

Submission on:

Regulatory Implications of Structural Separation

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Overview

This submission has been prepared in response to the Ministry of Economic Development discussion document *Regulatory Implications of Structural Separation*¹, where comment is sought on the implications of a possible voluntary structural separation of Telecom for the current regulatory and policy settings.

The discussion document has requested that submissions follow its own structure, and respond directly to questions on which views are sought. We have complied with this request, in the material contained in Part B below.

However, it is our firmly-held view that the exercise of reviewing existing regulation as a consequence of the possible structural separation of Telecom must give due regard to the fact that Telecom's options are themselves the consequence of fundamental changes in the Telecommunications environment – arising from both technological change and a fundamental shift in government policy in the sector as plans are put in place for investment in the Ultra Fast Broadband initiative (UFB). These changes have profound implications for the development of both regulatory policy and the entire telecommunications industry in New Zealand, aside from the specific consequences of Telecom's structural choices. If the current review is to provide a forward-looking set of regulatory policies and directions to cope with these fundamental changes, we cannot provide meaningful and coherent critical comment without taking them into account.

Consequently, we have taken the liberty of including an introductory section, Part A, where we lay out the background and context in which the regulatory review is being carried out, and explain the framework that has guided our thinking in analysing the issues raised in the discussion document, and which forms the basis for our discussion of the individual points addressed in Part B. Part A assists by providing further clarity regarding our responses in Part B.

In the spirit of open communication and debate about the very important policy and regulatory issues addressed in both the discussion document and our submission, we are happy to provide any further information or clarification that may be required.

¹ Ministry of Economic Development (2010). *Discussion Document: Regulatory Implications of Structural Separation*. September 2010. Retrieved from: <http://www.med.govt.nz/upload/74850/Regulatory%20Implications%20Of%20Structural%20Separation%20-%20September%202010.pdf>.

Part A: Background

Regulation best promotes the long-term interests of the welfare of citizens (economic efficiency) when it eliminates or ameliorates the consequences of market inefficiencies.

A.1 Rationale for Regulation²

As a starting point for contemplating the appropriate regulatory response³ to the proposed voluntary structural separation of any telecommunications provider whose market dominance has resulted in it being historically subject to regulation, it is apposite to consider:

- the objectives of, and justifications for, imposing regulation;
- the subject of regulatory intervention; and
- the ways in which the regulatory instruments applied alter activities in the subject entities in order to further achievement of the objectives that justify intervention in the first place.

The most common reason for regulatory intervention is to correct for market inefficiencies. Market inefficiencies arise from a number of reasons, including monopoly power, externalities and various forms of opportunistic behaviour⁴. Policy-makers impose regulations that avert the foreseeable consequences of market inefficiencies in order to promote or protect the public welfare. Most economists argue that the public welfare is best promoted by the pursuit of economic efficiency – total welfare, defined as the sum of consumer and producer surplus – in both its static and dynamic forms, and across both productive and allocative dimensions⁵.

Thus, regulators seek to maximise economic efficiency by eliminating or ameliorating market inefficiencies. Intervention is justified because, without it, the subject market will perform less efficiently than if the intervention is applied. The performance of a chosen regulation will be measured by the extent to which total welfare is increased

² The material in this section draws largely from :

Chapter 20 of Carlton, D. & Perloff, J. (2005). *Modern Industrial Organization*. 4th ed. Boston, Massachusetts: Addison-Wesley;

Melody, W. (2005). Regulation and network investment: a framework for analysis. Chapter 1 in Mahan, Amy K. & William H. Melody (eds) *Stimulating Investment in Network Development: Roles for Regulators* pp 19-38. Lyngby, Denmark: WDR Project, LIRNE.NET;

Melody, W. (2002). *Building the Regulatory Foundation for Growth in Network Economies*. Discussion paper 0201, World Dialogue on Regulation for Network Economies, managed by LIRNE.NET.

³ As opposed to the alternative hypotheses that intervention is primarily for the opportunistic purpose of expanding either the extent of the regulator's powers or the vested interests of other powerful groups ('capture theory'), or to redistribute resources within the industry to satisfy other objectives, at the expense of economic efficiency.

⁴ Opportunistic behaviour often arises because of asymmetric distribution of information or because the bounded rationality of human actors means that all possible future outcomes cannot be perfectly foreseen, and hence contingencies to allocate the all consequent costs and benefits efficiently cannot be devised ex ante.

⁵ Although it is acknowledged that a small minority holds that the primary purpose of regulation is to redistribute wealth amongst market participants.

in the subject market, relative to the counterfactual of no intervention. Whilst the means chosen may address the activities of a specific firm (e.g. one which has exerted market power to the detriment of economic efficiency), or the ways in which firms in a market are able to strike contracts to use specific infrastructures (e.g. elements of a legacy telecommunications network exhibiting bottleneck characteristics) in order to create products and services to sell to consumers, the end remains improved economic efficiency in a given market.

Markets are dynamic institutions where buyers (consumers) and sellers (producers) interact in response to their own incentives to increase individual welfare. They are open, complex systems, whereby interactions within the market evolve across time (for example as a consequence of internal learning by the participants as they interact with each other, so reducing information asymmetries), and where external shocks (for example, technological change or regulatory intervention) alter any or all of the methods of production, the relationships between the transactors, the institutions via which they organise production and transacting activities or the allocation of resources within the market. In turn, both regulatory intervention and technological change evolve over time as both responses to, and means to influence the activities of, markets. The interactions across the boundaries of each open system are themselves a consequence of the endeavours of the participants in those systems to improve their own positions.

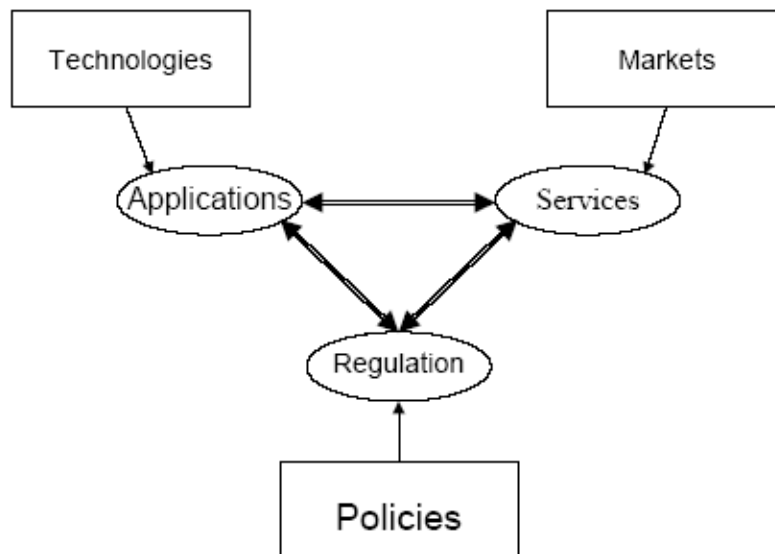


Figure 1: Telecommunications: the Interactions of Complex Systems⁶

⁶ Source: Melody (2002) *op. cit* p 9.

Figure 1 illustrates the systemic interaction between markets, technologies and policies (including regulatory policies). To the extent that optimal regulation seeks to ameliorate the effects of market inefficiencies and thereby increase economic efficiency in a market, its effectiveness is itself influenced by technological change and the changes in activities within the market that are influenced by it. By extension, regulation itself must also constantly evolve in response to those changes. Regulation that is optimal under one set of technological circumstances and market interactions may not be optimal under a different set of circumstances and interactions. Furthermore, regulatory intervention that alters the interaction (evolution) in a market may itself also affect the nature of technological innovation and change. What may appear optimal in the narrow frame of a market in one time period may not be optimal when taken in a dynamic frame across the wider system incorporating all of technologies, markets and the regulatory policy environment. Sound regulatory policy must take the wider context into account with every specific intervention.

A.2 Application to the Current Proposals

Whilst the preceding rationale might appear self-evident, it provides a useful framework against which to evaluate the regulatory and policy response to the possible future structural separation of Telecom New Zealand. We consider first the context in which the regulatory changes are proposed, by examining the existing regulatory framework and the justifications (both economic-efficiency related and otherwise) for their adoption. We then examine the specific motivations for reviewing the current regulatory provisions – arising from changes to both the technological and policy environments – and then discuss the implications for those regulatory arrangements that arise as a consequence of both the current regulatory context and the motivations for changes.

A.3 Context

- (a) The New Zealand fixed line telecommunications market has been historically subject to regulatory intervention as a consequence of market inefficiencies arising as a consequence of a single firm (Telecom New Zealand) having significant market power arising from its ownership of the only nationwide fixed-line Public Switched Telephone Network (PSTN) and the copper local loop providing fixed line telecommunications access to the vast majority of New Zealand homes and businesses. Regulatory interventions have included⁷:

⁷ For further comments on these interventions see Part C.

- i. A universal service obligation equalising rural and urban residential telephone rentals, a cap on residential retail prices and a mandatory 'free local calling' residential tariff, imposed in 1990 (the 'Kiwi Share').
- ii. Access regulation and regulated interconnection to the fixed line network, imposed in 2001.
- iii. Bitstream unbundling, imposed in 2003.
- iv. Full local loop unbundling (LLU), imposed in 2006.
- v. Functional separation, imposed in 2007, separating Telecom New Zealand into a network operation arm (Chorus), a wholesale operation (Telecom Wholesale) and a retail operation (Telecom Retail).

Whilst justifications based on at least some elements of economic efficiency were offered in support of the regulations in ii and iii, the efficiency rationale for the others remains at least partially obscure. This is especially true for item v. Separation (either functional or structural) is typically imposed for the specific purpose of precluding a vertically integrated firm subject to access regulation (of which unbundled bitstream and LLU are variants) from engaging in discriminatory practices in favour of its own retail arm to the detriment of competing retail firms relying upon the regulated firm for access to essential network services⁸. Mandatory separation requires the firm to create an independent retail operation that buys services on equivalent terms and conditions to its access-based competitors. If the regulated firm is truly engaging in discriminatory practices, and does manage a true bottleneck infrastructure for which there are no full or partial substitutes, then the additional institutional costs imposed by separation may be exceeded by gains from the elimination of discriminatory practices⁹. However, if full or partial substitutes exist, or the network firm must upgrade its infrastructure to a new generation (frontier) technology, separation reduces efficiency by imposing unnecessary costs and interfering with the optimal substitution of customers from one network to another¹⁰.

By contrast, a firm will voluntarily opt to separate into distinct entities when, taking all other external (market, technology, policy) factors into account, the long term expected returns for each of the separated entities are together

⁸ Cave, M. (2006). Six degrees of separation: operational separation as a remedy in European telecommunications regulation. *Communications and Strategies* 64: 89-103.

⁹ Albeit that de Bijl (2005) cautions that a careful empirical analysis is necessary to ascertain that this is indeed the case. de Bijl, P. (2005). Structural separation and access in telecommunications markets. *Journal of Network industries* 6(2): 95-114.

¹⁰ Heatley, D. & Howell, B. (2010a). *Structural Separation and Prospects for Welfare-Enhancing Price Discrimination in a New 'Natural Monopoly' Network: comparing fibre broadband proposals in Australia and New Zealand*. Wellington, New Zealand: New Zealand Institute for the Study of Competition and Regulation. 26 June. Available from <http://www.iscr.org.nz/n580.html>.

greater than the returns expected from the non-separated state¹¹. It is noted that the counterfactual for Telecom's proposed structural separation in the current discussion is the current set of functionally separate entities and the regulatory regime under which they operate.

- (b) Technological change has resulted in the evolution of two distinctly different product markets which are now subject to regulation: narrowband services capable of delivering a narrow range of specific voice telephony, fax and dial-up internet services using an exchange-based PSTN, and generic broadband services, over which a vast range of internet protocol applications (including voice services) can be offered. Both types of products can use the local copper loop as the 'last mile' of distribution.
- (c) Technological change has led to the development of ever-more capable networks for the distribution of the data used in internet applications. These developments have occurred in both the enhancement of the capabilities of the existing copper-based access networks and the creation of fibre-optic networks. Fibre has increasingly been deployed by the owners of copper access networks as part of the enhancements to their performance. Consequently, copper networks are being transformed by the deployment of fibre closer and closer to the end consumer, to the extent that modern Next Generation Networks (NGN) and full fibre-optic 'Fibre to the Home' (FTTH) networks connecting to end consumers are largely identical in all 'back room' network technologies. They differ only in the technologies used to connect the 'last mile' to the end consumer. In 2007, Telecom entered into an undertaking with the Government to deploy a fibre-based (internet protocol, packet-switched) NGN covering most of the country by 2011.
- (d) Technological change has led to a pattern of convergence whereby a large variety of applications previously delivered over customised networks are increasingly being converted into a common (digital) format enabling their delivery over broadband networks. Contemporaneously, the technologies capable of delivering broadband services have increased in capability, to the extent that for most purposes, broadband services capable of supporting the new wide array of applications can be delivered equally well over the 'last mile' to end consumers by co-axial cable, satellite, wireless, mobile, fibre-optic cable and satellite technologies, as well as copper loops. In the New Zealand context, broadband access capable of supporting the vast majority of commonly used residential, and many commercial, applications is available

¹¹ Howell, B., Meade, R. & O'Connor, S. (2010). Structural separation versus vertical integration: lessons for telecommunications from electricity reforms. *Telecommunications Policy* 34(7): 392-402.

nationwide over satellite, copper and, increasingly, mobile networks¹². Fibre, wireless and cable networks also compete with copper, satellite and mobile networks in many locations. International evidence shows that the fastest-growing segment of the market, in respect of both connections and revenues, is mobile broadband, with a significant number of households opting to have no fixed line connections as the quality of mobile broadband services improves¹³. Figure 2 confirms the growth of mobile and wireless internet connections in Australia – a pattern very likely to be replicated in New Zealand. It would be unsurprising if the growth of mobile broadband access did not have a material effect upon fixed line broadband access, and hence the appropriateness of existing regulations governing the fixed line market. .

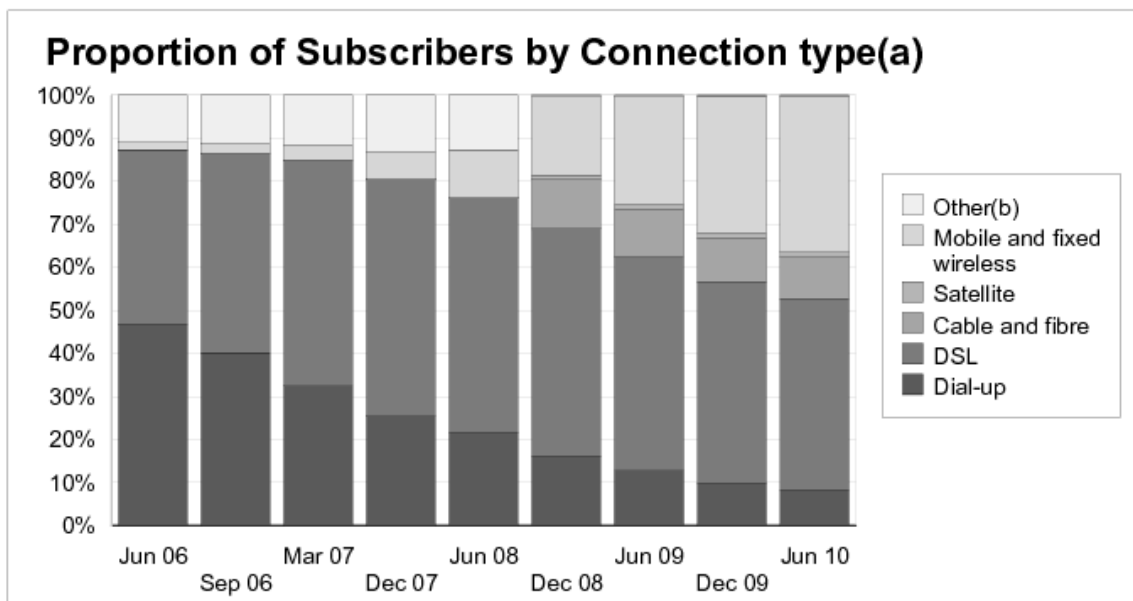


Figure 1. Australian internet subscribers¹⁴.

A.4 Motivation

The possibility that Telecom New Zealand might elect to structurally separate has occurred as a consequence of changes in both the technological and policy subsystems of its environment.

¹² Glass, H. (2010). Presentation to the 1st Asia-Pacific Regional Conference of the International Telecommunications Society, Wellington, New Zealand, August 28, 2010.

¹³ Levin, S. (2010). Issues for Universal Service and Net Neutrality in a Broadband Environment. Paper presented to the 1st Asia-Pacific Regional Conference of the International Telecommunications Society, Wellington, New Zealand, August 26, 2010.

¹⁴ Australian Bureau of Statistics (2010). *8153.0 Internet Activity, Australia, June 2010*. Retrieved September 22, 2010 from:

<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/8153.0Main+Features1Jun%202010?OpenDocument>.

Notes: (a) For ISPs with more than 1,000 active subscribers. (b) Prior to December 2008, 'Other' includes satellite, cable and fibre.

- (a) Technological change has led to the development fibre-to-the-premises (FTTP) technologies capable of providing faster and more capacious internet access ('frontier technology'). FTTH networks can act as a substitute for fixed broadband connections provided historically by fixed-line copper telecommunications providers. It is generally considered that, over the fullness of time, as a consequence of its superior technical characteristics FTTP will replace copper-based networks as the predominant last-mile fixed network technology. However, at the current point time, it is far from clear that sufficient demand exists for applications that can only operate on FTTH networks to justify a total substitution, given the high costs of building the FTTH networks¹⁵.
- (b) Policy change has arisen with New Zealand Government's UFB initiative to subsidise investment in local FTTP networks constructed by and operated in conjunction with private sector partners. The precondition for firms partnering with the government in this project is that they cannot be substantially owned or controlled by firms operating in retail broadband markets¹⁶. Telecom New Zealand, via its network operation arm Chorus, will be unable to participate in the government-planned network unless it structurally separates.

A.5 Implications

Telecom's possible structural separation is a direct response to both technological and policy changes. If the consequent regulatory response is consistent with the objective of pursuing economic efficiency in the telecommunications market, then that response MUST, as a matter of principle, take direct account of its likely anticipated effects when the appropriate interventions are designed. It is inappropriate to progress to regulatory change without first revisiting existing regulations, understanding all of the underpinning assumptions under which they were imposed, and assessing their ongoing efficacy in the pursuit of economic efficiency in the new environment engendered by all of the externally-imposed technological and policy changes and the market responses engendered. To the extent that specific historic regulatory tools remain in the revised regulatory framework, it must be because they enhance the pursuit of economic efficiency in their own right in the current and future anticipated environments, rather than being retained as artefacts addressing historic (and potentially now irrelevant) market imperfections.

¹⁵ Howell, B. & Grimes, A. (2010). Productivity questions for public sector fast fibre network financiers. *Communications and Strategies* 78: 127-45.

¹⁶ While telecommunications retailers would not be prevented from having a substantial equity interest in a local fibre company (LFC), they are prevented from having effective control of an LFC. Such limitations on control are presumed to make equity investment sufficiently unattractive to retailers to effectively preclude their involvement.

Specifically:

- (a) Access regulation to induce services-based competition has been presumed efficiency-raising only insofar as facilities-based competition between different infrastructures did not exist, and could not reasonably be anticipated to develop in the foreseeable future¹⁷. Classical economic theory posits that direct infrastructure competition will be more effective than access regulation as it imposes competitive pressures on the provision of both the underlying network infrastructure (type and quality – e.g. speed) and the overlaid non-bottleneck services. Access regulation and the ‘ladder of investment’ (LOI) model are a quasi-competitive second best¹⁸: access regulation addresses market inefficiencies in the overlaid (downstream) services, whilst the LOI acts as a ‘stepping stone’ to full infrastructure competition, by enabling access-based competitors to gradually invest in elements of network provision to the extent that they would eventually own all relevant network elements and become full infrastructure competitors to the incumbent.
- (b) Insofar as the government chooses to partner with any party other than Telecom for the deployment of the fibre network access infrastructure (FTTH) in specific geographic markets, facilities-based fixed line broadband competition will be delivered directly into the New Zealand market without any further recourse to the access-based ladder model.
- (c) A second fixed-line infrastructure connected to end-consumers means that copper local loops are no longer a fixed-line ‘access bottleneck’ for the provision of (wholesale or retail) broadband network access services¹⁹. Retailers (including the structurally- or functionally-separated Telecom operation) in those geographic markets where both Chorus and UFB provide services can choose the network over which to deliver applications to end consumers. Chorus’s dominance in the supply of last-mile services will extend in these dual-serviced markets only insofar as it retains either an absolute cost advantage over the competing FTTH infrastructure for the provision of access services of equivalent quality or is the sole provider of a service that is inherently unable to be replicated over alternate

¹⁷ “Facilities-based competition is viewed by OECD countries as important to ensure durable and effective competition in the telecommunications market.” OECD (2005). *Communications Outlook 2005*. p 32.

¹⁸ Cave. M. (2006). Encouraging infrastructure competition via the ladder of investment. *Telecommunications Policy* 30(3-4): 223-37.

¹⁹ Albeit that it is debatable that such a bottleneck continued to exist in any area where direct fixed line competition existed (e.g. from the cable network in Wellington and Christchurch, or from technologies such as satellite, wireless and mobile). The key remaining distinction is that downstream retailers with no independent network ownership are able to acquire customers as a consequence regulation to Telecom’s local access network alone.

infrastructure(s) – either fixed or mobile. As FTTH is inherently more capable than copper, it is highly unlikely that the second scenario will emerge. Indeed, if performance characteristics result in overwhelming consumer preference for FTTH, then not only is the copper network no longer a bottleneck – its owner is no longer the dominant firm in the market, so cannot be contributing materially to any significant market imperfections warranting regulatory amelioration.

- (d) Together, points (a) to (c) call into question the rationale for persisting with regulation predicated upon the promotion of services-based competition (i.e. access regulation) in those areas where facilities-based competition exists. It also begs the question of why ongoing investment on the legacy copper network by either the existing owner of access-based market entrants should be a focus of regulatory intervention at all. When taking into account the supposed superiority of the fibre network and the implicit assumption that it will ultimately supersede the copper-based network and become the new bottleneck fixed-line access infrastructure²⁰, such regulation appears superfluous. This line of thinking also highlights a very confused position across both the UFB and copper network regulatory policies regarding who may invest in different infrastructure types, should access regulation remain for the legacy copper network. Whilst ongoing access regulation means Telecom’s retail competitors are enabled (even incentivised?) to invest in elements of elements of Telecom’s network infrastructure in order to compete and ‘climb the ladder’ to ultimate competing legacy (copper) network ownership, they are simultaneously precluded from investing to the extent of taking a controlling ownership stake in the competing frontier fibre infrastructure, which presumably they will also be encouraged (even incentivised?) to purchase elements of with which to deliver services to their end consumers, and which would be the logical differentiated fixed line network technology that it might be expected a successful ladder-climber could progress to owning, were it not for the government’s own intervention by specifying and part-funding the UFB.
- (e) Structurally separate retailers with negligible infrastructure investments have emerged in access-regulated telecommunications markets principally because the regulation itself has created and continues to uphold the viability of their business case. In the event of access regulation becoming redundant (e.g. in the presence of facilities-based competition), then it is an

²⁰ Indeed, this assumption is implicit in the fact that the UFB policy already specifies that FTTH must be a structurally separate, open access network - long before it has even been invested in, let alone achieved the dominance that is usually necessary to warrant such intervention (unless, of course, it is presumed that, as with merger applications, an ex ante specification of this type will militate against both the acquisition and exertion of dominance).

inappropriate use of regulatory powers to support their ongoing existence. If there is a valid business case for their survival on efficiency grounds (e.g. as distributors) then they will survive as it suits the infrastructure owner for them to do so. If not, then it is most efficient to let them fail. It is noted that even the 'ladder of investment' does not presume that separate retailers will endure, as they are presumed to 'climb the ladder' to become fully vertically integrated infrastructure competitors to the incumbent²¹.

- (f) Where it has been imposed, regulated separation of network and retail operations in both copper and fibre networks has been a matter of regulatory choice, and imposed asymmetrically upon an access-regulated network which is presumed to have both market power and the proclivity to use the shield of vertical integration to discriminate in favour of its own downstream operations. It is not clear from either theoretical or empirical analysis that separation will on balance lead to increased economic efficiency in the long run. Indeed, it militates directly against the efficient acquisition of scale when imposed upon a nascent network, so is highly unlikely to be the structure of choice for investors in new networks except under very limited circumstances²². However, separation mandates do facilitate the regulatory enforcement process, by providing transaction transparency and comparability across the network-wholesaler and wholesaler-retailer boundaries. By using separation mandates to predetermine industry (market) structure, conduct can be more easily observed and (if necessary) regulated, to the extent that the (constrained) performance of the industry (market) can be verified (and is arguably more easily controlled). However, if applied when they should not, such mandates also preclude the natural evolution of the industry (market) to a more efficient set of structures. Market participants respond to the regulations by generating an entirely different set of path-dependent interactions than would have been the case otherwise.

In summary, the discussion in Part A provides a background upon which our response to the questions in the discussion document is based.

²¹ Even though the incumbent might itself be subject to separation mandates that preclude functional integration of retail and network operations.

²² Howell, B. (2010). Politics and the Pursuit of Telecommunications Sector Efficiency in New Zealand. *Journal of Competition Law and Economics*. 6 2. pp.253-376; Heatley, D, & Howell, B. (2010). *Structural separation and prospects for welfare-enhancing price discrimination in a new natural monopoly: comparing fibre broadband proposals in Australia and New Zealand*. http://www.iscr.org.nz/f580,16593/16593_Efficiency-raising_price_discrimination_with_postscript_.pdf

Part B: Responses to the Discussion Document

We now turn to the specific issues raised in the discussion document. In accordance with the directions, we structure this section according to the structure of the discussion document. Rather than addressing all questions, we confine our discussion to those issues directly relevant to the points raised in Part A.

1. Introduction

Paragraph 4 states that the discussion paper

“makes no assumption on the outcome of the UFB process”

and

“considers the implications of the structural separation of Telecom for the current regulatory and policy settings. These issues are ones that would arise if Telecom were to structurally separate, irrespective of whether it is a successful UFB bidder.”

Part A identifies that it is impossible to adequately assess the “implications of the structural separation of Telecom for the current regulatory and policy settings” in isolation from either: the objectives of and justifications for existing regulations and policies; or the extent to which Telecom’s option to structurally separate is a direct response to those regulations and policies.

Telecom’s motivation to consider structural separation is directly a consequence of the Government’s UFB policy – which is itself a direct response to technological change (the development of fibre technologies) and policy intervention to address a perceived market inefficiency (to the extent that the government’s investment is in part to address the fact that the private sector has so far failed to invest in a FTTH network of the nature specified by the government at the speed the government would prefer). Separation is proposed specifically so that Telecom **CAN** potentially participate as a UFB partner with the Government in the deployment of its network.

Moreover, the September 9 announcement that Telecom has not been chosen by Crown Fibre Holdings as the preferred UFB partner for territories covering up to 18% of the population²³ has clarified that in at least some geographic markets, Telecom will not be a partner, but will in fact be facing direct infrastructure competition from the UFB network, at least in the short-to-medium term²⁴. (Given that Telstra’s cable

²³ <http://www.crownfibre.govt.nz/news/press-releases/cfh-announces-shortlist-and-negotiations-for-first-stage-roll-out-of-ufb.aspx>

²⁴ It is noted that under the Commerce Act 1986, any agreement between Telecom and the Government’s preferred UFB partner in these regions in order to co-ordinate a smooth transition from copper connections to fibre connections would likely be in breach of the provisions in Sections 27 and 28 precluding the entering into of contracts, covenants, arrangements or understandings that substantially lessen competition.

network covers approximately 11% of the population, this announcement means that in the foreseeable future, fixed-line infrastructure competition will be a reality for a *minimum* of 29% of the population.)

As UFB decisions so materially affect the nature of competition in a market that has historically been regulated on the assumption that the incumbent has enduring market dominance as a consequence of its ownership of a bottleneck infrastructure for which there is no likely close substitute, it is naïve (and arguably irresponsible) to proceed with an analysis of regulatory and policy implications that abstracts the causal stimulus of inevitable structural rearrangement of the entire industry out of the consideration. The issues are manifestly not the same for the current review of regulatory and policy settings irrespective of whether Telecom is a successful UFB bidder. Indeed, we contend that the more apposite consideration is rather of the implications for regulation and policy that arise if a structurally separate Chorus2 owning the existing copper network assets were (or were not) a successful UFB bidder in specific regions.

We note also that the current review of the regulatory environment must also take into account the changes to government policy covered by the Rural Broadband Initiative (RBI)²⁵, to the extent that it is not certain that Telecom, or its copper network, will continue to be the infrastructure chosen to receive subsidies for the provision of services in commercially unviable areas.

Consequently, our submission takes the approach that the issues associated with the structural separation of Telecom are *not* independent of either the UFB bidding outcome or RBI decisions.

1.1 Policy principles

(7) The Ministry considers that any changes to the telecommunications regulatory regime should be consistent with the following policy principles: [numbered for our reference purposes]

- (i) promotion of competition in telecommunications markets for the long-term benefit of end-users of telecommunications services within New Zealand;*
- (ii) incentivising efficient investment in telecommunications infrastructure and service development by access providers and access seekers;*
- (iii) allowing consumers to choose between technology platforms on the basis of relative price and performance;*
- (iv) minimising the compliance costs and competitive distortions of any regulatory intervention;*
- (v) ensuring a sustainable industry structure;*

²⁵ http://www.med.govt.nz/templates/ContentTopicSummary_41997.aspx

- (vi) *providing sufficient certainty to the industry and ensuring that transitional measures minimise any market or investment disruption; and*
- (vii) *only introducing regulation where there is clear evidence of market failure and there are no non-regulatory options which will effectively address the issue.*

1. Please provide your views on the above policy principles, including whether any of the above principles should be amended or deleted, suggested additional principles, and relative weighting of the principles.

Part A outlines the case for the primary criterion for assessing the efficacy of the policy principles being the extent to which they further the pursuit of increased economic efficiency, in all of its dimensions. This leads us to the following conclusions in response to question 1 (in bold).

- (a) **It is our view that principle (v) as it is currently worded is an inappropriate objective for regulatory policy, and that it should be replaced with the objective of**
 - (v) **ensuring a sustainable industry;**

While the difference may appear subtle, its importance is crucial.

In an environment of rapid changes in technology and consumer preferences, it is far from clear that a stable (i.e. relatively unchanging) industry structure will lead to the most efficient outcome in the long run. Whilst in a static technological environment it may be possible to identify a particular stable industry structure that leads to predictable interactions between industry participants ('conduct') that deliver desired (most efficient) market outcomes ('performance')²⁶, in a dynamic context where technological change alters the products transacted, the relative costs and values placed upon them by producers and consumers, the methods of their production and the nature of the transactions by which they are exchanged, it is almost inevitable that the industry structures that best support the most efficient structural arrangement²⁷ of the industry will differ from those supporting the historic production and transaction processes.

²⁶ The application of models based on the 'Structure-Conduct-Performance' view for analysing industries has been criticised for its historic reliance upon measures of static efficiency. The failure of these models to take dynamic efficiency into account has led to the development of a new set of dynamic models using tools such as game theory and the sciences of decision-making under uncertainty (Carlton & Perloff, 2005: Chapter 8). For a discussion of the application of these models to the regulation of infrastructure, see Guthrie Guthrie, G. (2006). Regulating infrastructure: The impact on risk and investment. *Journal of Economic Literature*, 44(4), 925-972.

²⁷ We take the Transaction Cost Economics and New Institutional Economics view that the structural arrangement of the industry comprises the organisation of transacting parties across the entire value chain

Regulation can be used to impose a stable industry structure that can prevail despite the pressures of dynamic technological change. Indeed, industry participants may prefer such stability, especially if it insulates their current (economically viable) position against the threats and uncertainties embodied in technologically-driven structural change.

However, if the regulated structure prevents the industry from evolving in response to technological or customer preference changes in a manner that would result in increased economic efficiency, then structural stability is inappropriate as a regulatory objective. All industries evolve dynamically in response to the forces of technological, environmental and policy change. For example, in the early stages of a network technology with large scale economy effects arising from high fixed and sunk costs, it may be necessary to restrict competition to ensure that sufficient investment is made by a single firm, and scale economies are achieved. However, when the technology is more mature and widely diffused, and where technological change alters the cost structure, efficiency gains may be achieved by removing competitive restrictions and mandating structural changes (e.g. access regulation). Efficient regulation must be responsive to the need for these structural adjustments.

Consequently, ex-ante specification of a single specific and enduring 'sustainable industry structure' is likely to be harmful to the long-run sustainability of the industry. The risk exists that the industry becomes dependent for its survival upon externally-imposed forces (e.g. subsidies and regulatory protections) rather than its own internal resources and internally-generated responses to external stresses (such as technological change).

In a sustainable industry, new providers and/or new products will emerge where there is a reasonable expectation of customer demand sufficient to support profitable provision. Operational inefficiency, uncompetitive offerings, mismatch between products and consumer demand, or failure to adapt will lead to either industry exit (either product or participant) or reorganisation of the relationships between transacting parties in order to increase efficiency. Whilst some structural changes may be motivated by welfare-reducing opportunistic objectives (e.g. mergers to acquire or maintain dominance, or vertical integration to enable discrimination), and antitrust action or regulatory intervention may be appropriate to prevent welfare-reducing consequences, regulated structural impositions may also impede the ability to achieve a fair return from investments²⁸. Without the expectation of reasonable

into firms and markets, and the nature of the agreements via which all parties transact, both within and between individual entities.

²⁸ For a discussion of the ways in which access regulation and structural separation may impede the pursuit of economic efficiency, see

returns, ongoing investment is not forthcoming and the industry becomes financially unsustainable²⁹. Changes to industry structure in response to environmental changes are thus an important component of the competitive process. It is only under circumstances conducive to entry, exit and internal structural reorganisation that efficient investment is likely to take place.

As such dynamic behaviour is driven by the overarching objectives of both consumers and producers to increase their own individual welfare, and it is the objective of social planner to maximise the total long term welfare generated by the industry, this objective is best served by the alignment of interests towards the sustainability of the industry (including enabling its transformation or even extinction if that is the most economically efficient outcome).

This leads us to the view that

(b) Of the seven policy principles articulated, the modified principle (v) ensuring a sustainable industry should be the goal for both the industry and the regulatory policies governing it.

The remaining six articulated objectives should not be seen as independent or equally weighted. Rather, they serve as interdependent means by which regulation may support the overarching goal. They are means towards the end, or as proxies that may be useful when expressed as partial objectives. However, they are not mutually consistent: it may be necessary to trade off the benefit of pursuing one to enhance the pursuit of another, depending upon the prevailing circumstances. The way these tradeoffs are made will not be fixed. The guiding principle in making these tradeoffs must always be such that the greatest gains in economic efficiency are achieved.

To that end, it is our view that the six principles fall naturally into a group of three sub-goals, which address particular activities that can be observed in the interactions amongst participants in the industry, a definition of the criteria justifying regulatory

Howell, B. (2009). *Separating New Zealand's incumbent provider: a political economy analysis*. Paper presented at the International Telecommunications Society Regional Conference, Perth, Australia, August http://www.iscr.org.nz/f503,14751/14751_Political_Economy_of_Separation_BHowell_April09.pdf and Heatley, D., & Howell, B. (2010). *Price discrimination, structural separation and the diffusion of fibre broadband: policy implications for Australia and New Zealand*. Paper presented at the 1st Asia-Pacific Regional Conference of the International Telecommunications Society, August 26-28, Wellington, New Zealand, respectively.

²⁹ For example, a firm bound to provide universal service prices but facing selective competition only in low-cost markets must be subsidised or will withdraw from the market (e.g. by opting not to maintain infrastructure in the high-cost areas) as a consequence of being unable to continue offering services below cost in the uncompetitive high-cost markets.

intervention, and two constraints upon that intervention process, as illustrated in Figure 3.

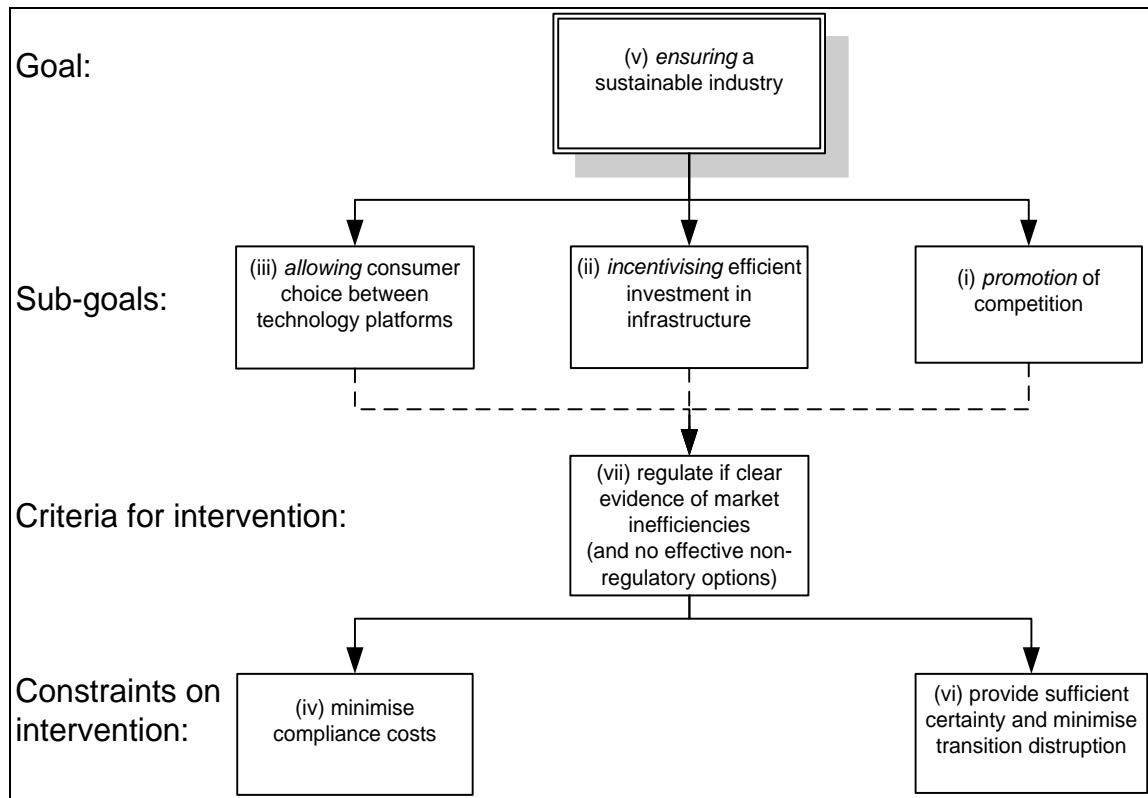


Figure 3. Proposed structure for telecommunications policy principles

This structure makes it clear that the sub-goals are subservient to the overall goal, and as such should not be pursued unilaterally³⁰. By placing these sub-goals at the same level, the inherent trade-offs between them can be made more explicit. In a similar vein, the proposed structure reveals there may be trade-offs to be made between principles at the “constraints on intervention” level.

(c) It is our view that that the principles should be ordered and structured under the sub-headings given in Figure 2.

We note that the three sub-goals are not independent, so their pursuit is conditional on the extent that they further the goal of increased efficiency.

³⁰ For example, the promotion of competition is not unambiguously good: under some circumstances it may lead to inefficient duplication of infrastructure, which is at odds with (ii).

Sub-goal (i), the promotion of competition, is desirable only to the extent that it results in an increase in efficiency³¹. Whether or not the pursuit of ‘competition enhancing’ policies such as access regulation and structural separation results in increased entry depends on a range of factors specific to the industry and competitive environment. For example, structural separation of freight railways has been problematic, in particular because of the strong economies of vertical integration³². Promotion of competition may also be inappropriate in some circumstances, for example when high fixed and sunk costs make it too risky for otherwise welfare-enhancing investment to occur, leading to inefficiently low levels of activity relative to that achievable when competitive entry is restricted.

It is also important that, when it is deemed appropriate to promote competition, the form of competition promoted is that most compatible with the pursuit of greatest increased efficiency in the long run. ‘Competition’ describes a dynamic process of interaction between industry participants. This interaction can take on many forms that influence, and are influenced by, inter alia, individual objectives, cost structures, processes, the nature of products and services exchanged, technologies, information asymmetries and factors external to the industry. Industry structure and the form of competition observed are typically interdependent. Three forms of competition that have become commonplace in telecommunications industry as a consequence of the ways in which they lead to increased efficiency in certain circumstances are infrastructure competition, services competition and benchmarked competition³³.

*Infrastructure competition*³⁴ is desirable where cost structures are such that more than one firm can invest in its own infrastructure serving the same customers. It can also occur when differentiated technologies compete for commercial superiority. Infrastructure competition is the norm in mobile telecommunications in developed countries, and is also common in transport, where, for example, road, rail and water-

³¹ Howell, B. (2010). Politics and the pursuit of telecommunications sector efficiency. *Journal of Competition Law and Economics* 6(2): 253-76

³² Pitman, R. (2005). Structural Separation to Create Competition? The Case of Freight Railways. *Review of Network Economics*. 4 3. For a discussion of the structural separation of New Zealand railways between 2004 and 2008 see Heatley, D. (2009). The history and future of New Zealand railways. ISCR Research Report. Retrieved October 9, 2010 from: [http://www.iscr.co.nz/f511,14914/14914 The history and future of rail in New Zealand RR .pdf](http://www.iscr.co.nz/f511,14914/14914%20The%20history%20and%20future%20of%20rail%20in%20New%20Zealand%20RR.pdf).

³³ It is noted that other forms of competition are also possible – including ‘dominant firm, competitive fringe’, and monopolistic competition, which takes account of product differentiation. Competitive disciplines can be strong in markets without large numbers of firms. Particularly for products and services with low marginal costs, competitive pressures can be fierce under oligopoly and monopolistic competition. A competitive fringe can keep a substantial check on the abuse of market power by a monopolist. The advantages of geographically-consistent pricing or the threat of entry can erode the pricing power of a local geographic monopoly. Assessment of the levels of actual competition in a market should be sensitive to these factors.

³⁴ Also known as *facilities* or *facilities-based competition*.

based carriers may compete in the same market. It is also common for urban fixed broadband connections in many countries (e.g. US, most of Australia, parts of New Zealand, where cable and telephony-based networks compete). Infrastructure competition increases welfare from both the effects it has upon productive and dynamic efficiency, notably increased consumer welfare that comes from the ability for consumers to enjoy the differentiated characteristics of (and applications supported by) the infrastructure best suited to their needs rather than the lower welfare achieved from purchase of the alternative³⁵. Promotion of infrastructure competition is thus consistent with sub-goal (iii) allowing consumer choice between technology platforms. However, to the extent that it results in inefficiently 'too many' infrastructures, it runs counter to the pursuit of sub-goal (ii).

*Services competition*³⁶ has been pursued where regulated access is provided to enable many firms to access services provided on a bottleneck infrastructure that cannot be efficiently duplicated (for example, as a consequence of high fixed and sunk costs leading to scale economies that lead to the lowest costs of production when only one firm serves the entire market). Services competition typically requires substantial regulatory restrictions on the owner of the bottleneck infrastructure. The New Zealand Telecommunications Act, in specifying regulated access to many elements of Telecom's infrastructure (e.g. the copper access network; some backhaul services) encourages the pursuit of services competition. However, the pursuit of services competition may be at the expense of pursuit of sub-goals (ii) and (iii). The effects of access regulation in diminishing the incentives for investment in alternative competing infrastructures is well-documented³⁷, leading to compromises in the pursuit of (ii) the incentivising of efficient investment in infrastructure. By extension, this further compromises the pursuit of (iii) allowing consumer choice between technology platforms.

Benchmarked competition can be used when firms with geographic monopolies compete, for example it is used in the regulation of electricity lines businesses in New Zealand.

As the most appropriate form of competition to pursue depends upon the (volatile) characteristics of the specific markets under consideration, it is very unlikely that an unchanging one-size-fits-all approach to either the models used to assess performance or the trade-offs between the priorities given to the three sub-goals is appropriate.

³⁵ See Carlton & Perloff (2005) *op. cit.*, Chapter 7.

³⁶ Or *services-based competition*.

³⁷ Howell, B (2009). *Comments to the Federal Communications Commission in response to the broadband study conducted by the Berkman Center for Internet and Society*. http://www.iscr.org.nz/f542.15628/15628_Berkman_Report_Response_to_FCC.pdf

This leads us to conclude that, to improve clarity in the role of competition in the regulatory process, principle (i) is amended:

- (d) Principle (i) should read “promotion of appropriate forms of competition where this will result in a long-term benefit of end-users of telecommunications services within New Zealand”.**

When it is clear what form of competition best supports the pursuit of increased efficiency, it becomes self-evident how each of sub-goals (ii) and (iii) should be prioritised.

We note at this point that the inconsistencies, confusions and contradictions identified in the ‘Implications’ subsection of Part A appear to have arisen principally because of a lack of clarity in regard to the overarching policy justifications for the government’s investment in the UFB in the first place. This leads to confusion in the policy directions regarding the historic regulations already in place. It also leads to confusion about the role that Telecom, and other infrastructure providers, will play in its deployment. Has the government invested in the UFB to provide infrastructure competition for Telecom? In that case, the direction for regulatory policy should clearly be a full reassessment of all regulations predicated on the pursuit of services competition (i.e. the removal of access regulation, for example as in the United States, at least in those areas where Telecom has NOT been selected as the investment partner). If the investment is in lieu of Telecom’s or any other retail entrant’s own investment in a successor FTTH network, then the appropriate policy direction should be a suspension of the pursuit of all market-based competition (and the associated regulation facilitating pursuit of competition) whilst a succession plan is devised to migrate all existing customers using Telecom’s network to the UFB (e.g. as has been signalled will occur in Australia, with the heads of agreement between NBNCo and Telstra to jointly manage the migration of customers to the fibre network).

We note also that in the absence of any clearly articulated competition policy for the government’s investment (i.e. is it in the pursuit of infrastructure- or services-based competition?), the position of firms that have already invested in competing local infrastructures (e.g. TelstraClear – cable; CityLink – fibre) is somewhat anomalous. Will they still be competing with both Telecom and the UFB as they compete with each other? Or will they be competing only with a combined Telecom/UFB, where their existing investments may potentially become stranded if they are unable to compete with a dominant, government-subsidised provider? What is their role going forward in a competitive landscape that is predicated on the assumption of UFB dominance?

These questions lead us to consideration of the criteria for intervention in Figure 2: principle (vii), that regulation should only be introduced where there is clear evidence of market inefficiencies. Whilst the original articulation was intervention in the case of “market failure”, the preceding discussion highlights that the sources of inefficiencies in the market may be other factors, such as policy interventions, the consequences of ill-targeted regulation or simply environmental changes that render past arrangements less efficient than they could be. Rather than the use of a pejorative term such as ‘market failure’ implying that actions on the part of only one subsystem of the complex interactive system outlined in Figure 1 in Part A is subject to scrutiny as the source of the observed inefficiencies, we instead suggest that a more wide-reaching criterion based upon performance measures (‘market inefficiencies’) rather than structural foci (‘market failure’) may more constructively align regulatory intervention with its overarching efficiency objectives. Taken within the systemic context outlined part A, it leaves open the avenue for considering that the inefficiencies may derive from other parts of the wider system rather than only within the ‘market’.

Thus:

- (e) It is our view that principle (vii) should be amended to read ‘regulate if clear evidence of market efficiencies (and no effective non-regulatory options)’.**

We note that the remaining articulated principles act primarily as constraints on the form of regulatory intervention adopted: (iv) that the interventions adopted should minimise compliance costs and (v) provide sufficient certainty and minimise transition disruption. As guiding principles, they are broadly consistent with the pursuit of increased economic efficiency. However, in light of the preceding discussions, the provision of certainty is consistent with the overarching efficiency objective only to the extent that the provision of certainty is offered only in regard to those factors over which it is reasonable and credible for the regulator to offer certainty. There may be trade-offs where the regulated provision of certainty impedes the ability of the market to evolve efficiently in response to events outside the control of either the market participants or the regulator.

To the extent that these types of trade-offs are important in the pursuit of increased economic efficiency, we propose that three further explicit constraints should be placed on regulation. Firstly, regulation should be forward-looking. It should not seek to remedy past injustices or inefficiencies. Rather it should anticipate environmental changes and to the extent possible, be appropriate under the most probable scenarios. Secondly regulation should be removed or revised if there are substantive changes to the ‘clear evidence of market inefficiencies’ and/or the lack of

'effective non-regulatory options' that led to its imposition. And thirdly it should be explicit that the target of regulation is the efficient functioning of markets, rather than of specific firms.

(f) We suggest adding three further principles under the subheading "Constraints on intervention":

- (viii) regulation should be forward-looking;**
- (ix) regulation should evolve – it should be subject to regular review, and be revised or amended in response to substantive changes in the conditions or assumptions on which it was based;**
- (x) the target of regulation should be markets not firms – in particular, firms in a similar situation should be regulated on an equivalent basis.**

Lastly we note that the test for market inefficiencies cannot be applied without a clear specification of the *market* which is believed to embody inefficiencies.

An industry is the aggregation of many 'markets' for the provision of goods and services. The term 'market' is defined in the Commerce Act as a: 'market in New Zealand for goods or services as well as other goods and services that, as a matter of fact and commercial common sense, are substitutable for them.' The Commerce Commission identifies five specific dimensions of market definition (Figure 4) and we can apply these dimensions in determining the boundaries of a 'market'.

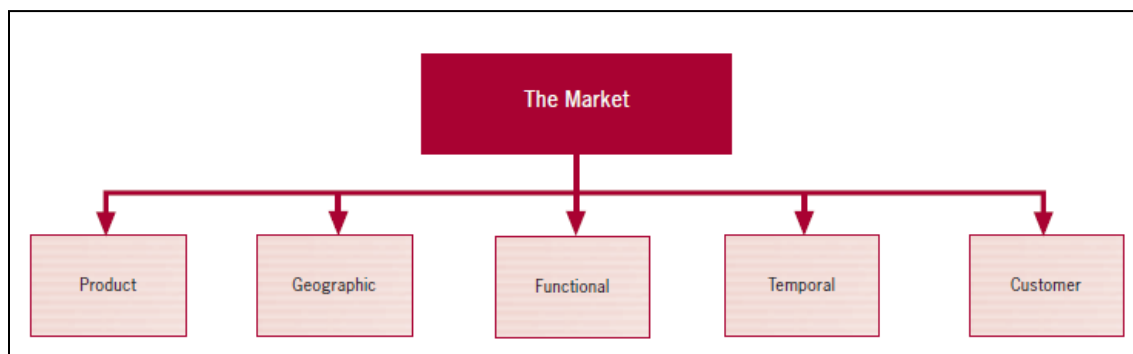


Figure 4. Dimensions of a market³⁸

The functional level refers to its position in the vertical chain of production or distribution: wholesale or retail. At the retail market level, we contend that there are

³⁸ Commerce Commission (2005). *Mergers and Acquisitions Guidelines*. p.14. Retrieved September 21, 2010 from: <http://www.comcom.govt.nz/assets/Imported-from-old-site/BusinessCompetition/MergersAcquisitions/ClearanceProcessGuidelines/ContentFiles/Documents/MergersandAcquisitionsGuidelines.pdf>.

essentially only two relevant telecommunications network products purchased by the majority of customers:

- Narrowband services (voice, fax, dial-up internet, SMS – purchased via a monthly account or prepay arrangement for either fixed line or mobile access)
- Broadband data.

These products are not unique to any technology. While a proportion of customers may have a specific requirement that determines a particular network technology is the only feasible one to purchase (e.g. mobile capability; very high speed requirements), competitive forces have succeeded in ensuring that every network technology now strives to emulate key features of its competitors' product, with the aim of being an effective substitute (from the perspective of a majority of customers).

For example, voice calls have been traditionally supplied using POTS. These can be supplied over copper twisted pair, HFC, or (utilising an appropriate adaptor) over fibre and satellite connections. Non-POTS voice calls can be supplied using mobile technologies (2G or 3G) or using VoIP over broadband connections (which themselves could be based on DSL, HFC, fibre, 3G, 4G or satellite). A market definition for voice calls that (explicitly or implicitly) restricted the market to a single technology would do so only because the product definition was so tightly specified as to exclude the range of network choices available that can act as partial or near complete substitutes, if not strictly homogeneous alternatives.

Technological change has resulted in an overwhelming trend for narrowband services to be delivered over the top (OTT) of IP-based broadband. Voice over IP is just one example of this trend. The narrowband share of the market is falling, and regulatory policy should anticipate the rapid future substitution of narrowband services with OTT delivery of the vast majority of services previously offered over narrowband via broadband data services.

The geographic extent of the market concerns the geographic area over which transactions between competing suppliers and buyers take place. The cost structures for telecommunications infrastructure define three broad geographic zones:

- An “urban” zone, in which it is commercially feasible to have two or more competing infrastructures.
- A “rural” zone, in which one infrastructure operator can make a commercial return, but two operators would be commercially unsustainable.
- A “remote” zone, in which the provision of infrastructure is not commercially sustainable

Given current cost structures, it is not implausible even in the New Zealand context that the most efficient telecommunications industry could be based upon infrastructure competition between vertically integrated firms in the urban zone, services or benchmarked competition in the rural zone, and tendering for the market in the remote zone³⁹. It is recognised that different technologies have different characteristics, thus zone boundaries defined in terms of a specific technology will differ from those of another specific technology. However, the complexities of individual technologies are to a large extent abstracted away if instead of an infrastructure-based view of product market definitions (copper, fibre, mobile), the market definition is instead cast as the purchase of a broadband connection of a given set of specifications, regardless of the infrastructure over which it is delivered.

Policy and regulatory choices in New Zealand have led (or will shortly lead) to substantially different competitive conditions for fixed line provision in different geographic regions. Table 1 identifies geographic regions that are defined by the outcomes of specific UFB and RBI policy initiatives. Depending on the outcomes of these policy processes, there could be as few as five or as many as seven geographic markets in which there will be between one and three fixed-line infrastructure providers.

Competition is further enhanced the widespread availability of mobile voice and data services. The Telecom and Vodafone 3G networks cover approximately 97% of the population, and the 2degrees 3G network covers most of Auckland, Wellington, Christchurch and Queenstown. Telecom offers 21Mbps (peak) download speeds using HSPA+ but, sensibly, tells people to expect real-life download speeds of around 4Mbps. Vodafone are expected to roll out a HSPA+ upgrade by the end of 2010.

Table 1 highlights the fact that on the basis of such market definitions, there will be a range of broadband markets across New Zealand with very different structural and economic characteristics. The implication is that in order to maintain consistency with the regulatory principles articulated above, it will no longer be appropriate to maintain a single set of regulatory arrangements across the entire country. The appropriate efficiency-raising regulations for one market (e.g. GM1, where infrastructure competition is substantial) may be totally inappropriate in another (e.g. GM7a, where there will only be one provider, and even then the service may be provided only because of the application of an explicit subsidy).

³⁹ See, for example, Levin (2010) *op. cit.*

The very fact that infrastructure competition has emerged in a number of urban geographic locations confirms this hypothesis.

This stands as further evidence in support of our contention that the regulatory review currently being undertaken cannot be carried out in isolation from either the UFB or RBI policies.

Table 1. Potential geographic regions for fixed-line infrastructure supply as at 9 October 2010.

Geographic market	Geography as defined by policy and regulatory choices	Fixed-line infrastructure competitors	Approx % of consumers
GM1	Wellington, Kapiti, Christchurch Assuming successful Telecom UFB bid	TelstraClear Telecom	0-11%
GM2	Wellington, Kapiti, Christchurch Assuming unsuccessful Telecom UFB bid	TelstraClear Telecom RFG business ⁴⁰	0-11%
GM3	Timaru, Whangarei and Central North Island	Telecom RFG businesses	12%
GM4	Other UFB areas Where Telecom is unsuccessful bidder	Telecom RFG business	0-52%
GM5	Other UFB areas Where Telecom is successful bidder	Telecom	0-52%
GM6	Non-UFB areas covered by Telecom cabinetisation programme	Telecom	9%
GM7a	Areas covered by Rural Broadband Initiative If Telecom is successful tenderer	Telecom	0 or 13%
GM7b	Areas covered by Rural Broadband Initiative if Telecom is unsuccessful tenderer	Telecom Successful bidder ⁴¹	0 or 13%
GM8	Unsuitable for fixed-line services	-	~3%

1.3 Relationship with regulatory regime for UFB networks

(13) The Ministry considers regulatory consistency across the fibre and copper access networks to be important.

As we have articulated above, ‘regulatory consistency’ across the two access networks matters not inasmuch as there are two networks of differing technological

⁴⁰ Member of the Regional Fibre Group. See: <http://www.nzrfg.co.nz/>.

⁴¹ While the RBI requires connection of schools to fibre, the tender allows technological flexibility for connections to homes and businesses. While Telecom may prefer to maximise the use of its existing fixed lines assets, it is likely that an alternative bidder would make extensive use of wireless technologies.

foundations to be regulated, but that increasingly the market(s) of interest are those relating to access to broadband services, regardless of the technologies over which those services are delivered. In order to maintain a consistent set of incentives that lead to the operation of a sustainable industry, with markets individually operating as efficiently as possible, and to the extent that regulation is required to enable that to occur, then it is imperative that there be a single policy and regulatory view across all access networks over which broadband access services are provided. Failure to do so will inevitably result in inconsistencies and regulatory arbitrage opportunities between the networks that will undoubtedly lead to a less efficient and less sustainable industry.

Paragraph 13's subsequent focus on regulatory consistency viewed as promotion of competition through open access, but the use of different tools (regulatory forbearance in a nascent network, separation of retail from network and wholesale operations) within the frame of the promotion of competition serves to confirm our earlier observation that a focus upon artefacts such as industry structure and sub-goals such as the promotion of competition might lead to the means of promoting economic efficiency becoming conflated with the pursuit of the end of an efficient and sustainable industry. We note that 'regulatory consistency' should not be interpreted as the consistent use of the same regulatory tools or sub-goal objectives and priorities, but rather as the consistent application of the regulatory principles within the framework proposed in Figure 2⁴².

2. Overview

(15) ... Structural separation would not affect the underlying problem of limited competition at the network level, which confers market power on the network owner. Regulation is likely to remain necessary to avoid monopoly pricing, unless competition from alternative networks emerges.

As discussed above, there is already substantial competition for all services supplied via the copper network in a number of geographical markets. Both the number of geographic markets where competitive intensity can reasonably be forecast to increase substantially in the near future is significant.

Paragraph 15 serves rather to reinforce our earlier observation that the relevant question challenging the regulatory regime is not Telecom's structural separation,

⁴² We note with some irony that at a time of technological convergence, and thus increased competition between technology platforms, the New Zealand policy and regulatory approach appears to be fragmenting towards separate rules and processes governing the operation of individual network platforms.

but the challenge posed by infrastructure competition that is both developing naturally and being imposed as a consequence of UFB policy decisions.

3. The current regulatory framework for copper services

5. Please provide your views on the LOI policy approach, including whether you agree that the current LOI access regime has successfully promoted competition in telecommunications markets.

The LOI policy approach is predicated on the absence of infrastructure competition and the existence of bottleneck infrastructure. It aims to incentivise the bottleneck owner's competitors to invest in successively more elements of network infrastructure ('climbing the ladder') to the extent that they ultimately own sufficient network elements to become full infrastructure competitors. It has been suggested as a means by which (the more desirable) infrastructure competition can emerge as a consequence of judicious application of access regulation⁴³.

There is scant evidence of the ladder working in practice⁴⁴. In the New Zealand context, the firms most aggressively investing via local loop unbundling provisions were already extensive infrastructure owners before the opportunity to invest in elements of the copper network were made available (Vodafone, TelstraClear, Kordia/Orcon). Local loop unbundling has been used largely as a means of enabling these existing infrastructure owners to enter into new market segments that were largely complementary to their existing network investments (for example, different geographic segments where they had no local access network – TelstraClear; across the boundary from mobile to fixed line access – Vodafone; or 'back a rung down the ladder' from backhaul into retail operations – Kordia via its purchase of Orcon). The effect in the market has been the use of LLU to enable these competitors to differentiate their multi-product bundles from those of Telecom or as a lower-cost option to deploying more of their own technology (e.g. TelstraClear).

The 'failure' of the 'ladder' model highlights further fundamental inconsistencies between the regulations governing the copper network and the UFB that lead to some very perverse consequences.

⁴³ Cave, M. (2006). Encouraging infrastructure competition via the ladder of investment. *Telecommunications Policy* 30(3-4): 223-37.

⁴⁴ See, for example, Hausman, J. & Sidak, H. (2005). Did mandatory unbundling achieve its purpose? Empirical evidence from five countries. *Journal of Competition Law and Economics* 1(1): 173-245.

Assuming that the 'ladder' model was appropriate when adopted in 2006 because there truly was a bottleneck infrastructure at that date, and that it was in fact able to encourage entrants to 'climb' from retail operations to full network ownership, then they would be fully integrated operators. As fibre is the frontier technology, then it is likely that rather than building a new copper access network a successful 'ladder climber' would invest in a fibre network. As the UFB is providing that network, climbers do not need to invest any more in either copper assets or a fibre network. Their capital would potentially be available for investment in the UFB. However, as existing retail operators, they are in effect unable to take a controlling interest in a UFB. There is no longer a case for them to invest any more in the industry at all. It is notable that none of the predominant unbundling entrants have engaged in the UFB tendering project as capital investors.

Moreover, if the effect of the UFB policy is to impose infrastructure competition without the need for Telecom's competitors to 'climb the ladder', it begs the question whether the 'ladder' has any further relevance in the New Zealand regulatory environment. If unbundling entrants can obtain (presumably superior, frontier – and subsidised) UFB products under open access arrangements, why would they continue to invest in a legacy network of inferior quality? Indeed, why also would Telecom continue to invest? Where the UFB is not deployed, and where it is uneconomic for there to be more than one network, then the 'ladder' would never have led to substantial competitor investment in the first place. In these uneconomic areas, even Telecom might need to receive subsidies to maintain a basic level of service (e.g. under the RBI). The leaves only the remaining areas where there is no UFB, where it might be desirable for 'ladder' type investment to occur. But these areas have not yet been opened up for unbundling. There may still continue to be a case for a ladder in these areas, but they comprise a very small share of the customer market – perhaps around 9% (Table 1).

The perversities also draw into attention the need to maintain the subsidiary regulatory tool of functional separation of Telecom's copper network. The 'ladder' builds upon the tool of access regulation. If the 'ladder' is no longer useful, at least in those markets where infrastructure competition exists, and the purpose of the UFB was to create such infrastructure competition then what is the purpose of maintaining regulated access regulation, functional separation and equivalence provisions? It would be expected that the nature of the relationships between Telecom and its LLU customers may change under infrastructure competition from being competitors on the copper platform to allies seeking to

develop a common set of network management arrangements enabling vigorous competition between the network platforms. At the very least, such co-operation would be expected to mitigate the risk of their existing assets becoming stranded. In order to maintain the dynamic incentives to invest in improved capabilities on the copper network to facilitate aggressive infrastructure competition across time, absent separation mandates, it might be expected that either contractual or ownership alliances would develop to finance network enhancements⁴⁵. Yet separation mandates preclude such dynamic efficiency-raising activities from occurring. Ipso facto, if access regulation and the ladder of investment are no longer appropriate for pursuing the regulatory goals of an efficient and sustainable industry, then neither is separation – either functional or structural – appropriate.

Such reasoning leads back again to the lack of clarity about the competition policy and objectives surrounding the UFB. Telecom's voluntary separation response is not what would normally be expected in a regulatory environment aligned with the pursuit of efficient infrastructure competition. It can be viewed as symptomatic of a response to a policy that is itself not clearly aligned with an overall efficiency-raising objective. The structural separation response must be seen as an example of where policy and regulatory interventions will necessarily alter industry interactions, but that the result may not be aligned with the overarching principles of efficient and appropriate regulation, especially if the policies themselves have not been adequately assessed under principles of the type articulated in section 1 above.

4.1 The implications of structural separation

6. What is your view on whether the regulated pricing methodology for UBA should be amended from retail-minus to a cost-based approach? Please provide your reasoning. If you have alternative suggestions, please provide those.

It is our view that cost-based prices will generally be more consistent with the pursuit of efficient outcomes – but only to the extent that all relevant costs and risks are factored into the consideration. Thus, the prices must be forward-looking.

⁴⁵ Howell, B., Meade, R. & O'Connor, S. (2010). Structural separation versus vertical integration: lessons for telecommunications from electricity reforms. *Telecommunications Policy* 34(7): 392-402.

Prices must also take into account the fact that there is both foreseeable and unforeseeable risk associated with network investments. Whilst the costs of foreseeable risks are most efficiently allocated to the party whose decisions lead to them being invoked, it is rarely most efficient for the unforeseeable risks to be borne by one party alone without adequate compensation being paid for these to be borne. Unless the costs of the unforeseeable risks are efficiently allocated or compensated, then policy sub-goal (ii) encouraging efficient investment will be unlikely to be satisfied.

4.4 The appropriate form of cost-based bitstream pricing

7. In your view, is a cost-building block pricing methodology the most appropriate methodology for pricing UBA? If not, please provide any suggested alternative pricing methodologies, and the reasons for your view.
8. Do you agree that the Commission should be provided with the discretion to ensure that the regulated price does not disincentivise appropriate investment in the copper network? If yes, which is the best method for achieving this in your view? Please provide the reasons for your view.
9. Do you consider that the existing requirement on the Commission to consider relativity between UCLL and UBA should be retained? Please provide the reasons for your view, and any suggested alternatives you might have.

Under the assumption of infrastructure competition, and the ongoing need for investment in the copper network, it is our view (see section 3 above) that this objective will be best achieved by the removal of both access regulation and functional separation obligations precluding the ability of investors in the copper network to bargain freely in order to develop the optimal set of strategies via which the copper network can compete with its network rivals.

To the extent that there is any need for concerns about price relativity in an environment characterised by network competition, it is the relativities between the provision of equivalent services on the different platforms. Normal competitive interaction in unrestricted markets where there is infrastructure competition will generally render any intervention unnecessary, as the relativities will be determined by the underlying cost structures of each network. However, it is noted that government subsidies applied to the UFB mean that the prices on

this network will not be truly cost-driven. In order to maintain relativities so that both platforms can continue to face equalised incentives, it is the prices of the UFB network that must be regulated to prevent the occurrence of unproductive arbitrage between the networks.

In respect of regulatory arbitrage, we raise our concerns about the interplay that will likely occur as a consequence of structural and functional separation obligations on both the copper and fibre networks. Retailers with limited investment in any network face the greatest incentives to engage in regulatory arbitrage as they do not bear the risks of their decisions to switch between networks. As UFB policies limit the ability of retailers to invest in the fibre networks, and the 'ladder of investment' has failed to elicit substantial new investment in the copper network, then the risks of regulatory arbitrage occurring under the currently proposed arrangements seem substantial. The way in which a regulator must respond is crucially dependent upon the overriding objective of the government's investment in the UFB. If the objective is to stimulate infrastructure competition, then the appropriate response would appear to be at the very least a dismantling of the non-discrimination provisions on the copper network, and prices that ensure that the balance between networks is maintained so that the subsidised one is not artificially advantaged. If instead the objective is to rapidly replace the copper network, then relativity is irrelevant – the prices on both the copper and fibre networks must be structured to crowd out all future development of the copper network in favour of a mass migration to the UFB.

4.5 Averaged or de-averaged cost-based prices⁴⁶

10. Do you agree that naked UBA prices should be averaged nationally using a weighted average of urban and non-urban lines and, if not, any suggested alternative approaches? Please provide the reasons for your view.

Geographically averaged prices are fundamentally incompatible with the pursuit of infrastructure competition without substantial intervention to correct for the distortions in incentives to competitive entry decisions that they invoke. The question of the relevance of de-averaged prices with a structurally separate Telecom ultimately rests with a policy decision on universal service-based retail pricing of the UFB proposal, and how this flows through to wholesale pricing

⁴⁶ This section draws upon Heatley, D. & Howell, B. (2010). *Will abolishing the Telecommunications Service Order Compensation End Universal Service pricing in New Zealand?* ISCR Current Comment 2010 (1). http://www.iscr.org.nz/f560.16057/16057_Abolishing_the_TSO_Compensation_25-Mar-10_v3.pdf

principles. The UFB policy requires averaged wholesale prices within a geographic region, but makes no assumptions with regard to averaging between regions. Indeed, the assumption that there will be up to 33 separate regions operated by different firms, and that national averaging would require transfers between them, tends to suggest that there will be no national averaging of UFB wholesale prices.

It is noted that to date, all network operators have offered nationwide retail telephony and broadband pricing despite facing different costs. For mobile networks, this has occurred as a consequence of competitive interaction and the imposition of the TSO. In respect of fixed lines, only Telecom has been bound by regulation to provide such retail pricing. Any compensation for unmet costs borne by Telecom as a consequence of 'cherry picking' by its competitors into low-cost areas has historically been addressed by the TSO – in respect of customer losses to both mobile and fixed line competitors.

If relativities between copper and UFB pricing are to be maintained (4.4. above), then the geographic pricing policy must be common across the networks. If they are not, then there will be different arbitrage opportunities in different geographic locations depending upon which set of rules applies to each network, leading to an eventual bifurcation of network provision across the country. Specifically, the network with de-averaged prices will be unable to compete in the rural areas, as its costs will be unsubsidised, whereas in the urban areas, the network with averaged prices will be unable to compete, as its costs must be artificially inflated to create the subsidies applied to the rural areas. The ultimate result is that infrastructure competition will be eliminated – the de-averaged network will become the sole network in the urban areas and the averaged one the sole network in the rural ones. That is, there will be a return to local geographic monopolies based upon a single technology. As the objective of averaged prices in the first place is to enable a nationally consistent set of retail prices (essentially a 'universal service price') then even this objective fail, as the prices for each region will, under these facts, become locally cost-based. Both consumer choice and efficiencies from infrastructure competition will be lost.

Given the foregoing assumptions about the likely de-averaged national UFB wholesale prices, it appears that the only logical option is to proceed with de-averaged prices on the copper network. For consistency, and because the costs in each UFB region are likely to be different, this suggests that for ease of assessment of market performance and promotion of competition, it would be

appropriate to align the boundaries for copper de-averaging with those of the UFB.

6. Local Service TSO

6.1 The current TSO framework

The current TSO imposes obligations upon Telecom in respect of:

- i geographically averaged ('universal service') retail prices;
- ii unmetered local calling for residential consumers;
- iii a cap on the rental price for a residential connection, based on the price prevailing upon privatisation in 1990; and
- iv service quality.

The current obligations relate purely to the provision of historic narrow-band services offered over the fixed line PSTN, but make no stipulation about the type of network over which those services must be provided. The list of services which must be supplied, in particular the requirement for provision of fax and dial-up internet services, takes little cognisance of the extent to which convergence to a common digital format has enabled the functionality offered by the historic services to be delivered by many different technologies, including those already offered by Telecom's existing infrastructure competitors.

Until the recent (2010) review of the TSO, even though Telecom bore the obligations at the retail level, the costs of meeting them were shared across the industry. The current proposals oblige Telecom alone to meet these costs⁴⁷.

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| <p>23. Should both network level and service level TSO obligations be retained in the event of structural separation?</p> <p>24. What features of the current Local Service TSO Deed and service quality measures are inconsistent with the delivery of telephony services over other technology platforms (for example mobile, IP Voice)?</p> <p>25. How could these features (if any) be amended without compromising end-user outcomes?</p> |
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⁴⁷ <http://www.beehive.govt.nz/release/rural+telecommunications+plans+finalised>
http://www.med.govt.nz/templates/StandardSummary_____296.aspx

To the extent that structural separation requires a view as to how the existing TSO obligations should be divided between the different residual operations, we will address items i to iii above. We are not qualified to comment on issue iv, as it pertains to question 24.

1. If the purpose of structural separation is to create a Telecom retail operation that is directly equivalent to any other retail operator, there seems little point in retaining retail price controls on Telecom, but not its (otherwise equivalent) retail competitors, as competitive processes will achieve the equivalent outcome more efficiently. Arguably, the same observation could be made under functional separation alone.
2. The 'unmetered local calling' obligation has been adopted by all of Telecom's fixed line competitors, yet only Telecom is bound to supply it. There is no apparent reason why one (separated) retail firm should have this obligation but not the others. Either all retailers must be bound by the regulation, or none of them. If the tariff is provided because it meets market demands for it, then no regulation is necessary to maintain it. Again competitive pressures will ensure its ongoing supply.
3. The remaining issue is the extent to which the costs of meeting the universal service price obligation are allocated. For a single, nationwide integrated network facing no competition, it is straightforward to 'average' retail prices to recover wholesale and network operation costs. Aside from the challenges of infrastructure competition (see section 4.5 above), separation drives a wedge between the locus of costs and the risks associated with them. The vast majority of the costs of a telecommunications operation reside in the network. By comparison, retail costs are small. If the universal service prices are imposed at the retail level, then in order for them to be passed to the network operator, wholesale prices must also be universal. This implies that the universal service obligation is rightly a network, rather than a retail, obligation. If the network operator is the sole supplier of connections to all (equalised) retailers, then transfers can be made internally so that the receipts from low-cost customers can be applied to cover the costs of supplying high-cost connections below cost.

6.8 Funding the Local Service TSO obligations

The 'problem', however, arises precisely because the copper network does face competition from other platforms – as has been evidenced in the problems associated with reconciling the TSO costs between network operators without unduly distorting the incentives for competitive entry.

As universal service pricing is a retail instrument effecting a wealth transfer from urban customers to rural ones, if it is allocated asymmetrically across retailers, there will inevitably be adverse selection (“cream-skimming” or “cherry-picking”) consequences that play out at the network level. If only one retailer must charge the equalised prices, then competitors with their own infrastructures and without an averaging obligation will enter only in low-cost segments and price to undercut the retailer who must subsidise customers in high-cost segments. If the entrant’s costs are indeed higher than the regulated retailer, then inefficient entry may occur. The regulated retailer, as the one of last resort, will be left with a disproportionate share of high-cost customers, and becomes economically unviable. These issues play out not just in respect of geographic cost elements, but also in relation to arbitrage between customer segments with different underlying cost structures – for example, between residential and commercial customers, or between high volume and low volume customers⁴⁸.

26. What practical approaches could be taken to provide for a continued cross-subsidy between the Chorus2 and ServiceTel Local Service TSO businesses?
27. What impact would the structural separation of Telecom have on the commercial viability of providing voice services, based on UCLL, to non-urban customers?
28. Following structural separation what would the appropriate “trigger” for the payment of additional compensation to ServiceTel/Chorus2?
29. Under current Government policy, Telecom can seek additional compensation for the Local Service TSO by either requesting an additional increase in the standard residential line rental under the Local Service TSO deed or by requesting a Commission determination of net cost. Should both or either of these options continue to be available after structural separation, and which business should have access to them?

It is our view that there is no simple way of addressing these issues as long as there is an expectation that selected firms within a competitive market are obligated to carry out socially-motivated wealth transfers but others are not. Either the social

⁴⁸ Howell, B. (2010) *Flat-rate Tariffs and competitive entry in telecommunications markets*. Paper presented to the 17th International Telecommunications Society Biennial Conference , Tokyo, June 28 2010. http://www.iscr.org.nz/f577.16530/16530_Tariff_Structure_and_Competitive_Entry_BH.pdf

obligation becomes a charge on all firms equally, or another means is found to effect the wealth transfer.

We note at this point that a continuing obligation upon the copper network operator to be the connector of last resort imposes some especial stresses, Again, these stresses derive from the UFB, and the confusion over whether it is an infrastructure competitor or the direct successor to the copper network. As the separated network operator cannot have a direct relationship with retail customers, and the presumption is that competition is to prevail and is restricted by competition law in its ability to form relationships with fibre operators to progress, it is likely to be unable to easily exit from the market when it is economically efficient for it to do so. Ultimately, it is the consumer's decision to switch from copper to fibre network connection. Retailers with no vested financial interest in either network face no special incentives to influence consumer decisions. As long as the copper operator as the connector of last resort is obligated to offer connections, a small number of consumers (and retailers for whom these customers are profitable) can force the copper operator to continue providing services, up to the point of financial insolvency, when an earlier exit would have been more efficient. If financial insolvency of the copper operator is the trigger for revision of increased government subsidies to keep the copper network operating, the inefficiencies can persist for even longer.

It is our view that the whole question the allocation of the obligations to be the provider of last resort – at both the network and retail level – must be revisited to take account of all of increasing competition, technological innovation and network evolution. At the very least, it is becoming clearer that the changing face of competition across the country means that it is highly unlikely that one network or one retail firm will be able to meet such obligations and remain financially viable. Locally specific characteristics must be taken into account. A single national policy is most unlikely to be optimal. We contend the LFCs and the successful RBI tenderers, being the recipients of government subsidies, are more likely to be able to meet such obligations, so a succession plan to transfer these obligations should be considered as the new networks are rolled out.

Part C – Appendix

Comments of previous regulatory interventions in the New Zealand fixed-line telecommunications market

1. A universal service obligation equalising rural and urban residential telephone rentals, a cap on residential retail prices and a mandatory ‘free local calling’ residential tariff, imposed in 1990 (the ‘Kiwi Share’). Whilst the free local calling and universal service obligations addressed largely historical allocative objectives, the cap on residential retail prices addressed efficiency by restricting the extent to which the firm could exert its market power by charging over-high prices to its retail customers. The costs of providing universal service and free local calling were recovered initially via interconnection prices charged to competitors and after 2001 from a tax levied annually on industry participants (the Telecommunications Service Order or TSO).
2. Access regulation and regulated interconnection to the fixed line network, imposed in 2001. The efficiency justification for regulated interconnection prices was on the basis of a static efficiency analysis that interconnection prices charged to competitors were above cost. Access to specified fixed line network products at regulated prices was justified on static and dynamic efficiency grounds of gains from increased competition in non-network elements of services provided by Telecom to its customers and access to a range of products and services not offered by Telecom.
3. Bitstream unbundling, imposed in 2003 following an economic efficiency analysis, as a compromise enabling increased dynamic efficiency by increasing competition in downstream broadband services whilst simultaneously preserving the incentives for Telecom to invest in a replacement ‘Next Generation Network’ based upon the provision of fibre-optic cables to roadside cabinets.
4. Full local loop unbundling (LLU), imposed in 2006. No economic efficiency argument was offered to support this regulatory intervention. Unquantified justifications included increasing broadband penetration and investment in the telecommunications market as a consequence of competitors investing in equipment installed in Telecom’s network.
5. Functional separation, imposed in 2007, separating Telecom New Zealand into a network operation arm (Chorus), a wholesale operation (Telecom Wholesale)

and a retail operation (Telecom Retail). Again, no efficiency justification was offered for this intervention.