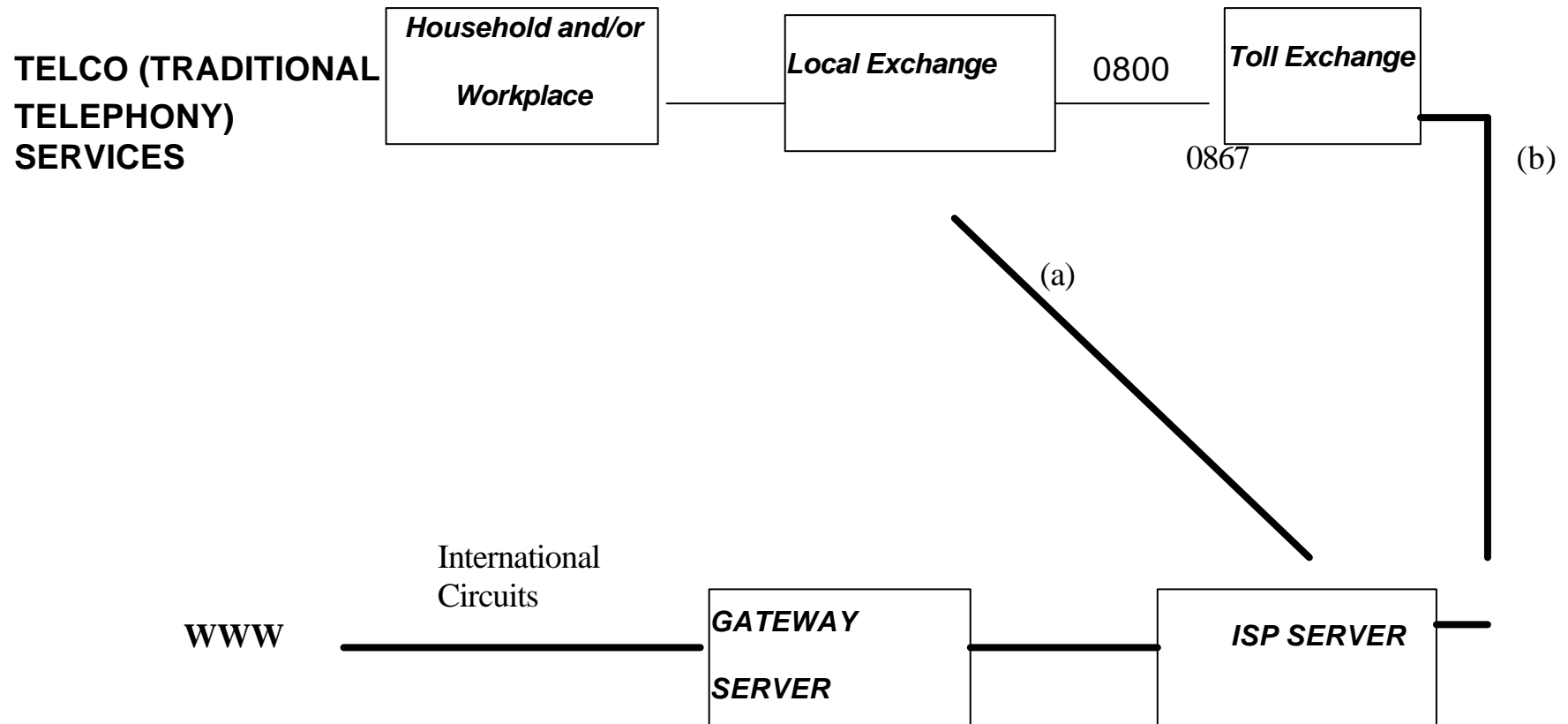


Figure 1

———— Denotes bandwidth

provided direct access through the 0867 number. At the toll exchange the connection has normally been to leased bandwidth from the switch to the ISP server, from there to an international gateway. By far most use continues to be directed towards websites in other countries.

The elements of an ISP's business described in Figure 1 illustrate that essential ingredients of this business are bandwidth and servers. There are additional value-added services provided by ISPs – e.g. website applications and helpdesk service - but bandwidth and servers are core costs of the business. As a consequence, barriers to entry are low. All that is required to start an ISP company is an Internet server (\$5,000 to \$20,000) and leased bandwidth. Within the country, bandwidth services are leased from various suppliers that include: Telecom, Clear, Saturn, BCL and other firms with microwave transmitting equipment or even ISPs themselves as they develop their own infrastructure. Bandwidth services beyond the gateway can be leased from a competitive range of domestic and international providers.⁴ Since the leased service can be paid for monthly, it is easy to adjust costs in response to volume of use.

Customer switching costs are low. Changing ISPs requires the customer to pay a connection fee to the new ISP, obtain a new email address and install some new software. The differentiation of products that does exist is in response to the individual needs of the customer. The factors in determining the level of service include price, speed of access, consistency of access, and help available to the customer. For example, an experienced Internet customer is most likely to want a low monthly price and high access speed, but minimal help. The level of service required for business versus residential customers is distinguished by consistency of access since a business customer requires greater dependability of access. Switching costs are also likely to be higher for some business users due to the need to change the email address but this may be avoided by purchasing a domain name.

⁴ While the differentiation between bandwidth and telephony sections of the network is useful, it is increasingly artificial as broadband is being laid directly to all customers (e.g. by Saturn) and ways of utilising broadband capabilities of copper wire are being installed (e.g. xDSL).

Telecommunications companies faces various threats from ISPs. They may lose traffic by customers switching to a different mode of voice exchange and may lose customer relationships that would facilitate conveying emerging valued added services. In addition, ISPs pose competitive threats for the telephony network itself. For example, telephony charges that are high between the local and toll exchanges stimulate entry in this segment and thereby the extension of broadband to the local exchange. This has in fact taken place. Ihug has by-passed toll exchanges – and, incidentally, the incumbent’s international gateway and broadband beyond the gateway. The toll bypass is represented by the broadband marked (a) in Figure 1. In Wellington and environs Saturn has bypassed both the toll and local exchanges with broadband to the household.

By way of summary the key features of ISP services are: very low up-front capital cost, low customer switching costs, especially for those entities with a domain name. While there is some variation in service characteristics they are sufficiently similar to be regarded as almost homogeneous. There have been variations over time in the quality of services that will have affected service characteristics and the relative demands for ISPs. The (potential) volume of the internet business has posed a challenge to the pricing of lines for traditional telephony services and stimulated telecommunications companies to recognise the competitive threat of the ISP’s demands for competitive delivery of broadband services to the local exchange, if not to the household. In short, ISPs are at the core of network interconnection and concomitant bypass issues and the performance of the ISP market is a strong indicator of the performance of the regulatory regime within which network communications providers operate.

The New Zealand Consumer

According to Enright (s.4.5) all New Zealand Internet users have benefited from a significant decrease in Internet access prices, with different types of users enjoying price decreases at different times. Using the price schedule for each ISP (see Enright Appendix B) monthly charges for three typical users were calculated from 1996 through 1999. For this purpose the users are defined as

- Low-End User

Each month, uses 10 hours per month of connection time and downloads 20Mbytes of international traffic, all at peak usage times. As of 1998/99, this characterises a low-end home user, although this would not have been so in the start of 1996.

- Mid-Range User

- Uses 20 hours per month of connection and downloads 100Mbytes of international traffic, 50% at peak usage. This characterises either a heavy residential user or a small business, with a relative increase in the former during the study period.

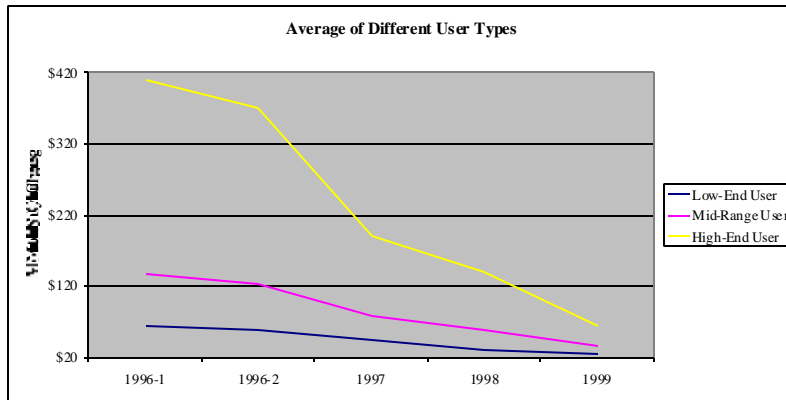
- High-end User

Uses 50 hours per month of connection time and downloads 500Mbytes of international traffic, 20% at peak usage. This characterises a business user, and the calculations assume that extra email addresses are not as important as minimising the monthly charge. Many of these users have high speed dial up connections or upgraded data connections, although this has not been assumed for price calculations.

Figure 2 below shows average prices, based on all ISPs listed by Enright for 1996-1999 for the three types of user⁵.

⁵ All prices are before indirect taxes. They have not been adjusted for inflation. Although inflation has been low through the study period these indices will understate somewhat the real price declines.

Figure 2- Average of Monthly Price for All Users



The reported averages are simple averages calculated arithmetically. Because consumers substitute away from the more expensive suppliers the arithmetic average will be greater than the average obtained by weighting by usage.

For all three user-types there has been a steady decline in price over the period, with the largest decline for the high-end user. The gap in prices between different ISPs and user types has closed although there is still considerable variation between ISPs (see Enright (s.4.5)). Evidently, all three types of Internet access customers have benefited from the lower prices in the market. Users who use less than the “low-user” above can take advantage of the low-cost, low-service providers. It is also clear that as the pricing schemes become less differentiated, ISPs will be forced to compete on other factors, such as extra services or dramatic increases in transmission speed.

Ihug has maintained the lowest price for the high-end user throughout the study period. Enright (s.4.5) shows that Xtra’s prices were below its competitors for the low cost user but Ihug maintained a lower price for the mid-range and high-end users.

Comparison with Australia

ISPs in each country provide essentially the same services. The structure of the two markets is quite different. Australia has approximately 180 ISPs in comparison to New Zealand's 11. In 1999, the incumbent telecommunications company, Telstra's Bigpond had a market share of 26.3% whereas Telecom New Zealand Limited's Xtra held 40% of the New Zealand market.

Relative prices are indicated in the following table. It includes the 1999 data of the earlier Figure 2 together with the equivalent data for Australia. The arithmetic, or simple, average reflects only prices and it is sensitive to prices no matter the extent to which customers use each ISP.⁶ The weighted average is lower than the simple average because it reflects the higher weights (relatively higher usage) attached to the cheaper ISPs.⁷

The averages disguise considerable price variation within both countries, reflecting different services to some degree and the different price paths that firms have chosen. Without adjusting for the exchange rate, the domestic currency prices suggest that ISP services are priced similarly in New Zealand and Australia. On the basis of both averages, at nominal exchange rates and the OECD purchasing power parity exchange rates New Zealand prices are lower.⁸

⁶ These averages utilise the price of ISPs that make up the market shares indicated in the table. The other ISPs were each very small (less than 2% market share in Australia).

⁷ To take account of possible different patterns of consumption, the comparison should be made on the basis of consumer usage in each of Australia and New Zealand. Our data do not permit this and so a common bundle has been used. Using this bundle will not give misleading results if the consumption bundles of small, medium and large consumers are very similar in the two countries. Unlike telephony, the tariff structures are similar for ISPs suggesting that the consumption bundles will be similar. In each country they are dominated by "take-or-pay" blocks of usage and these are offered to consumers in similar, though not identical, sizes. Thus the breaks or kinks in the tariff structures are similar and it is likely that usage will be similar. Similarity in consumption bundles, at least for households, is confirmed by the Nielsen/NetRatings of March 2000 (<http://eratings.com/news/20000504.htm>) which estimates of time spent surfing on the Internet per month and per session are almost identical in Australia and New Zealand.

⁸ To examine further indicators of price differentials we look at the charges (prices) for variable use. In this context, we note that usage in excess of the Bigpond (Xtra) take-or-pay block of 10 hours per month costs \$AUS3.60/hour (\$NZ1.25/hour) and exceeding the 80 hours per month (100 hours per month) block of Bigpond (Xtra) charges are \$AUS1.60/hour (\$NZ0.65/hour) in 1999. Both ISPs had significant market share – Bigpond 26.3% and Xtra 40% - of their respective markets. These price differentials confirm the relative prices indicated by the averages.

Australia and New Zealand: Monthly Average Prices

End User Level of Use		Australia			New Zealand
		AUS\$	PPP	NZ\$	NZ\$
Low	A. Average	\$24	\$27	\$29	\$24
	W. Average	\$22	\$25	\$27	\$20
Mid Range	A. Average	\$35	\$40	\$42	\$37
	W. Average	\$33	\$37	\$40	\$27
High	A. Average	\$68	\$77	\$82	\$65
	W. Average	\$58	\$66	\$70	\$38

(A) Arithmetic average price
(W) Weighted average price (weighted by market share)
Note: these monthly prices are obtained from 11 ISPs that cover 70% of the
Australian market and 5 ISPs that cover 80% of the New Zealand market.
PPP: OECD 1999
Exchange rate of 1\$NZ= 0.83\$Aus.

Internet access and usage varies rapidly over time and measurement of it is affected by the way it is utilised.⁹ The penetration rate measured as the number of ISP accounts per head of population is 13% for New Zealand and 10% for Australia. For households, the US, Australia and New Zealand stand out by a significant margin as leaders internationally (see the March 20 Nielsen/NetRatings 2000 (<http://eratings.com/news/20000504.htm>)) in Internet usage. Australia and New Zealand's ranking is attributed to their relatively de-regulated status and free per-minute calling for households. The ACNeilson data suggest that on a population basis New Zealand and Australian households utilise the internet to very similar extent. We conclude that the penetration and usage of ISP services is at least that of Australia. The relative penetration rate and usage of Internet services in the two countries is in accord with the price differential between them.

Discussion

Telecommunications has long been considered a non-tradable good in that domestic services are not contestable by services supplied by sources external to New Zealand. In fact, broadband services are to some degree contestable: they can be and are routed through Australia between two points in New Zealand and to other countries from New Zealand. Contestability in broadband services when combined with the fact that there is an international market for servers and labour suggests that ISP services are to a certain extent internationally contestable and that Australian and New Zealand ISP prices may converge to close proximity over time.¹⁰ Nevertheless, at this stage of market development New Zealand's prices for ISP services would seem to be lower and the size of the market relative to the population at least as high as for Australia.

The source of the price differential may convey information about the relative performance of the Australian and New Zealand regulatory systems. The reported prices are ISP charges. If, as seems likely, servers and labour cost approximately the same in the two countries in exchange-rate or PPP

⁹ For example, there may or may not be multiple users of the same access point.

¹⁰ Note that, at least on the basis of population density, network costs are likely to be of the order of 5% lower in Australia (see Alger, Dan and Joanne Leung, *Relative Telephony Costs Across Five Countries*, New Zealand Institute for the Study of Competition and Regulation, February 1999 (<http://www.iscr.org.nz>)). There will be much within-country variation in costs due to density variation across locations.

adjusted currency, then the difference would seem to lie either in broadband costs or less (potential) bypass of the telephony service of the toll exchange: these two possibilities will almost certainly be a reflection of the same factors.¹¹

The Australian regulatory regime is very complex in comparison to that of New Zealand. It has three separate bodies that have responsibilities for different aspects of telecommunications. Rather than attempt a comprehensive coverage of it we confine our attention to certain of the aspects that are relevant to the ISP market.¹²

Since the demise in 1997 of the duopoly-telecommunications policy, the Australian Competition and Consumer Commission (ACCC) has had a central and quite widely discretionary role in telecommunications regulation. Among other functions, it administers the telecommunications elements under Part XIB of the Trade Practices Act with the purpose of facilitating access to networks of carriers: this includes specifying services that will be provided under regulated access, and approving access codes, and undertakings about access terms and conditions. It also arbitrates disputes between access providers and demanders. A key function of the ACCC has been to “declare” particular functional services. A declared carrier service is a service for which any entrant has the right of access and for which a dispute over the terms and conditions of access will be resolved by the ACCC at the request of either party. The ACCC has declared a wide range of services, including key services for ISPs: those of domestic transmission and local service.

While the purpose of the “declared service” regulatory tool is to facilitate competition it may have the reverse effect in certain key aspects of service provision. The wide use of declarations - for example, in situations where competition is imminently feasible - may well inhibit competition. Inter-city broadband transmission was declared despite the existence of competitors and potential entrants.¹³ In such a circumstance declaring the service reduces the incentive for entry because it

¹¹ This discussion assumes that there are no differences in network installation requirements between the two countries.

¹² For a recent detailed review of the regulation of telecommunications in Australia see the report *Assessment of the Telecommunications Regulatory Regime in Australia*, Networks Economics Consulting Group, March 2000 (see <http://www.telecom.co.nz>) hereafter termed ATRRA.

¹³ See ATRRA (p.25).

make the use of others' networks available to any potential entrant and raises the spectre of the service being declared on new investment. For the same reasons, declarations applied to services subject to changing technology will almost certainly delay the timing of the introduction new technology. In short, declarations on domestic transmission and local service are likely to have limited actual and potential competition in the provision of the infrastructure that ISPs use.

The ACCC is the arbiter of terms and conditions for declared services. If competition is inhibited by declaration then prices have to be set on an administered basis: the ACCC has used a variety of approaches including cost models. Whatever the approaches are, pricing will not be determined by vigorous offerings of (potential) alternative infrastructure. To the extent that entry is inhibited and the market for the declared service has only one or two players price determination will face all the issues of administered price setting that is intrinsic to price regulation whatever its form.¹⁴ The market power conferred on the incumbents by declaration – and consequent reduced potential entry – together with a range of information and conceptual problems of an administered price renders it exceedingly difficult for the ACCC to set prices that would mimic any feasible competition. These administered prices may be higher than without declaration, even if they squeeze incumbents.¹⁵ Thus a potential explanation of different ISP prices in the two countries is relatively higher broadband costs implied by less (potential) bypass of telephony and broadband services.

In Australia the regulatory regime promotes access to infrastructure at the expense of competition to supply infrastructure. It has been successful in this respect: there are, on a population basis, more than three times as many ISPs in Australia as New Zealand and the main incumbent's ISP, Bigpond, has a much lower market share than does Xtra. However, ISP services are relatively homogeneous and in such circumstances very few ISPs - even fewer than New Zealand enjoys – can be expected to generate competitive outcomes that maximise social welfare. Certainly, it appears from the evidence that the vastly higher numbers of ISPs in Australia has not resulted in improved outcomes for customers over that of New Zealand. The lower market share of Bigpond is not at all indicative

¹⁴ The prospect of price regulation under declared services may of itself inhibit entry to these services.

¹⁵ For example, if lower cost producers do not enter.

that Telstra is suffering financially under the regulatory regime, at least in the short run. Telstra is one of few suppliers of an upstream infrastructure service for which entry is inhibited, and in such circumstances vertical integration is inessential to profitability.¹⁶

It appears that Australia has reduced infrastructural bypass under the regulatory regime and weakened (potential) facilities competition.¹⁷ The New Zealand case study of Enright *op cit* suggests that the drive to bypass existing infrastructure has been key to the success of certain service providers – particularly, Ihug – and to price competition. Indications are that it will also be critical to the competitive threats on telephony in general. Limiting competition in upstream infrastructure to promote much entry in the downstream market does not appear to have benefited Australian consumers of ISP services over their New Zealand counterparts.¹⁸

An avowed reason for regulating access is to reduce bypass where it inefficiently duplicates infrastructure. However, where competition is feasible, as it is in much of telecommunications networks, some duplication bypass is efficient to establish potential and actual facilities competition that flows through to increased usage and lower prices.¹⁹ The extent to which regulation can duplicate competition as well as reduce duplication is one of a number of critical issues in the optimal design of a regulatory structure. Where final prices are lower, usage is higher and supplying firms are financially successful under open competition as opposed to access regulation, as appears to be the case in the Australian and New Zealand ISP markets, inefficiencies of any duplication are outweighed by the performance of competition. It is an important topic that deserves continuing research.

¹⁶ ATRRA argue that Telstra is adversely affected in certain services. For a discussion of the vertical integration issue see pp.575-577 and the references cited therein, of Kuhn, Kai-Uwe, and Xavier Vives, “Excess entry, vertical integration, and welfare”, *RAND Journal of Economics*, 30(4), 1999, 575-603.

¹⁷ See ATRRA (p.45 and p.53)

¹⁸ The Australian system has regulatory costs that the New Zealand system does not possess, and these would have to be included in any full cost-benefit comparison.

¹⁹ Also, in telecommunications the technological change in networks and huge volume growth has been such as to require additions to network capacities and there is no reason why such additions should be restricted to the incumbent or should not be installed on a competitive basis.